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**CMA Inter Group-II**  
(2016 Syllabus)

Containing Questions  
of Last 20 Exams

Questions of Dec. 2018 in Chapters  
with Analysis-Solutions Online

**Paper-10**

## **Cost & Management Accounting and Financial Management**

**18<sup>th</sup> Edition**

**Applicable for  
June 2019 Attempt**

Prof. Arun Kumar  
CS (Dr.) Himanshu Srivastava  
CA Mohit Bahal

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## In this edition

Questions	Solutions
June - 2009 to December - 2018 Duly incorporated in chapters.	June - 2009 to June - 2018 Duly incorporated in chapters.
	December - 2018 on <a href="http://companion.sauda.com">companion.sauda.com</a>

# SCANNER®

## CMA Inter Gr. II

(2016 Syllabus)

### Paper 10 - Cost & Management Accounting and Financial Management

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## ***Preface to Scanner***

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Students of professional courses are always short of time and therefore, unable to revise the entire syllabus before exams. Keeping this in mind, We are presenting this Scanner (2016 Syllabus). This Scanner would essentially meet the requirement of students of CMA for ***Cost & Management Accounting and Financial Management***.

This Scanner broadly covers -

- How to present the answer.
- The main contents of the answer.
- What should be the length of answer for different marks.

Presentation of answer through tables would help the students in understanding the concepts in a clear manner.

Any further improvement in the contents of Scanner by making corrections and inclusions is keen to be achieved based on suggestions from the readers for which the authors shall be obliged.

Wishing all students a great success.

**Prof. Arun Kumar**  
**CS (Dr.) Himanshu Srivastava**  
**CA Mohit Bahal**

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***Dedicated To*** \_\_\_\_\_

**My Sweet Daughters  
Saanvi and Koohu**

**CS (Dr.) Himanshu Srivastava**

***Dedicated To*** \_\_\_\_\_

**My Cute Daughters  
Sumedha and Kamakshi**

**CA Mohit Bahal**

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## **Our Story**

Scanner contains questions of previous examinations which are arranged topic and category wise with lots of analysis to understand the trend of question papers. In 1989, Prof. Arun Kumar invented “Scanner” to reduce confusion and uncertainty in the preparation of CA Examination. Today, Scanner is the most sought after book by the professional students doing CA, CS & CMA.

## UNIQUE FEATURES OF THIS EDITION

- An **Examination Trend Analysis** for question paper based contents of last five examinations before the paper.
- Questions are arranged according to the **subject/topic** in ascending order of examinations/years.
- **Graph** for every chapter, showing marks allotment for last twenty examinations amongst Short Notes, Distinguish Between, Descriptive Questions and Practical Questions.
- Line Chart showing relative importance of chapters.
- Table Showing Marks of **Compulsory Questions** at the end of every chapter.
- Analytical Classification of every Chapter in **Four** Categories:
  - (1) Short Notes,
  - (2) Distinguish Between,
  - (3) Descriptive Questions and
  - (4) Practical Questions.
- **100%** Correct Answers of Practical Questions.
- Complete list of **Repeatedly Asked Questions** at the end of every chapter.
- Complete Question Paper of June 2018 and December 2018.
- Pleasant **get-up**.

### ***Praise for Scanner***

---

It's really a wonderful book where we have everything under one place.

***Rohit Kumar Gururani, New Delhi***

Mirror that reflects our preparation.

***Ms. Priya Sharma, Jamshedpur***

Scanner is a good approach for CMA students. It had played an important role in my preparation. This book gives an idea about examination. It was really of great help to me in my preparation.

***Ganesh Mallinath Kadage, Solapur***

The Scanner is very helpful because in it are given chapter-wise questions. Objective type questions are given at one place and it is very easy to prepare at the time of examination.

***Mutyala Bala Krishana, Bargarh (Orissa)***

“Scanner” is synonym of “Success”. By using this book, a student comes to know the important chapters and topics having high ranks. This helps him to score high in very short period of time.

***Chatar Singh Kalra, Punjab***

**Opportunity!!!  
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Scanner is a dynamic book to serve your needs with the shifting times. It is the product of immense effort of our team and we feel great pride to make timely editions of such volatile product for our students. Still some human errors may creep-in and some incompleteness may lie.

We seek your participation in improving your Scanner in two ways:

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8. The last date of sending the query is 31<sup>st</sup> May 2019 for January 2019 edition.
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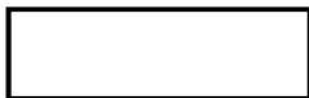
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Hey,

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## **Plan Your Work, Work Your Plan.**

### **When to Study?**

- As per the comprehensive study schedule or time table.
- Before use, first develop it.

### **How to prepare a time table?**

1. Divide total months available into months for completing the course and revising the course.
2. Then, divide the entire syllabus in the months available for completing the course.
3. This way you get the number of days for finishing a chapter.
4. After that prepare a monthly time table followed by daily time table. Applicable to all the subjects.
5. A time table:
  - 5.1. Gives us concrete idea of what to study when
  - 5.2. Saves our time
  - 5.3. Helps in prevention of leaving the things on mood or chance
  - 5.4. Makes us efficient and competent to do the scheduled assignment within the stipulated time
  - 5.5. Removes the tendency of postponement, on our part.
6. Time table must be realistic taking into consideration our interest, availability of time, ability and moral pressures.

### **What to Study?**

1. Be thorough with the content of your syllabus and fix priority of chapters/topics to be studied.
2. Fix the priority by analysing past years examination papers.

3. Weightage of a topic is determined on the basis of:
  - 3.1. Being repetitively asked
  - 3.2. Weightage of marks of the questions asked
4. Make the rank table.

### Rank Table

Chapter in	Chapters	Total marks asked last 20 exams.	Repeatedly Asked Questions	Rank

### From where to Study?

1. Although the syllabus seems vast, the scope of the syllabus is restricted to the various laws, common authenticated and well established rules and regulation and their application.
2. Be it accounts, economics, audit, law cost accounts, direct tax or indirect tax etc. Law/rule/regulation cannot be changed by any author. The difference which is apparent is the presentation, explanation and examples used. So we should be very careful while selecting our source and should stick to it.

### How to Study?

#### The Theory Subject

1. Make maps of topics/chapters in your mind and also on paper to interconnect your entire syllabus to understand the big picture
2. Use Pneumonic Code assets to help you remember things for long.
3. Make your own notes.
4. Make and use cards that bears topic on one face and its points to remember on the other face. It helps you do a quick revision.

#### The Practical Subject:

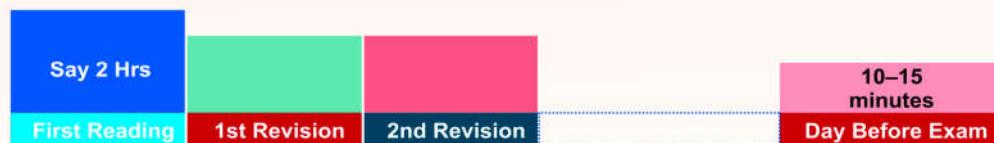
1. First grasp the concept of the topics along with the method and formula used.
2. Make a summary notes on it, regarding related laws, rules, formulae or techniques used. During revision this will be a handy tool instead of

struggling with the book.

3. In each chapter there are about 30-40 problems. We should solve all the questions. Different questions are based on different specific problem areas which need a particular technique to solve. Underline these specific problem areas with notes so that during subsequent revision we pay attention to those areas.
4. Categorise questions that belong to the same problem area. This way the 30 - 40 questions will be reduced to groups of 8-10 or 10-12 (as the case may be).
5. This makes us solve the questions speedily and skip similar problems already solved.

### Retain and Remember

6. Do not waste time on common problems but concentrate on specific problem areas in every question.
7. Develop the habit of revising the whole syllabus at specific intervals.
8. Revision is necessary.  
First Revision : within 24 hours  
Second Revision : Exactly after 7 days of first learning  
Third Revision : Exactly after 15 days of first learning
9. Revision efforts gradually decrease with subsequent revisions.



Time Graph

### How to Study Daily?

1. Do not study only one subject throughout the day. The general approach is to start and finish one subject and then start another subject. This way you forget the subjects very quickly and easily.
2. Study 3-4 subjects everyday.



3. Follow Mix-n-Match technique.

### Mix-n-Match technique:

1. Some chapters are big and some small in every subject.
2. Mark the chapter as “B” if they are big and “S” if they are small. Do this for every subject.
3. Now mix and match the chapters of one subject with the other that makes it easier to study and also at the same time feel less burdened.
4. In addition, match one practical subject with two theory subjects.

### How Much to Write?

1. The time allotted to answer each paper in the examination hall is 3 hours out of this 3 hours the effective time is 2 hours 45 minutes i.e. 165 minutes.
  2. The maximum marks is 100:
  3. Research suggests that a student can write 4000-5000 words in English and 3000-4000 words in Hindi at a stretch in 2½ to 3 hours.
- So, we can solve our problem by using a bit of mathematics.

### English:

For 100 marks-maximum of 4500 words (approx).

$$\therefore \text{For 1 marks} - \frac{4500}{100} = 45 \text{ words}$$

Also

For 100 marks – 165 minutes

$$\text{for 1 marks} - \frac{165}{100} = 1.65 \text{ minutes}$$

Thus, our writing speed should be near about 45 words in 1.65 minutes.

or 27 words per minute (approx)

$$\therefore \left[ \frac{45 \text{ Words}}{1.65 \text{ Minutes}} = 27 \text{ words (approx)} \right]$$

Thus, for a theory question of 8 marks

$$\text{Words : } 45 \text{ words} \times 8 = 360 \text{ words}$$

$$\text{Time} : \frac{360 \text{ Words}}{27 \text{ Words}} = 13.33 \text{ minutes.}$$

## Hindi

For 100 marks - 3500 words (approx)

$$\text{for 1 marks} - \frac{3500}{100} = 35 \text{ words.}$$

Also for 100  
marks – 165 minutes

$$\text{for 1 marks} - \frac{165}{100} = 1.65 \text{ minutes.}$$

**Thus**, the writing speed should be 21.2 words per minute.

**Thus**, for a theory question of 8 marks.

Words : 35 words × 8 = 280 words

$$\text{Time} = \frac{280 \text{ Words}}{21 \text{ Words}} = 13.33 \text{ minutes. If Possible}$$

## Presentation of the Answer

- Present your answer in a clear and attractive way. Use tables flow diagrams etc.
- Always give precise and relevant answer to the question.
- No need to write introduction/conclusion for direct theory question.
- Length of the answer should commensurate with the weightage of the marks (already discussed) and manage the time in such a way which ensure that you spend at least 5-7 minutes at the end for reviewing purpose.
- Don't use red ink or any sketch pen for underlining the heading or important points. Use black pen/pencils for underlining.
- Don't strike off any answer even if it is 100% wrong especially when you have no other opportunity due to time constraint. It may happen that you may get step marks for parts of the wrong answer.

## How to use the Various Schedules?

The schedules mentioned are scientific and systematic and are designed in such a way that if a student follows, he will complete the course within the stipulated time, revise it and retain it, not only till the date of examination but also thereafter.

The various schedules to be followed are:

1. Rank table
2. Time manager
3. Budgeted time schedule

## In what order should the schedules be used?

1. Firstly analyse the GRAPH and QUICK LOOK and assign weightage accordingly.
2. Then on the basis of weightage of the chapter ranks make RANK TABLE. Next use the TIME MANAGER.

## Benefits of schedules

### Rank Table:

The chapters of the entire subject is ranked on the basis of various factors such as:

1. Total marks asked in last 20 exams.
2. Repeatedly asked question.
3. Frequency of question in last 20 exams

Use rank table. Ranking helps a student to give priority to the important chapters.

### Time Manager:

It acts as a booster and inspires a student to complete the first learning or subsequent revision within the stipulated time.

Time Manager		Plan and Manage your Time					
Time	First In-depth learning	Instant Revision (In hours)		Periodic Revision (In hours)			Fix as per your need
	i.e. .... Day 1	Next day i.e. .... Day 2	After 7 days i.e. on .... Day 8	After 30 days i.e. on .... Day 30	After 60 days i.e. on .... Day 60	After 90 days i.e. on .... Day 90	
1. Budgeted							
2. Actual							
3. Variance (1-2)							

**Note:**

1. Budgeted hours has been fixed on the basis of survey amongst the students, however you may fix it according to your capacity and ability.
2. Write the actual time taken by you.
3. Variance may be favourable or unfavourable
  - if favourable it is a positive sign.
  - if unfavourable then you try to recoup it in subsequent learning.

**Over come Procrastination**

Procrastinating is putting things off or delaying. Procrastination is the thief of time. It waste time. All the schedules and planners will fail if we procrastinate. Once we have defined are goals and set deadlines for achieving it we should stick to it. We should never wait for the right mood but start right away. No matter what causes the do it later urge- we should overcome the urge with a do-it-now action.

The best day to start is today and the best time is now. Plan well and execute well. When feel disappointed, come back with a bang. Always there.



# Syllabus

## Section- A

### Paper 10

### Cost & Management Accounting and Financial Management

#### Syllabus Structure

A	Cost & Management Accounting	50%
B	Financial Management	50%

#### Objective:

To provide an in depth knowledge of the detailed procedures and documentation involved in cost ascertainment systems. To understand the concepts of Financial Management and its application for managerial decision making.

#### Section A: Cost & Management Accounting

##### 1. Cost and Management Accounting:

Introduction to Management Accounting - Relationship between Management Accounting and Cost Accounting.

##### 2. Decision Making Tools

(a) Marginal Costing: Break Even Analysis and Cost-volume-profit analysis; break-even charts and profit charts; differential cost analysis; stock valuation under marginal costing vs. absorption costing; applications of marginal costing in decision making.

(b) Transfer Pricing: Determination of Inter-departmental or Inter-company Transfer Price

##### 3. Budgeting and Budgetary Control

(a) Budgetary Control and Preparation of Functional and Master Budgeting

(b) Fixed, Variable, Semi-Variable Budgets

(c) Zero Based Budgeting (ZBB)

##### 4. Standard Costing & Variance Analysis

Computation of variances for each of the elements of costs, Sales Variances, Investigation of variances - Valuation of Stock under Standard Costing - Uniform Costing and Inter-firm comparison.

**5. Learning Curve**

Concept of Learning curve and its application

**Section B: Financial Management**

**6. Introduction to Financial Management**

Meaning - Objectives - Scope of Financial Management Sources of Finance - Introduction to Financial Markets.

**7. Tools for Financial Analysis and Planning**

Financial Ratio Analysis - Funds Flow Analysis - Cash Flow Analysis

**8. Working Capital Management**

Working Capital Management - Financing of Working Capital

**9. Cost of Capital, Capital Structure Theories, Dividend Decisions and Leverage Analysis**

Meaning of Cost of Capital - Computation of Cost of Capital - Capital Structure Theories and Dividend Decisions Theories (Walters - MM - Gordon Models) - Leverage Analysis.

**10. Capital Budgeting - Investment Decisions:**

Concept of Capital Budgeting - Non-Discounted and Discounted Cash Flow Method - Ranking of Projects.

# **Section A**

# **Cost & Management Accounting**

## Examination Trend Analysis

### Paper 10 Cost & Management Accounting and Financial Management

#### Question Paper Based Contents of Last Five Examinations

Years	Q. No.	Chapter		Page No.
		No.	Name	
2016 Dec.	1. (b)	2B	Transfer Pricing	100
	(c)	3	Budgeting & Budgetary Control	141
	(d)	2A	Marginal Costing and Decision Making	73
	(f)	4A	Standard Costing and Variance Analysis	179
	6. (a)	2A	Marginal Costing and Decision Making	73
	(b)	7	Tools for Financial Analysis and Planning	342
	7. (a)	4A	Standard Costing and Variance Analysis	179
	(b)	2A	Marginal Costing and Decision Making	34
	8. (a)	8	Working Capital Management	394
	(b)	9C	Leverage Analysis	472
2017 June	9. (a)	3	Budgeting & Budgetary Control	142
	1.	5B	Objective Questions Cost & Management Accounting	237
	2.	2A	Marginal Costing and Decision Making	74
	3.	4A	Standard Costing and Variance Analysis	181
	4. (a)	3	Budgeting & Budgetary Control	143
	(b)	2B	Transfer Pricing	101
	5. (a)	2A	Marginal Costing and Decision Making	29
	(b)	2A	" "	29
	(c)	3	Budgeting & Budgetary Control	114
	(d)	5A	Learning Curve	203
	6.	11	Objective Questions Financial Management	542
	7. (a)	7	Tools for Financial Analysis and Planning	344
	(b)	7	" " "	345
	8. (a)	8	Working Capital Management	396
	(b)	9C	Leverage Analysis	473
	9. (a)	9A	Cost of Capital & Capital Structure	430

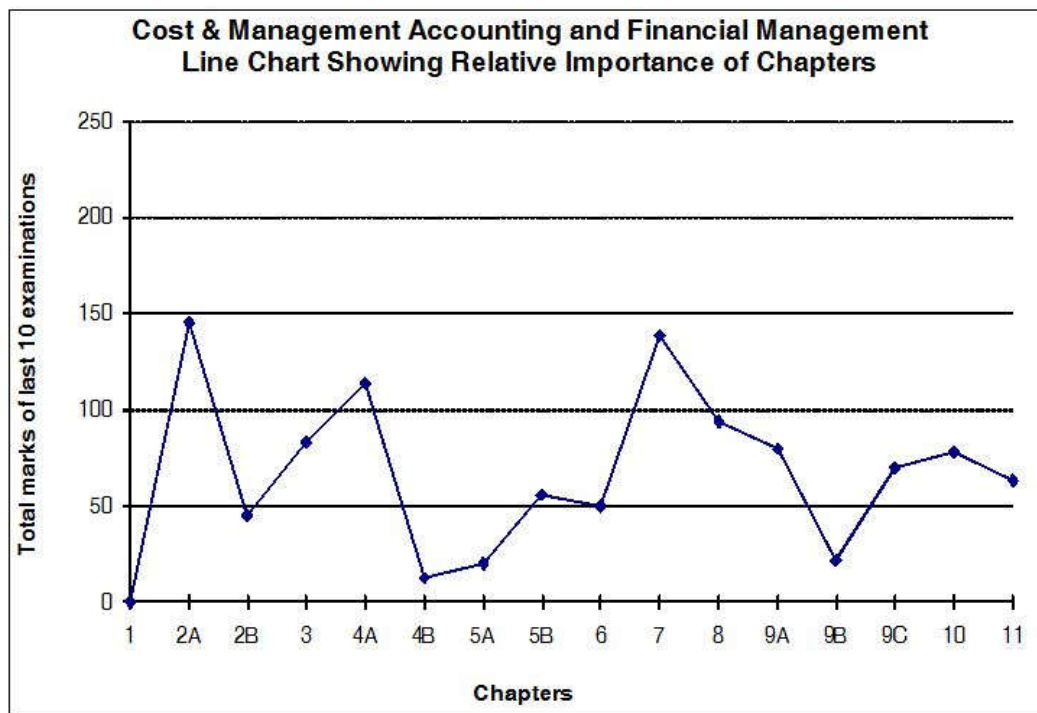
	(b)	10	Capital Budgeting	504
	10. (a)	9A	Cost of Capital & Capital Structure	408
	(b)	9A	" "	408
	(c)	9C	Leverage Analysis	453
	(d)	7	Tools for Financial Analysis and Planning	302
2017 Dec.	1.	5B	Objective Questions Cost & Management Accounting	239
	2.	2A	Marginal Costing and Decision Making	76
	3.	4A	Standard Costing and Variance Analysis	182
	4. (a)	2B	Transfer Pricing	102
	(b)	3	Budgeting & Budgetary Control	145
	5. (a)	2A	Marginal Costing and Decision Making	30
	(b)	2A	" "	30
	(c)	3	Budgeting & Budgetary Control	116
	(d)	4B	Uniform Costing and Inter-firm Comparison	196
	6.	11	Objective Questions Financial Management	30
	7. (a)	7	Tools for Financial Analysis and Planning	346
	(b)	7	" " " "	347
	8. (a)	8	Working Capital Management	397
	(b)	9C	Leverage Analysis	474
	9. (a)	9A	Cost of Capital & Capital Structure	430
	(b)	10	Capital Budgeting	505
	10. (a)	10	Capital Budgeting	483
	(b)	6	Interdiction to Financial Management	274
	(c)	6	" "	274
	(d)	9C	Leverage Analysis	454
2018 June	1.	5B	Objective Questions Cost & Management Accounting	242
	2.	2A	Marginal Costing and Decision Making	79
	3.	4A	Standard Costing and Variance Analysis	185
	4. (a)	3	Budgeting & Budgetary Control	146
	(b)	5A	Learning Curve	220
	5. (a)	1	Cost and Management Accounting	16
	(b)	3	Budgeting & Budgetary Control	116

	(c)	2B	Transfer Pricing	88
	(d)	4A	Standard Costing and Variance Analysis	156
6.		11	Objective Questions Financial Management	547
7.	(a)	7	Tools for Financial Analysis and Planning	350
	(b)	"	" " " "	352
8.	(a)	8	Working Capital Management	398
	(b)	9B	Dividend Decisions	447
9.	(a)	9A	Cost of Capital & Capital Structure	432
	(b)	10	Capital Budgeting	506
10.	(a)	7	Tools for Financial Analysis and Planning	302
	(b)	8	Working Capital Management	371
	(c)	7	Tools for Financial Analysis and Planning	302
	(d)	7	" "	304
2018 Dec.	1. (a)	5B	Objective Questions Cost & Management Accounting	244
	(b)	5B	" " "	245
	(c)	5B	" " "	246
	2. (a)	2A	Marginal Costing and Decision Making	81
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	5. (i)	2A	Marginal Costing and Decision Making	32
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	(iii)	5A	" " " "	205
	(iv)	3	Budgeting & Budgetary Control	117
	6. (a)	11	Objective Questions Financial Management	549
	(b)	11	" " " "	550
	(c)	11	" " " "	550
	7. (a)	7	Tools for Financial Analysis and Planning	355
	(b)	7	" " " "	356
	8. (a)	8	Working Capital Management	400
	(b)	9C	" " "	475

9.	(a)	9B	Dividend Decisions	447
	(b)	10	Capital Budgeting	508
10.	(i)	7	Tools for Financial Analysis and Planning	304
	(ii)	6	Interdiction to Financial Management	275
	(iii)	7	Tools for Financial Analysis and Planning	304
	(iv)	8	Working Capital Management	372

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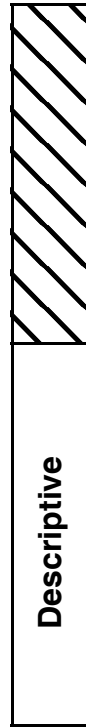
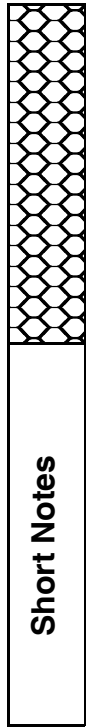
**Frequency Table Showing Distribution of Marks**

Chap. No.	Chapter Name	Years	14 June	14 Dec.	15 June	15 Dec.	16 June	16 Dec.	17 June	17 Dec.	18 June	18 Dec.	Total	Ave.
1.	Cost and Management Accounting										4			
2A.	Marginal Costing and Decision Making		14	12	22	12	4	13	20	20	12	16	145	14.5
2B.	Transfer Pricing		8			12	6	2	6	7	4		45	4.5
3.	Budgeting & Budgetary Control			12	10	6	2	14	10	9	10	10	83	8.3
4A.	Standard Costing and Variance Analysis		16	10	12	8	2	14	12	12	12	16	114	11.4
4B.	Uniform Costing and Inter-firm Comparison		7			2				4			13	1.3
5A.	Learning Curve								4		6	10	20	2.0
5B.	Objective Questions Cost &...								14	14	14	14	56	5.6
6.	Introduction to Financial Management		10	2	16		5	5		8		4	50	5.0
7.	Tools for Financial Analysis and Planning		18	8	10	18	8	5	16	12	24	20	139	13.9
8.	Working Capital Management		8	10	10	12	7	10	6	8	11	12	94	9.4
9A.	Cost of Capital & Capital Structure		6	18	4	8	7	10	14	7	6		80	8.0
9B.	Dividend Decisions		2			8	2				5	5	22	2.2
9C.	Leverage Analysis		8	8	10	6	10	5	10	8		5	70	7.0
10.	Capital Budgeting		8	10	8	4	10	10	6	9	6	7	78	7.8
11.	Objective Questions						3	4	14	14	14	14	63	6.3

**Frequency Table Showing Marks of Compulsory Questions**

Chap. No.	Chapter Name	Years	14 June	14 Dec.	15 June	15 Dec.	16 June	16 Dec.	17 June	17 Dec.	18 June	18 Dec.	Total	Ave.
1.	Cost and Management Accounting													
2A.	Marginal Costing and Decision Making	4											4	0.4
2B.	Transfer Pricing													
3.	Budgeting & Budgetary Control													
4A.	Standard Costing and Variance Analysis	2											2	0.2
4B.	Uniform Costing and Inter-firm Comparison	2											2	0.2
5A.	Learning Curve													
5B.	Objective Questions Cost & ...												0	0.0
6.	Introduction to Financial Management	2											2	0.2
7.	Tools for Financial Analysis and Planning	2											2	0.2
8.	Working Capital Management													
9A.	Cost of Capital & Capital Structure	2											2	0.2
9B.	Dividend Decisions	2					2						4	0.4
9C.	Leverage Analysis													
10.	Capital Budgeting						2						2	0.2
11.	Objective Questions						3	4					7	0.7

## Legends for the Graphs



# 1






## ***COST AND MANAGEMENT ACCOUNTING***

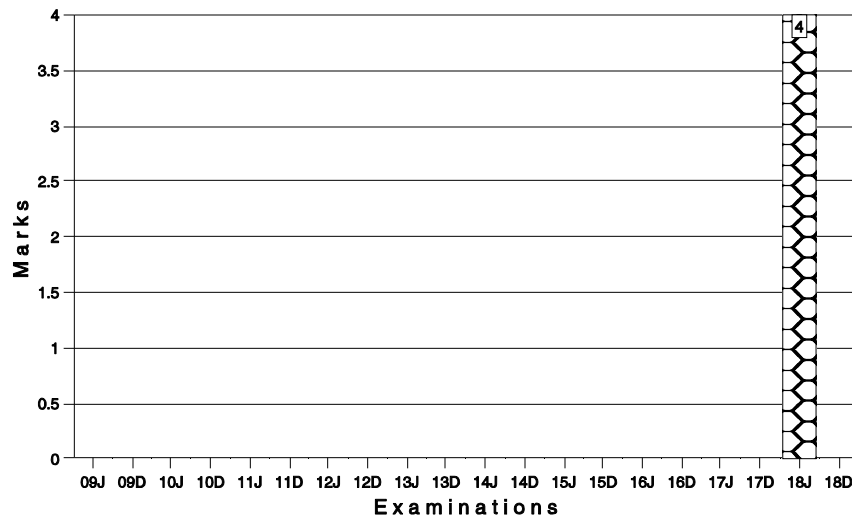
### **THIS CHAPTER INCLUDES**

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>• Introduction</li> <li>• Management Accounting - Definition</li> <li>• Significance of Management Accounting</li> <li>• Role of Management Accounting in Management Process</li> </ul> | <ul style="list-style-type: none"> <li>• Objective/Functions of Management Accounting</li> <li>• Limitations of Management Accounting</li> <li>• Relationship between Management Accounting and Cost Accounting</li> </ul> |
|--|--|

Marks of objective, Short Notes, Distinguish Between, Descriptive & Practical Questions

### **Legend**

 Objective
  Short Notes
  Distinguish
  Descriptive
  Practical



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## CHAPTER AT A GLANCE

Topic	Important Highlights
<b>Financial Accounting</b>	Financial Accounting is concerned with the preparation of Profit and Loss Account and Balance Sheet to disclose information to the shareholders.
<b>Management Accounting</b>	<p>Management Accounting provides the techniques for interpretation of accounting data.</p> <p>“Management Accounting is an integral part of management concerned with identifying, presenting and interpreting information for:</p> <ol style="list-style-type: none"> <li>1. Formulating strategy</li> <li>2. Planning and controlling activities</li> <li>3. Decision taking</li> <li>4. Optimizing the use of resources</li> <li>5. Disclosure to shareholders and others, external to the entity</li> <li>6. Disclosure to employees</li> <li>7. Safeguarding assets</li> </ol>
<b>Significance of management accounting</b>	<ol style="list-style-type: none"> <li>1. Delegation of Authority</li> <li>2. Need of the Management</li> <li>3. Qualitative Information</li> <li>4. Objective of the Business</li> </ol>
<b>Role of management accounting in management process</b>	<p>The role of Management Accounting is significant in making the firm both efficient and effective.</p> <p>It is well known the basic functions of management are:</p> <ol style="list-style-type: none"> <li>1. Planning,</li> <li>2. Organising,</li> <li>3. Controlling,</li> <li>4. Decision-making and</li> <li>5. Staffing</li> </ol>

<b>Functions of management accounting</b>	<ol style="list-style-type: none"> <li>1. Storehouse of Reliable Data</li> <li>2. Modification and Presentation of Data</li> <li>3. Communication and Coordination</li> <li>4. Financial Analysis and Interpretation</li> <li>5. Control</li> <li>6. Supplying Information to Various Levels of Management</li> <li>7. Reporting to Management</li> </ol>
<b>Limitations of management accounting</b>	<ol style="list-style-type: none"> <li>1. Accuracy is not Ensured</li> <li>2. A Tool in the Hands of Management</li> <li>3. Strength and Weakness</li> <li>4. Costly Affair</li> <li>5. Lack of Knowledge and Understanding</li> <li>6. Evolutionary Stage</li> <li>7. Psychological Resistance</li> </ol>
<b>Relationship between Management Accounting and Cost Accounting</b>	<p>The scope of Management Accounting is broader than the scope of Cost Accountancy. In Cost Accounting, primary emphasis is on cost and it deals with its collection, analysis, relevance interpretation and presentation for various problems of management. Management Accountancy utilizes the principles and practices of Financial Accounting and Cost Accounting in addition to other management techniques for efficient operations of a company.</p> <p>Management Accountancy makes corporate planning and strategy effective.</p> <p>Cost Accounting and Management Accounting are interdependent, greatly related and inseparable.</p>

**SHORT NOTES**

**2018 - June [5]** Write short note on the following.

(a) Concept of Management Accounting.

**(4 marks)**

**Answer:**

Management Accountants (also called managerial accountants) look at the events that happen in and around a business while considering the needs of the business. From this, data and estimates emerge. Cost accounting is the process of translating these estimates and data into knowledge that will ultimately be used to guide decision-making.

The main difference between financial and **managerial accounting** is whether there is an internal or external focus. **Financial accounting** focuses on creating and evaluating financial statements that will be reported externally, like creditors and investors. In contrast, managerial accounting analyses and results are kept in-house for business leaders to use to drive decision-making and run the company more effectively. Managerial accountants handle many facets of accounting. These include margins, constraints, capital budgeting, trends and forecasting, valuation and product costing.

—— Space to write important points for revision ——

**TOPIC NOT YET ASKED BUT EQUALLY IMPORTANT FOR EXAMINATION**

**DESCRIPTIVE QUESTIONS**

**Q1.** What is Management Accounting? Discuss the Significance of Management Accounting.

**Answer:**

“Management Accounting is concerned with the efficient management of a business through the presentation to management of such information that will facilitate efficient planning and control”. — Brown and Howard



Management Accounting is an integral part of management concerned with identifying, presenting and interpreting information for:

1. Formulating strategy
2. Planning and controlling activities
3. Decision taking
4. Optimizing the use of resources
5. Disclosure to shareholders and others, external to the entity
6. Disclosure to employees
7. Safeguarding assets

**The various advantages that accrue out of management accounting are enumerated below:**

- (1) **Delegation of Authority:** Now a day the function of management is no longer personal, management accounting helps the organisation in proper delegation of authority for the attainment of the vision and mission of the business.
- (2) **Need of the Management:** Management Accounting plays the role in meeting the need of the management.
- (3) **Qualitative Information:** Management Accounting accumulates the qualitative information so that management would concentrate on the actual issue to deliberate and attain the specific conclusion even for the complex problem.
- (4) **Objective of the Business:** Management Accounting provides measure and reports to the management thereby facilitating in attainment of the objective of the business.

—— Space to write important points for revision ———

**Q2.** Discuss the role of Management Accounting in Management process.

**Answer:**

The role of Management Accounting is significant in making the firm both efficient and effective. Management Accounting has brought out clear shift in the objective of accounting. From mere recording of transactions, the emphasis is on analyzing and interpreting to help the management to secure better results. In this way, Management Accounting eliminates intuition, which is not at all dependable, from the field of business management to the cause and effect approach.

Management accounting plays a vital role in the managerial functions performed by the managers.

1. **Planning:** Planning is the real beginning of any activity. Planning establishes the objectives of the firm and decides the course of action to achieve it. It is concerned with formulating short-term and long-term plans to achieve a particular end.  
While planning, management accountant uses various techniques such as budgeting, standard costing, marginal costing etc. for fixing targets.
2. **Organising:** Organising is a process of establishing the organizational framework and assigning responsibility to people working in the organization for achieving business goals and objectives.  
The management accountant may prepare reports on product lines, based on which managers can decide whether to add or eliminate a product line in the current product mix.
3. **Controlling:** Control is the process of monitoring, measuring, evaluating and correcting actual results to ensure that a firm's goals and plans are achieved. Control is achieved through the process of feedback. Feedback allows the managers to allow the operations continue as they are or take corrective action, by some rearranging or correcting at midstream.
4. **Decision-making:** Decision-making is a process of choosing among competing alternatives. Decision-making is inherent in all the above three functions of management planning, organizing and controlling. There may be different methods or objectives. The manager can plan or choose only one of the competing plans.
5. **Staffing:** Staffing is the process of recruitment, selection, development, training, compensation and overseeing employee in an organisation. The role of the management accounting in this regard is manning the entity structure through proper and effective selection, appraisal, and development of the personnel to fill the role assigned to the employer.

**Q3.** State the functions of Management Accounting.

**Answer:**

The primary objective of Management Accounting is to maximize profits or minimize losses. This is done through the presentation of statements in such a way that the management is able to take corrective policy or decision. The manner in which the Management Accountant satisfies the various needs of management is described as follows:

1. **Storehouse of Reliable Data:** Management wants reliable data for Planning, Forecasting and Decision-making. Management accounting collects the data from various sources and stores the information for appropriate use, as and when needed. Though the main source of data is financial statements, Management Accounting is not restricted to the use of monetary data only.
2. **Modification and Presentation of Data:** Data collected from financial statements and other sources is not readily understandable to the management. The data is modified and presented to the management in such a way that it is useful to the management.
3. **Communication and Coordination:** Targets are communicated to the different departments for their achievement. Coordination among the different departments is essential for the success of the organisation.
4. **Financial Analysis and Interpretation:** Management accounting helps in strategic decision making. Top managerial executives may lack technical knowledge. Accountant gives facts and figures about various policies and evaluates them in monetary terms.
5. **Control:** It is absolutely essential that there should be a system of monitoring the performance of all divisions and departments so that deviations from the desired path are brought to light, without delay and are corrected then and there. This process is termed as control. For the discharge of this important function, management accounting provides meaningful information in a systematic and effective manner.

6. **Supplying Information to Various Levels of Management:** Every level of management requires information for decision-making and policy execution. Top-level management takes broad policy decisions, leaving day-to-day decisions to lower management for execution. Supply of right information, at proper time, increases efficiency at all levels.
7. **Reporting to Management:** Reporting is an important function of management accounting to achieve the targets. The reports are presented in the form of graphs, diagrams and other statistical techniques so as to make them easily understandable.

—— Space to write important points for revision ——

**Q4.** Discuss the limitation of Management Accounting.

**Answer:**

Despite the development of Management Accounting as an effective discipline to improve the managerial performance, some of the limitations are as under:

1. **Accuracy is not Ensured:** Management Accounting is largely based on estimates. It does not deal with actual, alone, and thus total accuracy is not ensured under Management Accounting.
2. **A Tool in the Hands of Management:** Management Accounting is definitely a tool in the hands of management, but cannot replace management.
3. **Strength and Weakness:** Management Accounting derives information from Financial Accounting, Cost Accounting and other records. The strength and weakness of these basic information providers become the strength and weakness of Management Accounting too.
4. **Costly Affair:** The installation of Management Accounting is a costly affair so all the organizations, in particular, small firms cannot afford.
5. **Lack of Knowledge and Understanding:** The emergence of Management Accounting is the fusion of a number of subjects like statistics, economics, engineering and management theory. Any inadequate grounding in any one or more of the subjects is bound to have an unfavourable effect on the consideration and solution of the problems, relating to management performance.

6. **Evolutionary Stage:** Comparatively, Management Accounting is a new discipline and is still very much in a stage of evolution. Therefore, it comes across the same difficulties or obstacles, which a relatively new discipline has to face.
7. **Psychological Resistance:** Adoption of a system of Management Accounting brings about a radical change in the established pattern of the activity of the management personnel. It calls for rearrangement of personnel as well as their activities. This is bound to encounter opposition from some quarter or other.

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# 2A






## MARGINAL COSTING AND DECISION MAKING

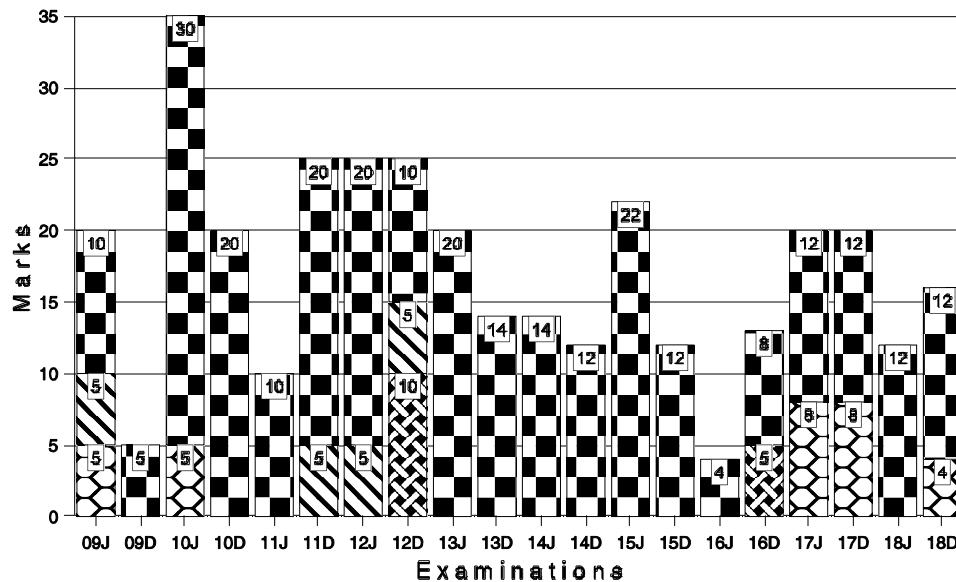
### THIS CHAPTER INCLUDES

- Basic Concepts
- Marginal Costing
- Absorption Costing
- Break even Analysis
- CVP Analysis
- Break-even Charts & Profit Charts
- Differential Cost Analysis
- Applications of Marginal Costing in Decision Making.

Marks of of objective, Short Notes, Distinguish Between, Descriptive & Practical Questions

### Legend

 Objective
  Short Notes
  Distinguish
  Descriptive
  Practical



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for registration and password see first page of this book.

## CHAPTER AT A GLANCE

Topic	Important Highlights
<b>2A.1 Marginal Costing</b>	CIMA has defined Marginal costing as “The accounting system in which variable costs are charged to cost units and fixed costs of period are written off in full against the aggregate contribution. Its special value is in decision making.” Marginal Costing is a technique used for managerial decision making.
<b>2A.1a Advantages of Marginal Costing</b>	<ol style="list-style-type: none"> <li>1. Helps in managerial decisions</li> <li>2. Simple technique</li> <li>3. Realistic valuation of stock</li> <li>4. No under/ over absorption of overheads</li> <li>5. Helps in cost control</li> <li>6. Aids in profit planning</li> </ol>
<b>2A.1b Disadvantages of Marginal Costing</b>	<ol style="list-style-type: none"> <li>1. Difficult analysis</li> <li>2. Ignores time factor</li> <li>3. Improper basis of pricing</li> <li>4. Difficulty in application</li> <li>5. Less effective capital intensive industries</li> <li>6. Unrealistic assumptions</li> </ol>
<b>2A.2 Marginal Cost</b>	CIMA has defined marginal cost ‘as the amount at any given volume of output by which aggregate costs are changed, if volume of output is increased or decreased by one unit’
<b>2A.3 Direct Costing</b>	It is a method of costing in which all direct cost is charged from operations.

<b>2A.4 Differential Cost</b>	It is defined as the total change in total cost. CIMA has defined Differential Costing as “a technique used in the preparation of ad-hoc information in which only costs and income differences between alternative courses of action are taken into consideration”. Differential cost calculation include both variable and fixed costs which are affected by the alternative courses of action. Uses of DCA (a) Introduction of new product. (b) Opening up of new product distribution channel. (c) Acceptance of export order requiring additional outlay. (d) Acceptance of additional order at lower price to special customers. (e) Processing of by - product or joint product beyond split off point.	
<b>2A.5 Marginal Cost and Differential Cost</b>		
<b>Basis of Difference</b>	<b>Marginal cost</b>	<b>Differential cost</b>
<b>1. Meaning</b>	Amount at any given volume of output by which aggregate costs are changed if the volume of output are increased or decreased by one unit.	Net increase or decrease in the total cost which results from variation in level of operation.
<b>2. Nature of change</b>	Marginal cost would only consider prime cost and variable cost.	Differential cost would consider total costs.
<b>3. Components</b>	Marginal cost includes prime cost and total variable overheads.	Differential cost includes both fixed and variable costs.



<b>4. Increase/ decrease</b>	Marginal cost changes with change in output.	Differential cost changes due to following factors: <ul style="list-style-type: none"><li>• Addition/deletion of Product</li><li>• Change in method of production, etc.</li></ul>
<b>2A.6 Incremental Cost</b>	It is the additional cost with change in level of activity.	
<b>2A.7 Contribution</b>	Excess of sales revenue over variable cost Salesxx Less: Variable Costxx Contributionxx	
<b>2A.8 Key Factor</b>	A factor of activities which over a period of time limits the activities of an undertaking. Examples: <ul style="list-style-type: none"><li>❖ Shortage of direct material</li><li>❖ Shortage of labor</li><li>❖ Shortage of production capacity</li><li>❖ Shortage of sales</li><li>❖ Shortage of financial resources</li></ul>	
<b>2A.9 Absorption Costing vs. Marginal Costing</b>		
<b>Basis of difference</b>	<b>Absorption costing</b>	<b>Marginal costing</b>
1. Treatment of fixed & variable costs	Both fixed & variable costs are charged to products.	Only variable costs are charged to products.
2. Valuation of stock	Stock is valued at total cost which includes both fixed & variable costs.	Stock is valued at marginal cost only.
3. Presentation of cost data	Presented in conventional pattern.	Its presentation shows contribution of each product.

4. Measurement of Profitability	Profitability is based on total profit which includes fixed costs.	Profitability is based on contribution which does not include fixed costs.
5. Effect on unit cost of production	Difference between opening & closing stock affects unit cost of production.	Difference between opening & closing stock does not affect unit cost of production.
<b>2A.10 Marginal Cost of Equation</b>	$S \times U - V \times U = F + P$ <p>Where,  S = Selling Price per Unit  V = Variable Cost per Unit  U = No. of units sold  F = Fixed Expenses  P = Profit</p>	
<b>2A.11 CVP Analysis</b>	CVP analysis is the analysis of cost, volume & profit. Assumptions: <ul style="list-style-type: none"> <li>• Change in no. of units sold results in change in revenues &amp; costs.</li> <li>• Direct &amp; indirect cost can be segregated into fixed &amp; variable cost.</li> <li>• Total revenue &amp; cost curves are linear.</li> <li>• Selling price, variable cost &amp; fixed cost are constant within a relevant range.</li> <li>• It does not take into account time value of money.</li> </ul>	
<b>2A.12 Break Even Point</b>	Sales – variable cost = fixed cost Or Contribution = Fixed cost Or Profit = zero	

	<p>Break even point (units) = <math>\frac{\text{Fixed cost}}{\text{Contribution}}</math></p> <p><b>Break even point (Value)</b> = <math>\frac{\text{Fixed cost}}{\text{P/V ratio}}</math></p> <p><b>Break even analysis:</b> A technique for studying CVP relationship and determining a point known as break even point at which total cost is equal to total revenue. It is used for ascertaining expected profit/loss at any point of production. It is an extension of marginal costing principles.</p>
<b>2A.13 Margin of Safety</b>	<p>Margin of safety represents the difference between actual sales and sales at break even point.</p> <p>MOS = actual sales - sales at break even point</p> <p>It also indicates the extent to which a fall in demand could be absorbed. It depends on following factors:</p> <ul style="list-style-type: none"> <li>• Level of fixed cost</li> <li>• Rate of contribution</li> <li>• Level of sales</li> </ul> <p>Margin of safety can also measure the soundness of a business and is very useful in decision making policy of the business.</p>
<b>2A.14 PV ratio</b>	<p><b>P/V ratio</b> = <math>\frac{\text{Contribution}}{\text{sales}} \times 100</math></p> <p>= <math>\frac{\text{Contribution per unit}}{\text{sales per unit}} \times 100</math></p> <p>= <math>\frac{\text{Change in profit}}{\text{Change in sales}} \times 100</math></p>

**SHORT NOTES**

**2009 - June [8]** Write a short note on the following:

(a) Cost Volume Profit Analysis;

**(5 marks)**

**Answer :**

**Cost Volume Profit Analysis :** Cost Volume Profit analysis (CVP analysis) is an extension of the principles of marginal costing. It studies the inter-relationship of three basic factors of business operations:

- (a) Cost of Production
- (b) Volume or production of sales and
- (c) Profit.

These three factors are inter-connected in such a way that they act and react on one another because of cause and effect relationship between them. The cost of a product determines its selling price and the selling price determines the level of profit. The selling price also affects the volume of sales which directly affects the volume of production and volume of production in turn influences cost. In brief, variations in volume of production results in changes in cost and profit. CIMA London has defined CVP analysis as *“the study of the effects on future profits of changes in fixed cost, variable cost, sales price, quantity and mix.”*

An understanding of CVP analysis is extremely useful to the management in budgeting and profit planning. It explains the impact of the following on the net profit :

- (a) Changes in selling prices,
- (b) Changes in volume of sales,
- (c) Changes in variable cost and
- (d) Changes in fixed cost.

Infact, CVP analysis helps in determining the probable effect of change in any one of these factors on the remaining factors.

—— Space to write important points for revision ———

**2010 - June [8]** Write a short note on the following:

(a) Managerial Decision Making

**(5 marks)**

**Answer :**

**Managerial Decision Making** is a very crucial function in any organization. Decision making should be on the basis of the relevant information. For example, marginal costing helps in generating relevant information in certain critical areas like:

- make or buy decisions
- accepting or rejecting an export order
- variation in selling price
- variation in Product Mix
- variation in Sales Mix
- key factor analysis
- evaluation of different alternatives regarding profit improvement
- closing down/continuation of a division
- capital Expenditure decision

The concept of Break Even Point is extremely important for decision making in various areas.

—— Space to write important points for revision ———

**2017 - June [5]** Write short notes on the following:

(a) Differential Cost

(b) Angle of Incidence

**(4 marks each)**

**Answer:**

- (a)** Differential Cost is the change in the costs which results from the adoption of an alternative course of action. The alternative actions may arise due to change in sales volume, price, product mix (by increasing, reducing or stopping the production of certain items), or methods of production, sales, or sales promotion, or they may be due to 'make or buy' or 'take or refuse' decisions. When the change in costs occurs due to change in the activity from one level to another, differential cost is referred to as incremental cost or decremental cost, if a decrease in output is being considered, i.e. total increase in cost divided by the total increase in output. However, accountants generally do not distinguish between differential cost and incremental cost and the two terms are used to mean one and the same thing.

**The essential features of differential costs are as follows:**

- (1) The basis data used for differential cost analysis are costs, revenue and the investment factors which are relevant in the problem for which the analysis is undertaken.
- (2) Total differential costs rather than the costs per unit are considered.
- (3) Differential cost analysis is made outside the accounting records.
- (4) As the differences in the costs at two levels are considered, absolute costs at each level are not as relevant as the difference between the two. Thus, items of costs which do not change but are identical for the alternatives under consideration, are ignored.
- (5) The differentials are measured from a common base point or position.
- (6) The stage at which the difference between the revenue and the cost is the highest, measured from the common base point, determines the choice from amongst a number of alternative actions.

**(b) Angle of Incidence:** Angle of Incidence is an angle formed at the intersection point of total sales line and total cost line in a formal break even chart. If the angle is larger, the rate of growth of profit is higher and if the angle is lower, the rate of growth of profit is lower. So, growth of profit or profitability rate is depicted by Angle of Incidence.

—— Space to write important points for revision ———

**2017 - Dec [5]** Write short notes on the following:

- |   |                  |
|---|------------------|
| (a) Break-even Analysis                     | <b>(4 marks)</b> |
| (b) Absorption Costing Vs. Marginal Costing | <b>(4 marks)</b> |

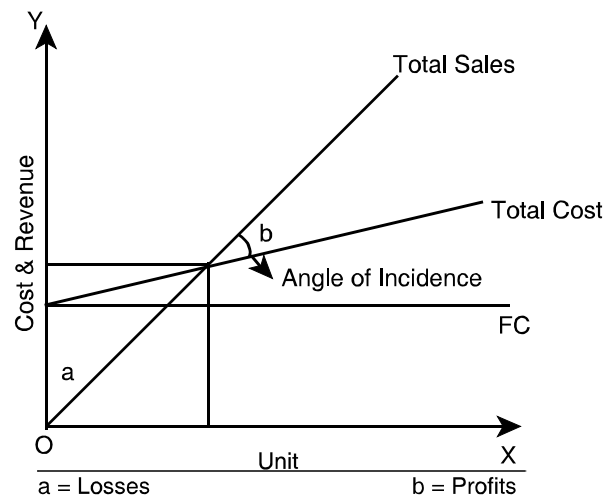
**Answer:**

**(a) Break Even Analysis:**

When someone asks a layman about his business he may reply that it is alright. But a technical man may reply that it is break even. So, Break Even means the volume of production or sales where there is no profit or loss. In other words, Break Even Point is the volume of production or sales where total costs are equal to revenue. It helps in finding out the relationship of costs and revenues to output. In understanding the

breakeven point, cost, volume and profit are always used. The break even analysis is used to answer many questions of the management in day to day business.

**The formal break even chart is as follows:**



When no. of units are expressed on X-axis and costs and revenues are expressed on Y-axis, three lines are drawn i.e., fixed cost line, total cost line and total sales line. In the above graph we find there is an intersection point of the total sales line and total cost line and from that intersection point if a perpendicular is drawn to X-axis, we find break even units. Similarly, from the same intersection point a parallel line is drawn to X-axis so that it cuts Y-axis, where we find Break Even Point in terms of value. This is how, the formal pictorial representation of the Break Even chart.

**(b) Absorption Costing:**

Under this method, the cost of the product is determined after considering the total cost i.e., both fixed and variable costs. Thus, this technique is also called traditional or total costing. The variable costs are directly charged to the products whereas the fixed costs are apportioned over different products on a suitable basis, manufactured during a period. Thus under absorption costing, all costs are identified with the manufactured products.

**Marginal Costing:**

Marginal costing is “the ascertainment of marginal costs and of the effect on profit of changes in volume or type of output by differentiating between fixed costs and variable costs.” Several other terms in use like direct costing, contributory costing, variable costing, comparative costing, differential costing and incremental costing are used more or less synonymously with marginal costing.

— Space to write important points for revision —

**2018 - Dec [5]** Write short notes on the following:

- (i) Application of Marginal Costing in Decision Making. **(4 marks)**

<b>DISTINGUISH BETWEEN</b>
----------------------------

**2008 - Dec [7]** (a) Distinguish between Marginal Costing and Absorption Costing. **(5 marks)**

**Answer :**

**Distinction between Marginal Costing & Absorption Costing**

<b>Marginal Costing</b>	<b>Absorption Costing</b>
1. Under marginal cost system all fixed cost (e.g. Production/ Administration /Selling/ Distribution Overheads) are treated as period costs and hence are written off against profit in the period in which they arise.	1. Under Absorption Costing, only administration, selling and distribution overheads are treated as period costs and hence, are written off against the profits to the period in which they arise.
2. Only variable manufacturing costs are treated as product costs and hence, are charged to products, processes or operations.	2. Only variable manufacturing costs and fixed production overheads are treated as period costs and hence, are written off against the profit in the period in which they arise.



3. Value of closing stock comprises only variable costs.	3. Value of closing stock includes fixed production overheads.
4. The question of over/under recovery of fixed overheads does not arise.	4. Over/under recovery of fixed overheads generally arises.
5. Managerial Decisions are based on contribution.	5. Managerial Decision are based on total profit.

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**2012 - Dec [5]** (b) Distinguish between Indifference Point and Break-Even Point with regard to their (i) Formula, (ii) Definition, and (iii) Purpose.

(2 + 2 + 1 = 5 marks)

**Answer:**

**Distinguish between Indifference Point and Break-Even Point-**

**(i) With Regard to Formula:**

$$\text{Indifference Point in (₹)} = \frac{\text{Difference in Fixed Cost}}{\text{Difference in P/V Ratio}}$$

$$\text{Break - even point in (₹)} = \frac{\text{Fixed Cost}}{\text{P/V Ratio}}$$

**(ii) With Regard to Definition:**

**Indifference point-** The level of sales at which total costs and profits of two points are equal is called indifference point.

**Break-even point-** The point of sale at which company makes neither profit nor loss is called Break-even point.

**(iii) With Regard to Purpose:**

**Indifference point:** It is used to choose between two alternative options of achieving the same objective.

**Break-even point:** It is used for profit planning.

— Space to write important points for revision —

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■ Scanner CMA Inter Gr. II Paper 10 A (2016 Syllabus)

**2012 - Dec [8]** (b) Difference between marginal costing and absorption costing. (5 marks)

**Answer:**

***Please refer 2008 - Dec [7] (a) on page no. 32***

—— Space to write important points for revision ———

**2016 - Dec [7]** (b) Distinguish between absorption costing and marginal costing. (5 marks)

**Answer:**

***Please refer 2008 - Dec [7] (a) on page no. 32***

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## DESCRIPTIVE QUESTIONS

**2009 - June [4]** (b) What are the factors those are taken into account by the Management while considering a Make or Buy decision ? (5 marks)

**Answer :**

Whether a component is to be manufactured or purchased from outside supplier is decided by comparing the marginal cost of manufacturing with the market price of the component. Specific and additional fixed cost may be treated as relevant cost. If the factory is operating at full capacity, then decision is taken after adding opportunity cost of production. In addition to above, following factors are also taken into consideration.

Plant Capacity

Profit maximization

Specialization

Nature of product

Secrecy

—— Space to write important points for revision ———

**2011 - Dec [2]** (b) State briefly the effect on profitability under marginal costing and absorption costing. **(5 marks)**

**Answer :**

**Effect of profitability under marginal costing & absorption costing:**

- (a) When unit of production and sales unit are equal, profit under marginal costing will be same as profit under the absorption costing.
- (b) When unit of production is more than sales, profit under absorption costing will be greater than the profit under marginal costing.
- (c) When unit of production is less than sales, profit under absorption costing will be lower than the profit under marginal costing.

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**2012 - June [2]** (b) State briefly the methods of segregating semi-variable cost into fixed and variable. **(5 marks)**

**Answer:**

**Methods of segregating semi-variable cost into fix and variable cost.**

Following are the methods of segregating semi-variable into fixed and variable cost.

**(i) Scatter graph method or graphical method:**

Under this method semi variable overheads are segregated into fixed and variable with the help of graph. Semi variable costs at various levels are ascertained. The level of activity is placed on X-axis and the semi-variable cost are placed on Y-axis.

Semi variable costs of respective levels are plotted on the graph. A line is drawn connecting all the points. The points at which the line of overheads the Y-axis will be the amount of fixed overheads.

**(ii) Comparison period or level of activity method:**

Under this method semi-variable overheads are segregated into fixed and variable by comparing the semi-variable overheads at different level of activity or overheads of different period. The variable component is computed with the help of following formula:

= Change in semi-variable overheads /change in activity level

**(iii) High level and low level method:**

This method is same as we discussed above, only difference is that under this method we compare sales at different levels and the overheads are represented as a percentage of sales. The percentage of variable overheads to sales is computed with the help of following formula :

$$\frac{\text{Semi-Variable overhead cost at higher level} - \text{Semi variable cost at lower level}}{\text{Sales at higher level} - \text{Sales at lower level}} \times 100$$

**(iv) Least square method:**

This method works on the simple equation. This method is based on the linear equation  $y = mx + c$ ,  $y$  is total cost,  $x$  is volume of output and  $c$  is total fixed cost. By solving this equation mathematically, we can calculate variable cost ( $M$ ) at different level of production.

**(v) Analytical method**

Under this method variable portion is ascertained after analysis of the ingredients of the cost or any other related factor. Variable portion is applied on a specific basis like percentage of total overheads or per unit. Fixed portion is computed by deducting variable portion from total semi-variable overheads.

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**2012 - Dec [2]** (b) List out at least five types of managerial decisions for which “Differential Cost Analysis” is useful. **(5 marks)**

**Answer:**

**Differential cost analysis is useful for the following Managerial decisions**

- (i) Accept or reject an offer at lower than existing price.
- (ii) Submission of a tender.
- (iii) Capital expenditure decision.
- (iv) Make or buy decision.
- (v) Alternative use of production facility.
- (vi) Variation in selling price.
- (vii) Variation in production mix.

- (viii) Retain or replace a machine.
- (ix) Processing a product further or not.
- (x) Evaluation of different alternatives regarding profit improvement.
- (xi) Optimizing investment plan out of several plans.
- (xii) Export sales vs. local sales.
- (xiii) Closing down or continuation of a division.

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## PRACTICAL QUESTIONS

**2008 - Dec [7]** (b) A company produces 30,000 units of product A and 20,000 units of product B per annum. The sales value and costs of the two products are as follows:

Sales Value	₹ 7,60,000	Factory Overheads ₹1,90,000
Direct Material	₹ 1,40,000	Administrative and
Direct Labour	₹ 1,90,000	Selling Overheads: ₹1,20,000

50% of the factory overheads are variable and 50% of the administrative and selling overheads are fixed. The selling price of A is ₹ 12 per unit and ₹ 20 per unit for B.

The direct material and labour ratio for product A is 2:3 and for B is 4:5. For both the products, the selling price is 400% of direct labour. The factory overheads are charged in the ratio of direct labour and administrative and selling overheads are recovered at a flat rate of ₹ 2 per unit for A and ₹ 3 per unit for B.

Due to fall in demand of the above products, the company has a plan to diversify and make product C using 40% capacity. It has been estimated that for C direct material and direct labour will be ₹ 2.50 and ₹ 3 per unit respectively. Other variable costs will be the same as applicable to the product A. The selling price of product C is ₹ 14 per unit and production will be 30,000 units.

**10.38****Scanner CMA Inter Gr. II Paper 10 A (2016 Syllabus)**

Assuming 60% capacity is used for manufacture of A and B, calculate-

- (i) Present cost and profit.
- (ii) Cost and profit after diversification:
- (iii) Give your recommendations as to whether to diversify or not:

**(10 marks)****Answer :****(i) Statement Showing Present Cost and Profit**

Particulars	Product A	Product B	Total
(i) Production and sales (units)	30,000	20,000	50,000
(ii) Sales value	3,60,000	4,00,000	7,60,000
(iii) Variable Costs			
• Direct Material	60,000	80,000	1,40,000
• Direct labour	90,000	1,00,000	1,90,000
• Factory overheads	45,000	50,000	95,000
• Administrative and selling overhead	30,000	30,000	60,000
(iv) Total variable costs	2,25,000	2,60,000	4,85,000
(v) Contribution [II-IV]	1,35,000	1,40,000	2,75,000
(vi) Fixed costs			1,55,000
(vii) Profit [v-vi]			1,20,000

**(ii) Statement showing cost and profit after diversification**

Particulars	Product A	Product B	Product C	Total
(i) Capacity Levels	60%	60%	40%	
(ii) Product and (units)	18,000	12,000	30,000	60,000
(iii) Sales value ₹	2,16,000	2,40,000	4,20,000	8,76,000
(iv) Variable Costs				
• Direct Material ₹	36,000	48,000	75,000	
• Direct labour ₹	54,000	60,000	90,000	

• Factory overheads ₹	27,000	30,000	45,000	
• Administrative and selling overhead ₹	18,000	18,000	30,000	
(v) Total variable costs	1,35,000	1,56,000	2,40,000	5,31,000
(vi) Contribution (iii-iv)	81,000	84,000	1,80,000	3,45,000
Less: profit Cost				
• Factory overheads ₹ 95,000				
• Administrative & selling overheads ₹ 60,000				
Total Fixed overheads				1,55,000
Profit				1,90,000

**(iii) Recommendation:** The company should implement the proposed diversification as it has resulted into increase in the profit from ₹ 1,20,000 to 1,90,000.

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**2009 - June [4]** (a) New India Engineering Co. Ltd., produces three components A, B and C. The following particulars are provided :

	PRODUCT		
	A	B	C
	₹	₹	₹
Per Unit			
Sale Price	60	55	50
Direct Material	20	18	15
Direct Labour	15	14	12
Variable overhead expenditure	13	13	17
Fixed Cost is ₹1,00,000 per year.			
Estimated Sales (in No. of Units)	2,000	2,000	2,000
M/C. Hrs. per unit	6	2	1

10.40

## ■ Scanner CMA Inter Gr. II Paper 10 A (2016 Syllabus)

Due to break-down of one of the machines, the capacity is limited to 12,000 machine hours only and this is not sufficient to meet the total sales demand. You are required to work out

- (a) what will be most profitable product mix that should be produced, and  
(b) the total contribution from the revised product mix. **(5 + 5 = 10 marks)**

**Answer :**

For New India Engineering Co. Ltd., in this case, Machine Hour is the limiting factor. So we will have to calculate contribution per machine hour.

	<b>Product</b>		
	<b>A</b>	<b>B</b>	<b>C</b>
Sales per unit (₹)	60	55	50
<i>Less:</i>			
Direct Material	20	18	15
Direct Labour	15	14	12
Variable overheads	<u>13</u>	<u>13</u>	<u>17</u>
<b>Total variable cost (₹)</b>	<b><u>48</u></b>	<b><u>45</u></b>	<b><u>44</u></b>
Contribution per unit (₹)	12	10	6
Machine hours per unit	6	2	1
Contribution per M/C hr. (₹)	2	5	6
Ranking	III	II	I
Production	<u>Balance</u>	<u>max 2,000</u>	<u>max 2,000</u>

Hours required for C  $2,000 \times 1 = 2,000$

For B  $2,000 \times 2 = 4,000$  balance 6,000

Production of A  $= 6,000 / 6 = 1,000$  units

Total Contribution = for A  $(1,000 \times ₹ 12)$  + for B  $(2,000 \times ₹ 10)$  + for C  $(2,000 \times ₹ 6) = ₹ 44,000$ .

— Space to write important points for revision —

**2009 - Dec [5]** (c) A company produces a single product. The selling price of the product is ₹ 69.50 per ton. The variable cost is ₹ 35.50 per ton, fixed cost for the period is ₹ 18.02 lakh.



- (i) Calculate the Break Even Volume; and  
 (ii) If the Break Even Volume represents 40% of the capacity of the plant, what will be the profit at 80% capacity if there is a reduction in sale price by 10% for additional 20% production and reduction by 15% for the next additional 20% production ? **(2 + 3 = 5 marks)**

**Answer :**

Break Even sales = Fixed Cost/Contribution per unit = ₹ 18,02,000/ (69.50- ₹ 35.50) = ₹ 18,02,000/ ₹ 34 = 53,000 units or ₹ 36,83,500

Additional sales at 80% = (as 40% sales = BEP = 53,000) hence 1,06,000 units

	First Additional 20% (26,500)	Second Additional 20% (26,500)
Revised Selling Price(less by 10%)	₹ 62.55 (Less by 15%)	₹ 59,075
Variable costs p.t.	₹ 35.50	₹ 35.50
Contribution p.t.	₹ 27.05	₹ 23.575
Profit	₹ 7,16,825	₹ 6,24,737
Profit at 80% capacity		₹
Contribution		
At 40% level		18,02,000
At next 20%		7,16,825
At next 20%		6,24,737
Less Fixed Cost		<u>(18,02,000)</u>
Profit		<u>13,41,562</u>

— Space to write important points for revision —

**2010 - June [3]** (b) A factory is currently working at 50% capacity and produces 5,000 units at a cost of ₹ 90 per unit as per details given below:

Materials	₹ 50
Labour	₹ 15
Factory Overhead	₹ 15 (₹ 6 fixed)
Administration Overhead	₹ 10 (₹ 5 fixed)

**10.42****Scanner CMA Inter Gr. II Paper 10 A (2016 Syllabus)**

The current selling price is ₹ 100 per unit.

At 60% working, material cost per unit increases by 2% and selling price per unit falls by 2%.

At 80% working, material cost per unit increases by 5% and selling price per unit falls by 5%.

Calculate the current profit at 50% working. Estimate profits of the factory at 60% and 80% working. Which capacity of production you recommend?

**(2 + 3 + 3 + 2 = 10 marks)**

**Answer :**

	50%	Capacity 60%	80%
	5,000units	6,000units	8,000units
A. Sales (₹)	<u><b>5,00,000</b></u>	<u><b>5,88,000</b></u>	<u><b>7,60,000</b></u>
B. Total variable costs:			
Direct Material (₹)	2,50,000	3,06,000	4,20,000
Direct Labour (₹)	75,000	90,000	1,20,000
Factory Overhead (₹)	45,000	54,000	72,000
Administration Overhead (₹)	<u>25,000</u>	<u>30,000</u>	<u>40,000</u>
	<u><b>3,95,000</b></u>	<u><b>4,80,000</b></u>	<u><b>6,52,000</b></u>
Factory Overhead (5,000 × ₹6)	30,000	30,000	30,000
Administration Overhead (5,000 × ₹ 5)	<u>25,000</u>	<u>25,000</u>	<u>25,000</u>
C. Total Fixed Cost (₹)	<u><b>55,000</b></u>	<u><b>55,000</b></u>	<u><b>55,000</b></u>
D. Total Cost (₹) (B + C)	<u><b>4,50,000</b></u>	<u><b>5,35,000</b></u>	<u><b>7,07,000</b></u>
E. Profit (₹)	<u><b>50,000</b></u>	<u><b>53,000</b></u>	<u><b>53,000</b></u>
F. Profit margin (%) $\left( \frac{\text{Profit}}{\text{Sales}} \right) \times 100$	10%	9.01%	6.97%

— Space to write important points for revision —

**2010 - June [4]** (b) ABC Ltd. is manufacturing three products X, Y and Z. All the products use the same raw material which is scarce and available to the extent of 61,000 kg. only. The following information is available from records of the Company:

Particulars	Product X	Product Y	Product Z
Selling Price per unit (₹)	100	140	90
Variable Cost per unit (₹)	75	110	65
Raw Material Requirement per unit(Kg)	5	8	6
Market Demand (Units)	5,000	3,000	4,000

Fixed Costs are ₹ 1,50,000.

Advise the Company about the most profitable product mix. Compute the amount of profit resulting from such product mix. **(4 + 6 = 10 marks)**

**Answer :**

(i)	X	Y	Z
Selling price	100	140	90
Less: Variable cost	<u>75</u>	<u>110</u>	<u>65</u>
Contribution per unit	25	30	25
Raw material required per unit	5	8	6
Contribution per unit of raw material	25/5	30/8	25/6
	=5	=3.75	= 4.17
Ranking	I	III	II
Market Demand	5,000	3,000	4,000
Units produced (W.Note1)	5,000	1,500	4,000

**Working notes:**

(i) Raw material Consumption based on given Ranking.

- a. Product X (I)  $5,000 \times 5$  = Kgs. 25,000
- b. Product Z (II)  $4,000 \times 6$  = Kgs. 24,000

Raw material available for product Y is:

$61,000 - 25,000 - 24,000 = 12,000$  kg.

No. of units to be produced for product Y (III) = 1500 units

- c. Product Y  $1,500 \times 8$  = Kgs. 12,000

$[61,000 - 25,000 - 24,000]$

= Material by X = 12,000 kgs.

One unit of product Y can be produced requiring Material 8 kg.

Hence, in 12,000 kgs.

No. of units of Y can be produced as under 12,000 kg. = 1,500 units.

**10.44****Scanner CMA Inter Gr. II Paper 10 A (2016 Syllabus)**

(ii) Statement showing contribution and Ranking of the product

Product	X	Y	Z	Total
Produced & Sale	5000	1500	4000	
Contribution per unit	25	30	25	
Contribution	<u>1,25,000</u>	<u>4,50,000</u>	<u>1,00,000</u>	
Total contribution				2,70,000
Less: Fixed Cost				<u>1,50,000</u>
Profit				<u>1,20,000</u>

———— Space to write important points for revision ————

**2010 - June [7]** (a) Starlight Co. Ltd. and Jupiter Co. Ltd. sell the same type of product. Budgeted Profit & Loss A/c of these companies for the year ended 31st March 2009 given below:

	Starlight Co.		Jupiter Co.	
	(₹'000)		(₹'000)	
Sales	300		300	
Less: Variable Cost:				
Material	100		80	
Labour	110		100	
Overhead	<u>30</u>	240	<u>20</u>	200
Fixed Cost		<u>30</u>		<u>70</u>
Budgeted Profit		<u>30</u>		<u>30</u>

You are required to find out the break-even point of each Company. Also state clearly which Company is likely to earn greater profit if there is (i) heavy demand; and (ii) poor demand for its product. **(10 marks)**

**Answer :**

	Starlight Co.	Jupiter Co.
Sales	3,00,000	3,00,000
Variable cost	2,40,000	2,00,000
Contribution	60,000	1,00,000
P/V Ratio	20%	33.33%
Fixed Cost	30,000	70,000

Break even point	$\frac{30,000}{20\%}$	$\frac{70,000}{33.33\%}$
	= 1,50,000	= 2,10,021

**Heavy demand:** Jupiter Co. is likely to earn more profits if heavy demand is there for product because P/V Ratio of Jupiter Co. is higher.

**Low demand:** Starlight Co. is likely to earn more profits when demand is low because Break even point of Starlight Co. is low.

— Space to write important points for revision —

**2010 - Dec [6]** (a) Black & White Co. Ltd. manufactures 10,000 units of a product at a cost of ₹4 per unit, which is sold in the domestic market at a sale price of ₹ 4.25 per unit. In the next year (2008), there is a fall in the domestic market which can consume the whole products (10,000) if the sale price is reduced to ₹ 3.72 per unit.

The cost particulars are given below:

	₹	
Material	1.50	per unit
Wages	1.10	"
Variable overhead	0.60	"
Fixed cost	₹ 8,000	

Marketing Manager has explored the foreign market and it is found that one foreign importer is ready to purchase 20,000 units of the product at a price of ₹ 3.55 per unit. There is a capacity to produce 20,000 units in the factory. However, ₹ 1,600 additional amount will be required towards fixed cost.

You are advised to offer your views whether it is worthwhile to capture the foreign market?

(10 marks)

**Answer :**

Particulars	2007	2008	
Sales in Units	10,000	10,000	20,000
Selling Price	4.25	3.72	3.55
Sales in Value	42,500	37,200	71,000
Materials (in ₹)	15,000	15,000	30,000
Wages	11,000	11,000	22,000

**10.46****■ Scanner CMA Inter Gr. II Paper 10 A (2016 Syllabus)**

Variable Overheads	6,000	6,000	12,000
Total Variable cost	32,000	32,000	64,000
Fixed Overheads	8,000	8,000	1,600
Total Cost	40,000	40,000	65,600
Profit / Loss	₹ 2,500	(2,800)	5,400

It is advised to accept the foreign offer because there is profit of ₹ 5,400.

— Space to write important points for revision —

**2010 - Dec [7]** (b) A company has two plants at locations I and II, operating at 100% and 75% of their capacities respectively. The company is considering a proposal to merge the two plants at one location to optimise available capacity. The following details are available in respect of the two plants:

Particulars	Location I	Location II
Sales (₹ in lakhs)	200	75
Variable Costs (₹ in lakhs)	140	54
Fixed Costs (₹ in lakhs)	30	14

For decision-making purposes you are required to work out the following information:

- The capacity at which the merged plant will break even.
- The profit of the merged plant working at 90% capacity.

**(5 + 5 = 10 marks)**

**Answer :**

Particulars	Plant-I	Plant-II	Total (Merged)
Capacity level (%)	100	100	100
Sales	200	100	300
Variable cost	140	72	212
Contribution	60	28	88
Fixed cost	30	14	44
Profit	30	14	44
P/V Ratio	30%	28%	29.33

Break-even sales  $44/29.33\% = 150$

Capacity of the merged plant at break-even =  $150/300 \times 100 = 50\%$

Profitability of merged plant at 90% capacity

	₹
Sales at 90% of ₹ 300	270 lacs
Variable cost 70.67% of sales	190.8 lacs
Contribution	79.2
Fixed cost	44.00
Profit	35.20

— Space to write important points for revision —

**2011 - June [4]** (b) A company produces a single product which is sold presently in the market at ₹ 75 per unit. The present production and sales are 40,000 units per month representing 50% of the capacity available. The cost data of the product are as under:

	₹
Variable Cost per unit	50
Fixed Cost per month	10 lakhs

To utilise the idle capacity and improve profitability, the management has two proposals on hand as under :

- to increase sales by selling to a chain stores 30,000 units at ₹ 55 per unit, retaining existing sales at the existing price.
- to reduce selling price as advised by the Sales Department as under:

<b>Reduced selling price per unit by</b>	<b>Expected Increase in Sale</b>
₹ 5	10,000 units
₹ 8	30,000 units
₹ 11	35,000 units

Prepare a table to present the results of the above proposals and give your comments.

**(4 + 4 + 2 = 10 marks)**

**10.48****Scanner CMA Inter Gr. II Paper 10 A (2016 Syllabus)****Answer :****Composition of Contribution at Various price level**

Particulars	Present Level	Proposal (i)	Proposal (ii)		
			(a)	(b)	(c)
Quantities in Units	40,000	70,000	50,000	70,000	75,000
Selling price per unit (₹)	75	40,000 @ ₹ 75 30,000 @ ₹ 55	70	67	64
Variable cost per unit (₹)	50	50	50	50	50
Total	10 lakhs	10.00 lakh (40,000 × 25) + 1.5 lakh (30,000 × 5) = 11.50	10 lakh (50,000 × 20)	11.90 Lakhs (70,000 × 17)	10.5 lakhs (75,000 × 14)
Contribution (₹)	(40,000 × 25)				

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 Space to write important points for revision
 

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**2011 - Dec [2]** (a) A company prepares a budget for a production of 200000 units. Variable cost per unit is ₹ 15 and the fixed cost is ₹ 2 per unit. The company fixes its selling price to fetch a profit of 10% on cost.

- What is the break-even point? (both in units and in ₹)
- What is profit volume ratio?
- If it reduces its selling price by 5%, how does the revised selling price affect the break-even point and the profit volume ratio?
- If a profit increase of 10% is desired more than the budget, what should be the sales at the reduced price?

**(3 + 2 + 3 + 2 = 10 marks)****Answer:****Statement for selling price**

Variable cost = ₹ 15.00

Fixed cost = ₹ 2.00

Total cost = ₹ 17.00

Add: profit @ 10% on cost = ₹ 1.70

**Selling price = ₹ 18.70**

Contribution per unit = ₹ 18.70 – 15.00 = ₹ 3.70

Total contribution = 3.70 × 2,00,000 = ₹ 7,40,000

Total fixed cost = 2,00,000 × 2 = ₹ 4,00,000

Budgeted profit = 7,40,000 – 4,00,000 = ₹ 3,40,000



$$\text{Profit Volume ratio} = \frac{3.70}{18.70} \times 100 = 19.79\%$$

$$(i) \text{ Break even point} = \frac{\text{Total fixed cost}}{\text{Contribution per unit}} = \frac{4,00,000}{3.70} = 1,08,108 \text{ Units}$$

$$\text{Break even value} = \frac{\text{Total fixed cost}}{\text{Profit volume ratio}} \times 100 = \frac{4,00,000}{19.79} \times 100$$

$$= ₹ 20,21,622$$

$$(ii) \text{ Profit volume ratio} = \frac{3.70}{18.70} \times 100 = 19.79\%$$

(iii) Selling price reduced by 5%

New selling price = ₹ 17.765

New contribution per unit = 17.765 – 15 = ₹ 2.765

$$\text{Break even point} = \frac{\text{Total fixed cost}}{\text{Contribution per unit}} = \frac{4,00,000}{2.765} = 1,44,665 \text{ Units}$$

$$\text{Break even value} = \frac{\text{Total fixed cost}}{\text{Profit volume ratio}} \times 100 = \frac{4,00,000}{15.56} \times 100$$

$$= ₹ 25,69,982$$

$$\text{Profit Volume ratio} = \frac{2.765}{17.765} \times 100 = 15.56\%$$

(iv) Desired profit = 3,40,000 + 10% of 3,40,000 = ₹ 3,74,000

Sales for desired profit

$$= \frac{\text{fixed cost} + \text{desired profit}}{\text{P V ratio}} = \frac{4,00,000 + 3,74,000}{15.56\%}$$

$$= ₹ 49,74,293$$

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**2011 - Dec [7]** (a) M/s. Jupiter & Co. Ltd. manufactures a product in its factory which presently utilises 60% of its capacity. The cost details including selling price are given below:

	₹
Sales 6000 units	5,40,000
Direct Materials	96,000
Direct Labour	1,20,000
Direct Expenses	20,000

**10.50****■ Scanner CMA Inter Gr. II Paper 10 A (2016 Syllabus)**

Factory Overheads	2,00,000
Administration Overheads	21,000
Selling and Distribution Overheads	25,000

Out of fixed overheads, 12.5% and 20% of selling and distribution overheads variable with production and sales. Administration overheads are wholly fixed.

Now, it is revealed that existing product could not achieve budgeted level for two consecutive years, the management decides to introduce a new product with marginal investment but largely using present plant and machinery.

The cost data of the new product is given below:

	₹
Direct Materials	16 per unit
Direct Labour	15 per unit
Direct Expenses	2 per unit
Variable Factory Overheads	2 per unit
Variable Selling & Distribution Overheads	1.5 per unit

Marketing Manager of the company is expecting to sell 2000 units of new product at a price of ₹ 60 per unit.

The fixed factory overheads are expected to increase by 10% and fixed selling and distribution expenses will go up by ₹ 13,500 annually. Administration overheads will remain unchanged.

You are advised to give your opinion. Should the new product be introduced?

**(3 + 3 + 3 + 1 = 10 marks)**

**Answer :**

**Statement of profit for new and existing product**

Particulars	Existing Product	New Product
Sales Quantity	6000 Units	2000 Units
Sales Value	₹ 5,40,000	₹ 1,20,000
Less: Variable cost	₹ 2,66,000	₹ 73,000
Contribution	₹ 2,74,000	₹ 47,000
Less: Fixed cost	₹ 2,16,000 (W.N.1)	₹ 31,000 (W.N.2)
Profit	₹ 58,000	₹ 16,000

**Working note:****1. Total fixed cost for existing product**

Factory overheads = Total ₹ 2,00,000

Variable @ 12.5% = 25,000

Fixed = 1,75,000

Selling & distribution overheads = Total ₹ 25,000

Variable @ 20% = 5,000

Fixed = 20,000

Administration overheads = 21,000

Total = 1,75,000 + 20,000 + 21,000 = ₹ 2,16,000

**2. Incremental fixed cost**

Fixed factory overheads @ 10% of 1,75,000 = 17,500

Selling & distribution overheads = 13,500

Total = 31,000

— Space to write important points for revision —

**2012 - June [2]** (a) Gupta Enterprise is operating at 60% capacity level producing and selling 60,000 units @ ₹ 50 per unit. Other relevant particulars are as follows:

	Cost per unit
Material	₹ 20
Conversion Cost (variable)	₹ 10
Dealer's margin (10% of sales)	₹ 5
Fixed cost for the period is ₹ 6,00,000	

As there is a stiff competition it is not possible to sell all the products at the existing cost price structure. The following alternative proposals are considered:

- (i) Decrease selling price by 20%
- (ii) Increase dealer's margin from 10% to 20%

Select the better alternative. Also calculate the sales volume required to maintain the same amount of profit under the alternative which is considered better assuming that volume of sales will not be a limiting factor under such alternative. Also assume that fixed cost will remain constant.

**(3 + 2 + 2 + 3 = 10 marks)**

**10.52****■ Scanner CMA Inter Gr. II Paper 10 A (2016 Syllabus)****Answer:**

Particulars	Present	Alternative I	Alternative II
Selling Price per unit	50	40 (50-20% of 50)	50
Variable Cost per unit	35 (20+10+5)	34 (20+10+4)	40 (20+10 +10)
Fixed Cost	₹ 6,00,000	₹ 6,00,000	₹ 6,00,000
Contribution per unit	₹ 15	₹ 6	₹ 10
Total Contribution	9,00,000	—	—
Profit (Contribution - Fixed Cost)	3,00,000	—	—
P/v Ratio [(contribution/sales) × 100]	30%	15%	20%
Break Even Sales (Fixed cost /PV ratio)	₹ 20,00,000	₹ 40,00,000	₹ 30,00,000

From the above results, it appears that P/V Ratio under the second alternative is higher than that under the first alternative. Also breakeven point under the second alternative sets at a lower level than the level under the first alternative. Therefore, second alternative i.e. increasing dealer's margin to 20% is better both in terms of profitability (as reflected from P/V Ratio) and risk (as reflected from BEP).

Required volume of sales when second alternate is selected

= (Fixed cost + Profit)/PV Ratio

= (6,00,000 + 3,00,000)/20% = ₹ 45,00,000.

— Space to write important points for revision —

**2012 - June [5]** (a) Richa Industries engaged in manufacturing Lunch Boxes is working to 50% capacity and produces 15,000 Lunch Boxes per annum.

The present cost break up for one Lunch Box is as under :

Material ₹ 25; Labour ₹ 20 and Overhead ₹ 15 (60% variable).

The selling price is ₹ 75 per Lunch Box.

If it is decided to work at 60% capacity, the selling price falls by 2%. At 80% capacity, the selling price falls by 10% accompanied by a similar fall in the price of material but labour rate increases by 10%.

You are required to find out the most profitable capacity level amongst 50%, 60% and 80% capacity levels and also calculate the Break-even Point (in units) at above said levels.

**(3 + 2 + 5 = 10 marks)**

**Answer:****Statement of profit at various capacity levels**

Particulars	Capacity levels		
	50%	60%	80%
Sales (in Units)	15000	18000	24000
Selling price per unit (₹)	75.00	73.50	67.50
Less: Variable Cost per unit (₹)	<u>54.00</u>	<u>54.00</u>	<u>53.50</u>
Contribution per unit (₹)	<u>21.00</u>	<u>19.50</u>	<u>14.00</u>
Total Contribution (₹)	3,15,000	3,51,000	3,36,000
Less: Total Fixed cost (₹)	90,000	90,000	90,000
Total profit/loss	2,25,000	2,61,000	2,46,000

**Working Notes :**

(1) Selling price at various levels :

- At 50% capacity level ₹ 75  
 At 60% capacity level ₹ 73.50 (75 × 98%)  
 At 80% capacity level ₹ 67.50 (75 × 90%)

(2) Variable cost per unit :

- At 50% capacity level Material ₹ 25  
    Labour ₹ 20  
    Overheads ₹ 9(15 × 60%) ₹ 54.00  
 At 60% capacity level Material ₹ 25  
    Labour ₹ 20  
    Overheads ₹ 9 (15 × 60%) ₹ 54.00  
 At 80% capacity level Material ₹ 22.50 (25 × 90%)  
    Labour ₹ 22 (20 × 110%)  
    Overheads ₹ 9 (15 × 60%) ₹ 53.50

(3) Fixed cost

- Fixed Cost per unit 15 × 40% = ₹ 6  
 Total fixed overheads 6 × 15,000 = ₹ 90,000

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**10.54****■ Scanner CMA Inter Gr. II Paper 10 A (2016 Syllabus)**

**2012 - Dec [3]** (a) XYZ Ltd. manufactures a particular product for which it has the existing capacity to produce 10,000 numbers each month. Currently it produces and sell 7,500 numbers per month at a price of ₹ 150 each. The following cost information are provided for the month just concluded for 7,500 numbers:

	₹
Direct Material	2,25,000
Direct Labour	3,00,000
Variable Costs—set ups, material handling, quality control (150 batches of 50 nos. each x ₹ 500 per batch)	75,000
	<u>6,00,000</u>
Fixed manufacturing costs	2,75,000
Fixed marketing costs	1,25,000
	<u>10,00,000</u>

The company has received a special one-time order for 2,500 numbers of the product at a special price of ₹ 100 each. The company can manufacture the additional quantity of 2,500 numbers in 25 batches of 100 nos. each. You are required to evaluate whether it will be worth while for XYZ Ltd. to accept the special offer to sell additional 2,500 numbers.

If the capacity of the plant was restricted to 9,000 numbers, will it be advisable to accept the special one-time order for 2,500 number given that the special order must be executed either in full or rejected totally?

**(4 + 3 + 2 + 1 = 10 marks)**

**Answer:**

**Decision regarding the acceptance of Proposal**

**(i) When capacity is 10,000 numbers**

	Amount (₹)
Incremental revenue (2,500 × 100)	2,50,000
Less- Incremental expenses	
Material @ ₹ 30 per number 2,500 × 30	(75,000)

Labour @ ₹ 40 per number	$2,500 \times 40$	(1,00,000)
Setup cost @ ₹ 500 per batch	$25 \times 500$	(12,500)
Incremental Contribution		<b>62,500</b>

**Decision:** Company is able to earn extra contribution by accepting the proposal. Hence company should accept it.

**(ii) When capacity is restricted to 9,000 numbers**

Particulars	Amount (₹)
Incremental revenue by accepting the offer	62,500
Less: Loss of contribution due to loss of sale by 1,000 number (W.N.)	(70,000)
Loss of contribution	(7,500)

**Decision:** The Company should not accept special order.

**Working note:**

1. Material cost per number  $(2,25,000/7,500) = 30/\text{number}$
2. Labour per number  $(3,00,000/7,500) = 40/\text{number}$
3. Contribution when capacity is 10,000 numbers and current production is 7,500 numbers

Sales revenue  $(7,500 \times 150)$  ₹ 11,25,000

Less: Variable cost

Direct material  $(₹ 30 \times 7,500) = 2,25,000$

Direct labour  $(₹ 40 \times 7,500) = 3,00,000$

Setup cost  $(₹ 150 \times 500) = 75,000$  ₹ 6,00,000

Contribution **₹ 5,25,000**

4. Contribution when capacity is restricted to 9,000 numbers

Sales revenue  $6,500 \times 150$  ₹ 9,75,000

Less: Variable cost

Direct material  $₹ 30 \times 6,500 = 1,95,000$

**10.56****■ Scanner CMA Inter Gr. II Paper 10 A (2016 Syllabus)**

Direct labour ₹ 40 × 6,500	= 2,60,000	
Setup cost ₹ 130 × 500	= 65,000	₹ 5,20,000
Contribution		<u>₹ 4,55,000</u>

5. Loss of contribution due to reduction in sale by 1,000 numbers  
 ₹ 5,25,000 – ₹ 4,55,000 = ₹ 70,000

— Space to write important points for revision —

**2013 - June [2]** (a) The following are figures relating to a factory for two successive years:

	Year I ₹	Year II ₹
Sales	10,00,000	16,80,000
Marginal Cost of Sales	6,00,000	8,00,000
Contribution	<u>4,00,000</u>	<u>8,80,000</u>

During Year II, the selling price increased by 20% and the company implemented a cost reduction programme very aggressively. You are required to analyse the increase in contribution due to

- (i) Increase in selling price
- (ii) Increase in sales volume
- (iii) Reduction in cost

**(3 + 4 + 3 = 10 marks)**

**Answer :**

Particulars	Year I	Year II SP increased by 20%	Year II Actual	Year II Before SP Increase
Sales	10,00,000	12,00,000	16,80,000	14,00,000 (10,00,000 + 40%*)
Less: Marginal Cost of Sales	6,00,000	6,00,000	8,00,000	8,40,000 (at year I cost) (6,00,000 + 40%)
Contribution	4,00,000	6,00,000	8,80,000	5,60,000

**Working Note:**

\* Increase in Sales = ₹ 16,80,000 – ₹ 14,80,000

∴ Increase in Volume =  $\frac{48,00,000}{12,00,000} \times 100 = 40\%$



- (i) Increase in contribution due to increase in Selling Price = ₹16,80,000  
 - ₹14,00,000 = ₹ 2,80,000  
 Increase in Volume = 40%  
 If only volume increased, Sales value should have been = ₹14,00,000  
 Variable cost should have been = ₹ 8,40,000  
 Contribution should have been = ₹ 5,60,000
- (ii) Increase in Contribution due to volume increase = ₹ 5,60,000 –  
 ₹ 4,00,000 = ₹ 1,60,000  
 Variable cost for the increased volume  
 should have been = ₹ 8,40,000  
 It is actually = ₹ 8,00,000
- (iii) Increase in Contribution due to Cost Reduction = ₹ 40,000

— Space to write important points for revision —

**2013 - June [5]** (a) A company manufactures a product currently utilizing 80% capacity with a turnover of 32,000 units at a selling price of ₹ 25 per unit. The variable cost of the product is ₹ 17.5 per unit. Fixed cost amounts to ₹ 1,50,000 up to 80% of level of output and there will be an additional cost of a supervisor amounting to ₹ 20,000 beyond that level.

Calculate:

- (i) Activity level (%) at break-even point  
 (ii) Number of units to be sold to earn a net income of 10% of sales  
 (iii) Activity level (%) to earn a profit of ₹ 1,00,000 **(10 marks)**

**Answer :**

Capacity utilized 80%

Turnover at 80% capacity = 32,000 Units

Turnover at 100% capacity = 40,000 Units

Fixed cost ₹ 1,50,000, Fixed cost at more than 80% = ₹ 1,70,000

Selling price = ₹ 25 per unit

Contribution per unit = ₹ 7.50

PVR =  $7.5/25 \times 100 = 30\%$

$$(i) \text{ BEP} = \frac{\text{Fixed Cost}}{\text{Contribution/Unit}} = \frac{1,50,000}{7.5} = 20,000 \text{ units}$$

Activity level in % =  $20,000/40,000 \times 100 = 50\%$

- (ii) (a) If fixed cost is ₹ 1,50,000  
 Let desired sales be X units

**10.58****■ Scanner CMA Inter Gr. II Paper 10 A (2016 Syllabus)**

$$\text{Desired sales} = \frac{\text{Fixed Cost} + \text{desired profit}}{\text{PVR}}$$

$$X = \frac{1,50,000 + .10x}{.30}$$

$$X = ₹ 7,50,000 \text{ units}$$

$$\text{Number of units} = 1,50,000/25 = 30,000 \text{ units}$$

As activity level is less than 32000 units, hence additional supervision cost will not be applicable.

(b) If fixed cost is ₹ 1,70,000

$$X = \frac{1,70,000 + .10X}{.30}$$

$$X = ₹ 8,50,000$$

$$\text{No. of units} = 8,50,000/25 = 34,000 \text{ units}$$

(iii) No. of units to be sold to earn a profit of ₹ 1,00,000

$$\text{No. of units} = 1,50,000 + 1,00,000/7.5 = 33,333 \text{ units}$$

Which exceeds 32,000 units.

Hence fixed cost will be ₹ 1,70,000

$$\text{No. of units} = \frac{1,00,000 + 1,00,000}{7.5} = 36,000 \text{ units}$$

$$\text{Activity level} = 36,000/40,000 \times 100 = 90\%$$

— Space to write important points for revision —

**2013 - Dec [1] {C}** (b) The following figures have been given for Profit and Sales from the accounts of ZEESLIN LTD.

Year	Sales (₹)	Profit (₹)
2011	2,00,000	20,000
2012	3,00,000	40,000

Calculate the sales required to earn a Profit of ₹ 50,000. **(2 marks)**

**(d)** The cost per unit of a product manufactured in a factory of ZENION LTD. amounts to ₹ 160 (75% variable) when production is 10,000 units. If the production increases by 25% what would be the cost of production per unit? **(2 marks)**

**Answer :**

$$(b) \quad P/V \text{ Ratio} = \frac{\text{Change in profit}}{\text{Change in sales}} \times 100 = \frac{40,000 - 20,000}{3,00,000 - 2,00,000} \times 100$$

$$= \frac{20,000}{1,00,000} \times 100 = 20\%$$

$$\text{Fixed cost} = \text{Sales} \times P/V \text{ Ratio} - \text{Profit}$$

$$= 2,00,000 \times 0.2 - 20,000 = ₹ 20,000$$

Sales required to earn a desired profit of ₹ 50,000

$$= \frac{\text{Fixed cost} + \text{Desired profit}}{P/V \text{ Ratio}} = \frac{20,000 + 50,000}{20\%} = ₹ 3,50,000$$

$$(d) \quad \begin{array}{ll} \text{Variable Cost per unit} & = ₹ 160 \times 75\% = ₹ 120 \\ \text{Fixed Cost per unit} & = (160 - 120) = ₹ 40 \\ \text{Total fixed Cost} & = 10,000 \times 40 = ₹ 4,00,000 \\ \text{Production increases by 25\% of 10,000} & = 12,500 \\ \text{Variable cost } 12,500 \times 120 & = 15,00,000 \\ \text{Total Cost} = VC + FC = 15,00,000 + 4,00,000 & = ₹ 19,00,000 \end{array}$$

$$\text{Cost of production per unit} = \frac{19,00,000}{12,500} = ₹ 152$$

— Space to write important points for revision —

**2013 - Dec [2]** (a) A review, made by the top management of THAKAR LTD. which makes only one product, of the result of first quarter of the year revealed the following:

Sales in units	10,000
Loss in ₹	10,000
Fixed cost (for the year ₹ 1,20,000) in ₹	30,000
Variable cost per unit in ₹	8

The Finance Manager who feels perturbed suggests that the company should at least break even in the second quarter with a drive for increased sales. Towards this, the company should introduce a better packing which will increase the cost by ₹ 0.50 per unit.

**10.60****■ Scanner CMA Inter Gr. II Paper 10 A (2016 Syllabus)**

The Sales Manager has an alternate proposal. For the second quarter additional sales promotion expenses can be increased to the extent of ₹ 5,000 and a profit of ₹ 5,000 can be aimed at for the period with increased sales.

The Production Manager feels otherwise. To improve the demand, the selling price per unit has to be reduced by 3 per cent. As a result the sales volume can be increased to attain a profit level of ₹ 4,000 for the quarter.

The Managing Director asks you as a Cost Accountant to evaluate these three proposals and calculate the additional Sales Volume that would be required in each case, in order to help him take a decision.

**(2 + 8 = 10 marks)****Answer :****Results of the first quarter: Sales 10,000 units**

<b>Particulars</b>	<b>Per unit (₹)</b>	<b>Amount (₹)</b>
Variable Cost (VC)	8	80,000
Fixed Cost (FC)	3	30,000
Total Cost	11	1,10,000
Loss	1	10,000
Sales (S)	10	1,00,000
Contribution (S - VC)	2	20,000

**Comparative Statement of 3 Proposals**

<b>Particulars</b>	<b>Proposal of</b>		
	<b>Finance Manager Amount (₹)</b>	<b>Sales Manager Amount (₹)</b>	<b>Production Manager Amount (₹)</b>
Selling Price Per Unit	10.00	10.00	9.70
Variable Cost Per Unit	8.50	8.00	8.00
Contribution Per Unit	1.50	2.00	1.70
Fixed Cost	30,000	35,000	30,000
Profit required	Nil	5,000	4,000

Particulars	Proposal of		
	Finance Manager Amount (₹)	Sales Manager Amount (₹)	Production Manager Amount (₹)
BEP (Units) = Fixed Cost/Contribution per unit (A)	30,000/1.50 = 20,000	-	-
Sales (Units) = Fixed Cost + Profit/Contribution per unit (A)	-	35,000 + 5,000/2.00 = 20,000	30,000 + 4,000/1.70 = 20,000
Sales in First Quarter (B)	10,000	10,000	10,000
Fixed Cost	10,000	10,000	10,000
Additional Sales Volume required in SECOND Quarter as Compared to first Quarter (A-B)	Nil	5,000	4,000

— Space to write important points for revision —

**2014 - June [1] {C}** (a) ASHEEKA LTD. has annual turnover of ₹ 200 lakh and an average C/S Ratio of 40%. It makes 10% profit on sales before charging depreciation and interest which amount to ₹ 10 lakh and ₹ 15 lakh respectively.

What will be the Fixed Cost of Asheeka Ltd.? **(2 marks)**

**(d)** The total production cost of HORIZON LTD. for making 6000 units is ₹ 35,000 and the total production cost for making 15000 units is ₹ 69,000. Once the production exceeds 10000 units additional fixed costs of ₹ 7,000 are incurred. What will be the full production cost per unit for making 12000 units? **(2 marks)**

**Answer:**

**(a)** Profit = 10% of sales =  $200 \times 10\%$  = ₹ 20 lakhs  
 Depreciation and Interest = ₹ 25 lakhs  
 Loss = ₹ 5 lakhs

Contribution = Fixed cost + Profit

$$80 = \text{Fixed cost} + (-5)$$

∴ Fixed cost =  $80 + 5 = ₹ 85 \text{ Lakhs}$

(d) At 6000 units semi variable cost = ₹ 35,000

At 15,000 units total cost = ₹ 69,000

At 15000 units semi variable cost =  $69,000 - 7,000 = ₹ 62,000$

$$\text{Variable Cost / Unit} = \frac{\text{Change in Cost}}{\text{Change in units}} = ₹ \frac{62,000 - 35,000}{15,000 - 6,000} = ₹ 3$$

At 6,000 units

Total Variable Cost =  $6,000 \times 3 = ₹ 18,000$

Fixed Cost =  $35,000 - 18,000 = ₹ 17,000$

**At the level of 12,000 units**

Variable cost =  $12,000 \times 3 = ₹ 36,000$

Fixed cost =  $17,000 + 7,000 = ₹ 24,000$

Total cost =  $36,000 + 24,000 = ₹ 60,000$

Cost per unit =  $60,000 \div 12,000 = ₹ 5.00$

— Space to write important points for revision —

**2014 - June [3]** (b) KOOTCHAR LTD. currently at 80% capacity has the following particulars:

	₹
Sales	48,00,000
Direct Materials	15,00,000
Direct Labour	6,00,000
Variable Overheads	3,00,000
Fixed Overheads	19,00,000

An export order has been received that would utilize half (50%) the capacity of the factory. The order cannot be split i.e. it either to be taken in full and executed at 10% below the normal domestic price or reject totally.

The alternative available to the Management of the company are:

- (i) Reject the order and continue with domestic sales only (as at present level of sales).

Or

- (ii) Accept the order, split the capacity (100%) between overseas and domestic sales and turn away excess domestic demand.

Or

(iii) Increase capacity so as to accept the export order and maintain the present domestic sales by —

A. buying an equipment that will increase capacity by 10%. This will result in an increase of ₹ 1,50,000 in fixed costs; and

B. work overtime to meet balance of required capacity. In that case labour will be paid at one and a half ( $1\frac{1}{2}$ ) times the normal wage rate.

You are required to prepare a comparative statement of profitability and suggest the best alternative. (6 + 2 + 2 = 10 marks)

**Answer:**

**Statement showing computation of profit at present and at proposed two alternatives:**

S. No.	Particulars	Present 80%	Foreign 50% + Domestic 50% = 100%	80% Domestic + 50% Foreign = 130%
	Domestic Sales (Note 1)	48,00,000	30,00,000	48,00,000
	Export Sales (Note 2)		27,00,000	27,00,000
i.	<b>Total Sales</b>		<b>57,00,000</b>	<b>75,00,000</b>
ii.	Variable Cost			
	Direct material (Note 3)	15,00,000	18,75,000	24,37,500
	Direct wages (Note 4)	6,00,000	7,50,000	9,75,000
	Variable OH (Note 5)	3,00,000	3,75,000	4,87,500
		—		75,000
	Addl. OT cost (Note 6)			
iii.	<b>Total Variable Cost</b>	<b>24,00,000</b>	<b>30,00,000</b>	<b>39,75,000</b>
iv.	<b>Contribution (i-iii)</b>	<b>24,00,000</b>	<b>27,00,000</b>	<b>35,25,000</b>
v.	<b>Fixed Cost</b>	<b>19,00,000</b>	<b>19,00,000</b>	<b>20,50,000</b>
vi.	<b>Profit (iv-v)</b>	<b>5,00,000</b>	<b>8,00,000</b>	<b>14,75,000</b>

**Working Notes:**

- Sales at 100% = Sales at 80% capacity  $\times 100/80$   
= 48,00,000  $\times 100/80$  = ₹ 60,00,000
- Sales revenue at 50% capacity = ₹ 30,00,000  
Sales revenue at 50% capacity for export sales = ₹ 30,00,000 - 10%  
= ₹ 27,00,000

**10.64****Scanner CMA Inter Gr. II Paper 10 A (2016 Syllabus)**

3. Direct material of 100% capacity = ₹ 15,00,000 × 100/80 = ₹ 18,75,000  
At 130% capacity = 15,00,000 × 130/80 = ₹ 24,37,500
4. Direct labour at 100% = 6,00,000 × 100/80 = ₹ 7,50,000  
At 110% of capacity = 7,50,000 × 110/100 = ₹ 8,25,000  
Direct labour at 130% = 6,00,000 × 130/80 = ₹ 9,75,000
5. Variable overheads at 100% = 3,00,000 × 100/80 = ₹ 3,75,000  
Variable overheads at 130% = 3,00,000 × 130/80 = ₹ 4,87,500  
Fixed overhead ₹ 19,00,000 + 1,50,000 = ₹ 20,50,000
6. Overtime cost = 3,00,000 × 20%/80% = ₹ 75,000

**Suggestion:** As the profit is more at the Alternative III, i.e. accepting foreign order fully and maintaining present domestic sales fully, it is the best alternative to be suggested.

— Space to write important points for revision —

**2014 - Dec [1]** Answer the question:

- (a) MENZ LTD. earned a profit of ₹ 3,00,000 during the year 2013-14. If the marginal cost and selling price of a product are ₹ 80 and ₹ 100 per unit respectively, find out the amount of 'Margin of Safety'. **(2 marks)**
- (d) In a factory repairs and maintenance expenses were ₹ 1,50,000 at 60% capacity level out of these 40% was fixed. Calculate the repairs and maintenance expenses for the capacity level of 80%. **(2 marks)**

**Answer:**

$$\begin{aligned}
 \text{(a) Margin of safety} &= \frac{\text{Profit}}{\text{PV Ratio}} \\
 \text{PV Ratio} &= \frac{\text{contribution/unit}}{\text{selling price}} \times 100 \\
 &= \frac{100 - 80}{100} \times 100 = 20\% \\
 \text{Margin of safety} &= \frac{3,00,000}{20\%} = ₹ 15,00,000
 \end{aligned}$$

**Answer:**

- (d) Total repair and maintenance expenses at 60% capacity = ₹ 1,50,000  
Fixed repair and maintenance expenses = 1,50,000 × 40% = ₹ 60,000  
Variable expenses = 1,50,000 – 60,000 = 90,000



Variable expenses for 80% capacity level =  $90,000/60 \times 80 = ₹1,20,000$

Fixed expenses at 80% capacity level = ₹ 60,000

Total repair and maintenance expenses at 80% capacity level = 1,20,000 + 60,000 = ₹ 1,80,000

— Space to write important points for revision —

**2014 - Dec [2]** (c) Answer the question:

- (i) The following data extracted from the records of DHOORA LTD. are given to you:

Particulars	Year 2013-14	
	First six months (₹)	Second six months (₹)
Cost of sales	10,50,000	15,30,000
Profit/Loss (-)	(-) 50,000	2,70,000

You are required to calculate for the year 2013-14:

- (1) P/V Ratio
- (2) Fixed cost
- (3) BEP
- (4) The amount of profit where sales are ₹ 25,00,000
- (5) Amount of sales required to earn a profit of ₹ 6,50,000
- (6) Amount of sales required to earn a profit of 25% on cost.

**(2 + 1 + 1 + 1 + 1 + 2 = 8 marks)**

— Space to write important points for revision —

**Answer:**

$$(1) \text{ PV Ratio} = \frac{\text{change in profit}}{\text{change in sales}} \times 100 = \frac{2,70,000 - (-50,000)}{18,00,000 - 10,00,000} \times 100 = 40\%$$

$$(2) \text{ Fixed Cost} = (\text{Sales} \times \text{PV Ratio}) - \text{Profit} = 28,00,000 \times 40\% - 2,20,000 = ₹ 9,00,000$$

$$(3) \text{ Break Even Point} = \frac{\text{Fixed cost}}{\text{PV Ratio}} = \frac{9,00,000}{40\%} = ₹ 22,50,000$$

$$(4) \text{ Amount of profit when sales are ₹ 25,00,000}$$

$$\text{Profit} = \text{Sales} \times \text{PV Ratio} - \text{Fixed cost}$$

$$= 25,00,000 \times 40\% - 9,00,000 = ₹ 1,00,000$$

- (5) Sales required to earn a profit of ₹ 6,50,000

$$\text{Required sales} = \frac{\text{Fixed Cost} + \text{Desired Profit}}{\text{PV Ratio}} = \frac{9,00,000 + 6,50,000}{40\%}$$

$$= ₹ 38,75,000$$

- (6) Sales required to earn a profit of 25% on cost

25% on cost = 20% on sales

Let the sales be x

$$X = \frac{\text{Fixed Cost} + \text{Desired Profit}}{\text{PV Ratio}} = \frac{9,00,000 + 0.2x}{40\%}$$

$$.4x - .2x = 9,00,000$$

$$X = 9,00,000 / 0.2 = ₹ 45,00,000$$

— Space to write important points for revision —

**2015 - June [1]** Answer the question:

- (a) SHRIJINI LTD. having a Margin of Safety of ₹ 4 lakh makes a Profit of ₹ 80,000. If its Fixed Cost is ₹ 5 lakh, what will be Break-Even Sales of SHRIJINI LTD.? **(2 marks)**

**Answer:**

Margin of Safety = ₹ 4,00,000

Profit = ₹ 80,000

PV ratio =  $\frac{\text{Profit}}{\text{Margin of Safety}} \times 100$

$$= \frac{80,000}{4,00,000} \times 100$$

$$= 20\%$$

Fixed Cost = ₹ 5,00,000

Break Even Sales =  $\frac{\text{Fixed Cost}}{\text{PV ratio}}$

$$= \frac{5,00,000}{20\%}$$

$$= ₹ 25,00,000$$

— Space to write important points for revision —

**2015 - June [2]** Answer the questions:

- (a) (ii) Normal capacity of SUVAN LTD. is 240000 Units per annum. Cost structure for the year ending 31<sup>st</sup> March, 2015 is as follows:

Direct material cost per unit ₹ 25

Direct labour cost per unit (subject to a minimum of ₹ 2,50,000 per month) ₹ 20

Overheads: Fixed ₹ 18,00,000

Variable per unit ₹ 15

Semi variable ₹ 9,60,000 per year upto 50% capacity and additional ₹ 3,00,000 for every 20% increase in capacity or part thereof.

In the year 2015-16 the company to be worked at 60% capacity for the first four months but it was expected that it would work at 80% capacity for the remaining 8 months. During the first four months, the selling price per unit will be fixed at ₹ 100.

**Required:**

What should be the price per unit in the remaining eight months to earn a total Profit of ₹ 43,80,000? **(4 + 6 = 10 marks)**

- (b) (i) SHEENNA LTD., an appliance manufacturer, has always sold its product through wholesalers. Last year its sales were ₹ 20,00,000 and its net profit 10% of sales. As a result of the increase in appliance sales through departmental stores and e-commerce business establishment, the company is considering elimination of wholesalers and selling directly to retailers. It is estimated that this would result in a 40% drop in sales but net profit would be ₹ 1,80,000 due to the elimination of middlemen. Fixed expenses would increase from ₹ 2,00,000 to ₹ 3,00,000 owing to additional storage and logistics facilities.

As a Management Accountant you are required to find out:

- (1) Whether the proposed change would raise or lower the break-even point in rupees? By how much? Give reason.
- (2) What would be the sale volume in rupees which would enable Sheena Ltd. to obtain as much profit as it made last year?

**(8 + 2 = 10 marks)**

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**Answer:****(a) (ii) Profit Statement for first four months:**

Sales Quantity ( $\text{₹ } 2,40,000 \times 60\% \times \frac{4}{12}$ )	48,000 Units
Sales Value ( $\text{₹ } 100 \times 48,000$ )	₹ 48,00,000
Less: Variable Cost:	
Material Cost $\text{₹ } 25 \times 48,000 =$	12,00,000
Overhead $\text{₹ } 15 \times 48,000 =$	7,20,000
Labour Cost $\text{₹ } 2,50,000 \times 4 =$	<u>10,00,000</u>
Contribution	₹ 18,80,000
Less:	
Semi variable cost $(9,60,000 + 3,00,000) \times \frac{4}{12} =$	₹ 4,20,000
Fixed Cost $(18,00,000 \times \frac{4}{12}) =$	₹ 6,00,000
	<u>₹ 10,20,000</u>
Profit	₹ 8,60,000

Desired Profit During the year = ₹ 43,80,000

Profit earned during first four months = ₹ 8,60,000

Profit to be earned during the remaining 8 months = ₹ 35,20,000

**Calculation of selling price for remaining 8 months:**Unit Sold  $(2,40,000 \times 80\% \times \frac{8}{12}) = 1,28,000$  units**Total Variable Cost:**

	₹
Material $\text{₹ } 25 \times 1,28,000 =$	32,00,000
Labour $\text{₹ } 20 \times 1,28,000 =$	25,60,000
Overheads $\text{₹ } 15 \times 1,28,000 =$	<u>19,20,000</u>
	<u>76,80,000</u>

Semi variable cost  $(9,60,000 + 3,00,000 + 3,00,000) \times \frac{8}{12} = ₹ 10,40,000$ Fixed Cost  $\left(18,00,000 \times \frac{8}{12}\right) = ₹ 12,00,000$

	₹
Total Cost	99,20,000
Desired Profit	<u>35,20,000</u>
Total Sale Value	1,34,40,000

$$\text{Selling price} = \frac{1,34,40,000}{1,28,000} = ₹ 105$$

(b) (i)

1. Sales	₹ 20,00,000
Net Profit 10% of sales	₹ 2,00,000
Fixed Expenses	₹ 2,00,000
Contribution	= Profit + Fixed Expenses = ₹ 2,00,000 + 2,00,000
	= ₹ 4,00,000

$$\begin{aligned} \text{PV Ratio} &= \frac{\text{Contribution}}{\text{Sales}} \times 100 \\ &= \frac{4,00,000}{20,00,000} \times 100 = 20\% \end{aligned}$$

$$\begin{aligned} \text{Break even sales} &= \text{Fixed Expenses} / \text{PV Ratio} = 2,00,000 / 20\% \\ &= ₹ 10,00,000 \end{aligned}$$

$$\begin{aligned} \text{Sales through Departmental stores} &= 60\% \text{ of } 20,00,000 \\ &= ₹ 12,00,000 \end{aligned}$$

Profit	= ₹ 1,80,000
Fixed Expenses	= ₹ 3,00,000
Contribution	= ₹ 4,80,000

$$\begin{aligned} \text{PV Ratio} &= \frac{\text{Contribution}}{\text{Sales}} \times 100 \\ &= \frac{₹ 4,80,000}{₹ 12,00,000} \times 100 = 40\% \end{aligned}$$

$$\begin{aligned} \text{Break even sales} &= \text{Fixed Expenses} / \text{PV Ratio} = ₹ 3,00,000 / 40\% \\ &= ₹ 7,50,000 \end{aligned}$$

Break even sales will be lowered by ₹ 2,50,000

Reason- Variable cost will be decreased due to elimination of middlemen.

$$\begin{aligned}
 2. \text{ Sales for desired profit} &= \frac{\text{Desired Profit} + \text{Fixed Exp.}}{\text{PV ratio}} \\
 &= \frac{\text{₹ 2,00,000} + \text{₹ 3,00,000}}{40\%} \\
 &= \text{₹ 12,50,000}
 \end{aligned}$$

———— Space to write important points for revision ————

**2015 - Dec [1]** Answer the question.

(a) Given: Sales ₹ 2,00,000; Fixed Cost ₹ 40,000; BEP ₹ 1,60,000.  
Ascertain the profit. **(2 marks)**

**Answer:**

$$\begin{aligned}
 \text{BEP} &= \frac{\text{Fixed Cost}}{\text{P/V Ratio}} = 1,60,000 = \frac{40,000}{\text{P/V Ratio}} \\
 \text{or P/V Ratio} &= \frac{1}{4} = \frac{\text{Contribution}}{\text{Sales}} = \frac{1}{4} \\
 \text{Contribution} &= \frac{\text{Sales}}{4} = \text{Contribution} = \frac{2,00,000}{4} = \text{₹ 50,000} \\
 \text{Variable Cost} &= \text{Sales} - \text{Contribution} \\
 \text{Variable Cost} &= 2,00,000 - 50,000 \\
 &= \text{₹ 1,50,000} \\
 \text{Profit} &= \text{Sales} - \text{FC} - \text{VC} \\
 \text{Profit} &= 2,00,000 - 40,000 - 1,50,000 \\
 &= \text{₹ 10,000.}
 \end{aligned}$$

———— Space to write important points for revision ————

**2015 - Dec [2]** Answer the question:

(a) (i) In 2014 the turnover of Akash Ltd., which operated at a margin of safety of 25%, amounted to ₹ 12,00,000 and its profit volume ratio was 40%. During 2015 the company estimated that although the same volume of sales would be maintained, the sale value would go down due to decrease in selling price. There will be no change in variable costs. The company proposes to reduce its fixed costs through an intensive cost reduction programme. These changes will

alter the profit volume ratio and margin of safety to  $\frac{100}{3}\%$  and 40%

respectively in 2015.

You are required to present a comparative statement indicating sales, variable costs, fixed costs and profits of the company for 2014 and 2015. (10 marks)

**Answer:**

**Comparative statement indicating sales, variable costs, fixed costs and profits of the company for 2014 and 2015**

	2014		2015	
	Note no.	(₹)	Note no.	(₹)
Sales (S)		12,00,000	7	10,80,000
Variable Cost (VC)	1	7,20,000	6	7,20,000
Contribution (C)	2	4,80,000	8	3,60,000
BEP	3	9,00,000	9	6,48,000
Fixed Cost (FC)	4	3,60,000	10	2,16,000
Profit (P)	5	1,20,000	11	1,44,000

**Working Notes:**

**2014:**

P/V Ratio = 0.4 (Given)

VC/S = 1 - P/V = 1 - 0.4 = 0.6

MOS = 0.25 × S (Given)

1. VC = (VC/S) × S = 0.6 × 12,00,000 = ₹ 7,20,000

2. C = S - VC = ₹ 4,80,000

$$3. \text{ BEP} = S - \text{MOS} = S - 0.25 \times S = 0.75 \times S = ₹ 9,00,000$$

$$4. \text{ FC} = \text{BEP} \times \text{P/V} = 9,00,000 \times 0.4 = ₹ 3,60,000$$

$$5. \text{ P} = \text{C} - \text{FC} = 4,80,000 - 3,60,000 = ₹ 1,20,000$$

**2015:**

$$6. \text{ VC} = ₹ 7,20,000 \text{ (Same as 2014)}$$

$$\text{P/V Ratio} = 100/3\% = 1/3 \text{ (Given)}$$

$$\text{VC/S} = 1 - 1/3 = 2/3$$

$$\text{MOS} = 0.40 \times S \text{ (Given)}$$

$$7. \text{ S} = \text{VC} \times (3/2) = 7,20,000 \times 3/2 = ₹ 10,80,000$$

$$8. \text{ C} = \text{S} - \text{VC} = 10,80,000 - 7,20,000 = ₹ 3,60,000$$

$$9. \text{ BEP} = \text{S} - \text{MOS} = 10,80,000 - 0.40 \times S = 10,80,000 - 4,32,000 = ₹ 6,48,000$$

$$10. \text{ FC} = \text{BEP} \times \text{P/V} = 6,48,000 \times 100/3\% = ₹ 2,16,000$$

$$11. \text{ P} = \text{C} - \text{FC} = 3,60,000 - 2,16,000 = ₹ 1,44,000.$$

— Space to write important points for revision —

**2016 - June [1]** (b) If BEP is ₹ 39,00,000 at 65% level of sales and profit is ₹ 8,40,000 at 100% level of sales, find out the P/V ratio. **(2 marks)**

(c) If the fixed cost per unit is ₹ 40 at 40% level of capacity what should be fixed cost per unit at 80% level of capacity? **(2 marks)**

**Answer:**

(b) At 65% of level of sales  $\text{BEP} = ₹ 39,00,000$

$$\text{Total sales} = \frac{39,00,000}{65\%} = ₹ 60,00,000$$

$$\begin{aligned} \text{Margin of safety} &= \text{Total Sales} - \text{Break even sales} \\ &= 60,00,000 - 39,00,000 \\ &= ₹ 21,00,000 \end{aligned}$$

$$\text{P/v ratio} = \frac{\text{Profit}}{\text{Margin of Safety}} = \frac{8,40,000}{21,00,000} \times 100 = 40\%$$



(c) Fixed cost per unit is ₹ 40 at 40% level.

Therefore fixed cost per unit at 80% =  $\frac{₹40}{2}$  = ₹ 20 per unit

**Note:** As the level of capacity increases, fixed cost per unit decreases. Although total fixed cost remains the same irrespective of level of production.

— Space to write important points for revision —

**2016 - Dec [1]** (d) In a company, in 2015-16 sales amounted to ₹ 40,00,000 as compared to ₹ 27,00,000 in 2014-15. Profits in 2014-15 were ₹ 2,80,000, which amounted to 35% of the profits of 2015-16. Calculate P/V ratio.

(2 marks)

**Answer:**

Profit for the year 2015-16 = ₹ 2,80,000 × 100/35 = ₹ 8,00,000.

P/V ratio = (Change in Profits/Change in Sales) × 100

= [(8,00,000 – 2,80,000)/(40,00,000 – 27,00,000)] × 100

= (5,20,000/13,00,000) × 100

= 40%.

— Space to write important points for revision —

**2016 - Dec [6]** (a) A firm sells its products at ₹ 39 per unit. If its monthly sale amounts to 1000 units, it suffers a monthly loss of ₹ 4,550. If monthly sale amounts to 1500 units, the firm makes a monthly profit of ₹ 1,950. Find BEP in units and find the required sales and MOS in rupees to earn a monthly profit of ₹ 5,850.

(6 marks)

**Answer:**

Contribution per unit = change in profit/change in units = (1,950 + 4,550)/(1500 - 1000) = ₹ 13.

At 1500 units, total contribution = 1500 × 13 = ₹ 19,500

Less: Profit = ₹ 1,950

Fixed cost -19500 -1950 = ₹ 17,550

BEP in units = Fixed Cost/contribution per unit =  $17,550/13 = 1,350$  units  
Required contribution to earn profit of ₹ 5,850 =  $5,850 + 17,550 = ₹ 23,400$ ;  
Required sales to earn contribution of ₹ 23,400 =  $23,400 \times 3 = ₹ 70,200$   
 $P/V = 13/39 = 1/3$   
MOS = Profit/(P/V) = ₹ 5,850/(1/3) = ₹ 17,550.

— Space to write important points for revision —

**2017 - June [2]** (a) The anticipated sales of Electronic Corporation Ltd. is ₹ 4,00,000 and unit selling price is ₹ 20 each. The per unit cost of direct material is ₹ 9, labour is ₹ 3 and other variable expenses are ₹ 3 per unit. The company is earning a net profit of 5% and to improve the profitability, the following proposals were discussed at the Executive Committee Meeting:

- (i) The present administrative setup is on the regional basis and it was felt that centralization will reduce the fixed cost by ₹ 12,000.
- (ii) The Production Manager has agreed that he will try to work on a cost reduction programme which will reduce the cost by ₹ 1 per unit but there will be little impact on the quality which will be negligible to the customer.
- (iii) The Sales Manager opposed the two proposals and suggests that it may be possible to increase the number of units sold by 20%, provided the selling price is reduced by 5%.
- (iv) Alternatively, as per Sales Manager, if the selling price is increased by 10%, the sales number of units will be reduced by 5%.

As the Cost and Management Accountant of the company, evaluate the aforesaid four proposals and also put forward your suggestions to improve the situation. **(8 marks)**

**(b)** Calculate Margin of Safety from the following information:

Sales ₹ 30,00,000; Fixed expenses ₹ 9,00,000; Profit ₹ 6,00,000

**(4 marks)**

**Answer:****(a)**

Particulars	Per unit (₹)	Total (₹)
Sales (20,000 units)	20	4,00,000
Variable Costs		
Direct Materials	9	1,80,000
Labour	3	60,000
Other variable Expenses	3	60,000
Total variable cost	15	3,00,000
Contribution	5	1,00,000
Less: Profit @ 5% of 4,00,000		20,000
Total Fixed Cost		80,000

	(i)	(ii)	(iii)	(iv)
Proposal	Central administration (Reduction in F.C. by ₹ 12,000)	Variable cost Reduction by ₹ 1 per unit	20% increase in Sales units with 5% reduction in selling price	10% increase in selling price and 5% reduction in sales units
Sales (units)	20,000	20,000	24,000	19,000
Selling price per unit (₹)	20	20	19	22
Variable cost (₹)	15	14	15	15
Contribution/unit	5	6	4	7
Total Contribution (₹)	1,00,000	1,20,000	96,000	1,33,000
Less: Fixed cost (₹)	68,000	80,000	80,000	80,000

Net Profit (₹)	32,000	40,000	16,000	53,000
Anticipated Profit (₹)	20,000	20,000	20,000	20,000
Increase (Decrease) in profit (₹)	(+) 12,000	(+) 20,000	(-) 4,000	(+) 33,000

**Conclusion:** The proposal of Sales Manager (i.e., iii) is not at all acceptable as this will result in loss of ₹ 4,000. The proposal (ii), with a profit of ₹ 20,000, will have little impact on quality. This proposal is fraught with marketing dangers. The lower quality of the product will have long-range disadvantages, as compared to the product of the competitors. The Sales Manager's proposal – (iv) is really attractive, as it will fetch additional profit worth ₹ 33,000. The proposal – (i) will yield additional profit of ₹ 12,000. As Cost and Management Accountant of the company, I will recommend combination of proposals (i) and (iv).

(b) C - F. E. = Profit

C = Profit + F. E.

C = 6,00,000 + 9,00,000 = 15,00,000

P/V Ratio =  $\frac{C}{S} = \frac{15,00,000}{30,00,000} \times 100 = 50\%$

MOS =  $\frac{\text{Profit}}{\text{P/V Ratio}} = \frac{6,00,000}{50\%} = ₹ 12,00,000$

— Space to write important points for revision —

**2017 - Dec [2]** (a) The Asian Industries specialize in the manufacture of small capacity motors. The Cost Structure of a motor is as under:

Material ₹ 50

Labour ₹ 80

Variable overheads 75% of labour cost.

Fixed overheads of the company amounts to ₹ 2.4 lakhs per annum. The sale price of the motor is ₹ 230 each.

- (i) Determine the number of motors that have to be manufactured and sold in a year in order to break-even.

- (ii) How many motors will have to be made and sold to make a profit of Rupees one lakh per year?
- (iii) If the sale price is reduced by ₹ 15 each, how many motors will have to be sold to break-even? **(6 marks)**

**(b)** The table below shows the Costs and Profits of three different products — X, Y & Z, manufactured by Jerbera Co. Ltd.

	X	Y	Z	Total
	₹	₹	₹	₹
Sales	3,00,000	1,80,000	1,20,000	6,00,000
Variable Cost	2,40,000	1,26,000	72,000	4,38,000
Contribution	60,000	54,000	48,000	1,62,000
Fixed Cost				81,000
Profit				81,000

Can the profits of the company be increased by changing the sales mix of the products? Use Marginal Costing technique to arrive at your answer.

**(2 + 2 + 2 = 6 marks)**

**Answer:**

**(a) Marginal Cost Statement:**

Sales Price	230
Less: Variable Cost:	
Material	50
Labour	80
Variable overhead (75% of ₹ 80)	60
Contribution	40

- (i) Calculation of Number of motor that have to be manufactured and sold in order to Break even =  $\frac{\text{Fixed Cost}}{\text{Contribution per Unit}}$

$$= \frac{2,40,000}{40} = 6,000 \text{ motors}$$

- (ii) Calculation of Number of motor manufactured and sold to get profit of ₹ 1,00,000

$$\begin{aligned} \text{No. of Unit to be sold} &= \frac{\text{Fixed cost} + \text{Desires Profit}}{\text{Contribution per Unit}} \\ &= \frac{2,40,000 + 1,00,000}{40} \\ &= 8,500 \text{ motors} \end{aligned}$$

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- (iii) If S.P. reduce by ₹ 15 then new contribution  
 $= 215 - (50 + 80 + 60)$   
 $= 25$   
 BEP in Units  $= \frac{2,40,000}{25}$   
 $= 9,600 \text{ motors.}$

**(b)**

Particulars	X ₹	Y ₹	Z ₹	Total
Sales	3,00,000	1,80,000	1,20,000	6,00,000
Variable Cost	2,40,000	1,26,000	72,000	4,38,000
Contribution	60,000	54,000	48,000	1,62,000
Fixed Cost				81,000
Profit				81,000
P/V Ratio	20%	30%	40%	27%

The above table shows that product Y and Z, are more profitable than X. Keeping total production same, company should change the sales mix in a way more of product z and y are produced. If company decides to use its production capacity more for product Y and Z than X, then the effect on profit if sale of product Y and Z is increased by ₹ 60,000 each and product X by reducing ₹ 1,20,000.

	X	Y	Z	Total
Sales	1,80,000	2,40,000	1,80,000	6,00,000
Variable Cost	1,44,000	1,68,000	1,08,000	4,20,000
Contribution	36,000	72,000	72,000	1,80,000
				81,000
				99,000

From the above table, we can observe that proposed change in product mix leads to an increase in profit from ₹ 81,000 to ₹ 99,000.

— Space to write important points for revision —

**2018 - June [2]** (a) QUALITY PRODUCTS LTD, manufactures and markets a single product.

The following data are available.

	₹/ Unit
Materials	16
Conversion Costs (Variable)	12
Dealer's Margin (10% of Sales)	4
Selling Price	40
Fixed Cost: ₹ 5 Lakhs	
Present Sales: 90,000 Units	
Capacity Utilization: 60%	

There are acute competition. Extra efforts are necessary to sell. Suggestions have been made for increasing sale:

(a) By reducing Selling Price by 5%

(b) By increasing dealer's margin by 25% over the existing rate.

**Required:**

(i) Which of these two suggestion you would recommend, if the company desires to maintain the present profit?

(ii) Give reasons:

**(4+2 = 6 marks)**

**(b)** XYZ Co. purchases 40,000 glass cases per annum from an outside supplier at ₹ 5 each. The production manager feels that these should be manufactured and not purchased. A machine costing ₹ 1,00,000 (no salvage value) will be required to manufacture the item within the factory. The machine has an annual capacity of 60,000 units and life of 5 years. The costs required for manufacture of each glass case is as follows:

Direct Materials ₹ 2.00

Direct Labour ₹ 1.00

Variable overheads 100% of Labour Cost

**Required:**

- (i) Should the company continue to purchase the glass cases from outside supplier or should it make them in the factory?
- (ii) Should the company accept an order to supply 10000 glass cases to the market at a selling price of ₹ 4.50 per unit? **(3×2 = 6 marks)**

**Answer:****(a) Present variable Cost/unit:**

	₹
Materials	16
Conversion Costs	12
Dealer's Margin	4
Total variable Cost/unit	32

Contribution/unit = Selling Price/unit – Variable Cost/unit = ₹ 40 - ₹ 32 = ₹ 8

∴ Total Contribution = ₹ 8 × 90,000 units = ₹ 7,20,000

In both the suggestion, Fixed Cost remains unchanged.

∴ The Present Profit of ₹ 2,20,000 (₹ 7,20,000 – ₹ 5,00,000) can be maintained by maintaining the total contribution at the present level i.e., ₹ 7,20,000.

**(A) Reducing Selling Price by 5%:**

New Selling Price ₹ 40 – ₹ 2 or ₹ 38.

New Dealer's Margin 10% of ₹ 38 or ₹ 3.80

New Variable Cost ₹ 16 + ₹ 12 + ₹ 3.80 = ₹ 31.80.

New Contribution/unit ₹ 38 – ₹ 31.80 = ₹ 6.20.

Sales (in units) required to maintain present level of profit  
 = Total Contribution/(Contribution/unit) = ₹ 7,20,000/₹ 6.20  
 = 1,16,129 units.

**(B) Increasing Dealer's Margin by 25%.**

New Margin will be (₹ 4 + 25% of ₹ 4) = ₹ 4 + ₹ 1 = ₹ 5

New Variable Cost = ₹ 16 + ₹ 12 + ₹ 5 = ₹ 33

Contribution = ₹ 40 – ₹ 33 = ₹ 7

Sales in units = ₹ 7,20,000/₹ 7 or 1,02,857 units.



**Recommendation:**

The 2<sup>nd</sup> Proposal is recommended because the contribution/unit is higher and the Sales (in units) are lower. Lower sales effort and lesser finance would be required in implementing the 2<sup>nd</sup> Proposal. The company can earn higher profits by increasing its sales, as an alternative.

(b) (i)

**Calculation Of Costing**

Particular	Per unit	Amount
Material Cost	2	80,000
Direct Labour	1	40,000
Direct Overhead	1	40,000
Machinery Purchase (1,00,000/5)	0.5	20,000
<b>Total Cost</b>	<b>4.5</b>	<b>1,80,000</b>
Purchase from Supplier	5	2,00,000
Saving if glass cases made by company		20,000

- (ii) The Company should make the glass cases because if Company make the glass cases then they will save 20,000/- amount. Order for supply of 10000 per unit  $4.5 = 45000$ , in this case Company will be on BEP point it means no profit no loss. If Company accept this offer then Company will cover total cost but no profit condition.

So I think the Company should not accept this offer.

— Space to write important points for revision —

**2018 - Dec [2]** (a) CADINI LTD., a factory engaged in manufacturing Plastic Buckets is working to 40% capacity and produces 10,000 Buckets per annum. The present cost break-up for one Bucket is:

**10.82****■ Scanner CMA Inter Gr. II Paper 10 A (2016 Syllabus)**

Material – ₹ 10

Labour – ₹ 3 and

Over head – ₹ 5 (out of which 60% is fixed)

The Selling Price is ₹ 20 per Bucket.

If it is decided to work the factory at 50% capacity, the Selling Price falls by 3%.

**Calculate:**

(i) The profit at 50% capacity,

(ii) Break Even Quantity in units.

**(4+2 = 6 marks)**

**2018 - Dec [2]** (b) XER Co. manufactures an electronic product and puts a price tag of ₹ 190.00 as wholesale price. The company has a production and storage facility with a 100,000 unit monthly output capacity based on running an 8 hours shift each workday.

Estimated Costs are given below:

Monthly Fixed Costs	(₹)	Per Unit Costs	(₹)
Building Depreciation	2,50,000	Production Labour	45.00
Project Management	1,75,000	Supervisors Charges	5.00
Advertising Costs	3,00,000	Material Handling	8.00
Network Administration	75,000	Sales Commission	12.00
Office Expenses	1,50,000	Materials	70.00
Equipment (Depreciation)	2,00,000	Electricity Costs	3.00

**Required:**

- Based on the information provided, what quantity must this firm produce in order to be at breakeven?
- If the firm produces at the plant's capacity, what is the minimum price at which the firm can sell the product and still breakeven?
- Suppose the firm seeks to target profit of ₹ 30,00,000 from this product based on the input costs and wholesale price noted in the problem. How many units would the firm need to produce to generate the required profit?

**(6 marks)**

## Repeatedly Asked Questions

No.	Question	Frequency
1	Difference between marginal costing and absorption costing. 12 - Dec [8] (b), 16 - Dec [7] (b)	2 Times

### Table Showing Marks of Compulsory Questions

[illegible]

# 2B






## TRANSFER PRICING

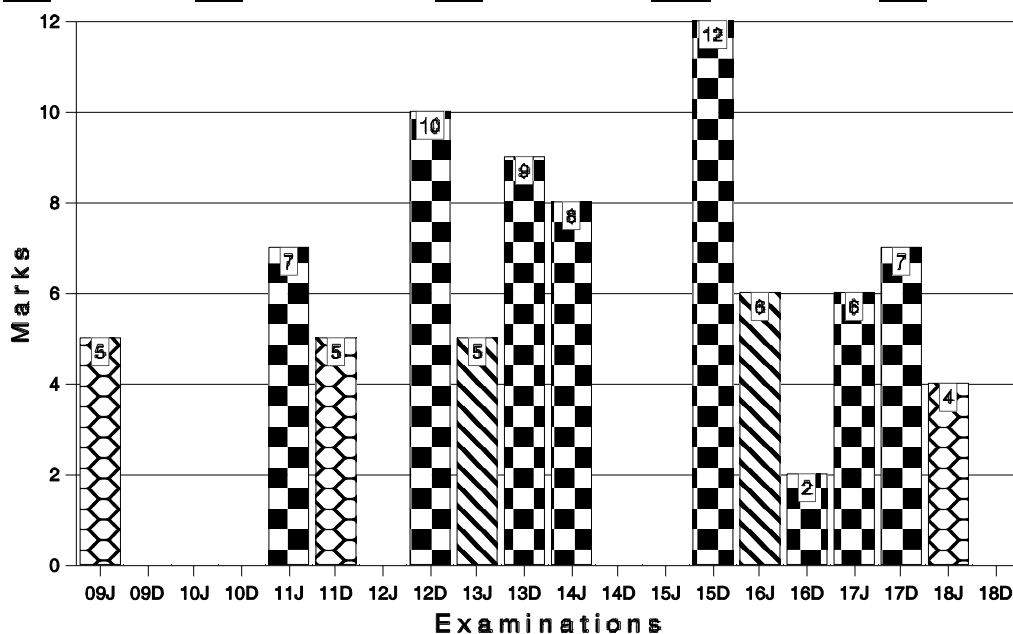
### THIS CHAPTER INCLUDES

- Transfer Pricing
- Objectives of Inter Company Transfer Pricing
- Methods of Transfer Pricing
- Pricing based on cost
- Market price as transfer price
- Negotiated Pricing
- Pricing based on opportunity cost

Marks of objective, Short Notes, Distinguish Between, Descriptive & Practical Questions

### Legend

 Objective 
  Short Notes 
  Distinguish 
  Descriptive 
  Practical



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for registration and password see first page of this book.

## CHAPTER AT A GLANCE

Topic	Important Highlights
<b>Transfer Pricing</b>	A transfer price is the notation value placed on goods and services transferred from one division to another division. Product transfer may include partly finished goods or finished goods transferred for use.
<b>Objects of Transfer Pricing</b>	The main objects of transfer pricing are as follows: <ul style="list-style-type: none"> <li>(i) To develop a commercial attitude in those who are responsible for the performance of profit centers. The main emphasis here is on profitability.</li> <li>(ii) In a given short period of time to optimize the profit of a company.</li> <li>(iii) Optimum use of given financial resources</li> <li>(iv) To minimize overtax burden international groups may try to manipulate transfer pricing between countries.</li> </ul>
<b>System of transfer Pricing</b>	Pricing is influenced by two systems if there are many independent units of an organisation <ol style="list-style-type: none"> <li>1. <b>Laissez faire:</b> In this system, each independent unit has full freedom to negotiate the prices of its goods and services.</li> <li>2. <b>Centrally imposed system:</b> In this system, the pricing by independent units is regulated by guidelines laid down by top management.</li> </ol>
<b>Methods of transfer pricing</b>	<ol style="list-style-type: none"> <li>1. <b>Cost –based transfer pricing:</b> Various methods of Cost –based transfer pricing <ul style="list-style-type: none"> <li>i. Actual Cost of production</li> <li>ii. Variable Cost</li> <li>iii. Standard Cost</li> </ul> </li> </ol>

	<ul style="list-style-type: none"> <li>iv. Cost of Sales</li> <li>v. Cost of Sales Plus</li> <li>vi. Opportunity Cost Based Transfer pricing</li> <li>vii. Prorating based transfer pricing</li> </ul>
	2. <b>Market Pricing-</b> Under this method, the transfer pricing to other division is based on market price.
	3. <b>Negotiated Transfer Pricing-</b> All independent units are allowed to fix the prices after negotiations or bargaining. Divisional managers have full freedom to go for outside purchases if prices quoted by other division are not acceptable to them.
	4. <b>Dual Transfer Pricing-</b> Under Dual Transfer Pricing method more than one price is recorded in the books as <ul style="list-style-type: none"> <li>⇒ Charge receiving division with variable cost and credit the supplying division with an amount in excess of variable cost.</li> <li>⇒ Allowing a fix mark-up on variable cost and fixed cost of the supplying division.</li> <li>⇒ Charging the buying centre with synthetic market price and crediting supplying centre with standard variable cost plus mark-up or full cost plus or normal mark-up.</li> </ul>
	5. <b>Synthetic Market Pricing-</b> It represents variable cost of the selling responsibility centre plus the opportunity cost to the company as a whole.
	6. <b>International Transfer Pricing-</b> International Transfer Pricing has the following objectives: <ul style="list-style-type: none"> <li>⇒ Income tax minimization</li> <li>⇒ Import duty minimization</li> <li>⇒ Avoidance of financial problems</li> </ul>

	<ul style="list-style-type: none"><li>⇒ Improvement of financial results</li><li>⇒ Adjustment of currency fluctuations.</li></ul>
	<b>International Transfer pricing methods</b> <ul style="list-style-type: none"><li>⇒ Comparable uncontrolled price method</li><li>⇒ Re-sale price method</li><li>⇒ Cost plus method</li><li>⇒ Profit split method</li><li>⇒ Transactional net margin method</li><li>⇒ Any other method as may be prescribed by CBDT.</li></ul>

## **SHORT NOTES**

**2009 - June [8]** Write a short note on :

(b) Limitations of Market Based Transfer pricing.

**(5 marks)**

**Answer :**

Limitations of Market based Transfer Pricing:

The main limitations of this method are:

- (i) Difficulty in obtaining just market prices. Sometimes it is difficult to obtain at all any market price for those very products which are manufactured only for internal consumption.
- (ii) Difficulty in determining the elements of selling and distribution expenses such as commission, discounts, advertisement and sales promotion etc., so that necessary adjustment may be made in the market price to provide benefit of these expenses, to the profit centre, receiving the goods.
- (iii) There may be resistance from the buying division. They may question buying from the selling division if in any way they have to pay the market price.
- (iv) Market prices may be fluctuating and hence there may be difficulties in fixation of these prices.

- (v) Market price is rather a vague term as such prices may be ex-factory price, wholesale price, retail price, etc.
- (vi) Market prices may not be available for intermediate products, as these products may not have any market.
- (vii) The method may be difficult to operate if the intermediate product is for captive consumption.

—— Space to write important points for revision ———

**2011 - Dec [8]** Write a short note on the following :

- (a) Limitations of market-based transfer pricing; **(5 marks)**

**Answer :**

***Please refer 2009 - June [8] (b) on page no. 87***

—— Space to write important points for revision ———

**2018 - June [5]** Write short note on the following:

- (c) Transfer Pricing **(4 marks)**

**Answer:**

Transfer price is the price at which divisions of a Company transact with each other, such as the trade of supplies or labor between departments. Transfer prices are used when individual entities of a larger multi-entity firm are treated and measured as separately run entities. A transfer price can also be known as a transfer cost.

Transfer pricing is closely monitored within a Company's financial reporting and requires strict documentation that is included in financial reporting documents for auditors and regulators. This documentation is closely scrutinized. If inappropriately documented, it can lead to added expenses for the Company in the form of added taxation or restatement fees. These prices are closely checked for accuracy to ensure that profits are booked appropriately within arm's length pricing methods and associated taxes are paid accordingly.

—— Space to write important points for revision ———



**DESCRIPTIVE QUESTIONS**

**2008 - Dec [6]** (b) Explain the methods of Transfer Pricing. **(5 marks)**

**Answer :**

**Methods of Transfer Pricing:**

Methods of Transfer Pricing are usually employed in industry when goods or services are transferred from one unit to the other unit.

1. At cost or variants of cost e.g. actual manufacturing cost; standard cost; full cost and full cost plus mark up.
2. At market price.
3. At bargained or negotiated prices.

**Pricing at Cost**

- (a) **Actual cost of production:** In this method goods or services are transferred at their actual cost of production. It is useful for those units where the responsibility or profit performance is centralized.
- (b) **Standard cost:** Under this method all transfers are valued at their standard cost. Any difference between actual and standard cost viz., variances are usually absorbed by the supplying unit.
- (c) **Cost of Sales/Full cost:** Under this method, in addition to actual cost of production, expenses like selling and distribution, administration, research and development cost etc. are also allowed to be recovered from user division. In this method, the supplying unit is not allowed to make any profit on transfers to other units. But it is free to earn profit on outside sale.
- (d) **Full cost plus mark up:** Under this method the supplying unit transfers goods and services at full cost plus some mark-up or allowance for profit. This allowance is either expressed as a percentage of capital employed or cost of sales. Selling expenses here are recovered by the supplying unit without incurring them, especially when the goods/services are transferred internally.

**Pricing at market price:** Under this method, the transfer prices of goods/services transferred to other units/divisions are based on market prices. In a competitive market goods/services cannot be transferred to its users at a higher price. Such a competitive market provides an incentive to efficient production. Since market prices will, by and large be determined by demand and supply in the long run, it is claimed that profits which results under this method will provide a good indicator of the overall efficiency of the various units.

Competitive market prices provide reliable measures of divisional income because these prices are established independently rather than by individuals who have an interest in the results.

**Negotiated Price:** Here each decentralized unit is considered as an independent unit and competitive price is arrived at by negotiation or bargaining. The divisional managers have full freedom to go for outside purchase if the prices quoted by other divisions are not acceptable to them.

———— Space to write important points for revision —————

**2013 - June [7]** (b) What are the methods of fixing 'Transfer Price' for transfer of a product from one profit centre to another? Mention one demerit of each method. **(5 marks)**

**Answer :**

Methods of transfer pricing:

1. Cost-based transfer pricing
2. Market Pricing
3. Bargained or Negotiated Pricing

**1. Cost-based transfer pricing:**

**(a) Actual cost of production:** In this method goods or services are transferred at their actual cost of production.

Demerit- Inefficiency of transferor borne by receiving centre.

**(b) Standard cost:** Under this method all transfers are valued at their standard cost.

**Demerit-** Standards may be unrealistic or out dated creating an unfair price for any of the divisions.

(c) **Cost of Sales/Full cost:** Under this method, in addition to actual cost of production, expenses like selling and distribution, administration, research and development cost etc. are also allowed to be recovered from user division.

**Demerit-** In this method, the supplying unit is not allowed to make any profit on transfers to other units.

2. **Market pricing:** Under this method, the transfer prices of goods/services transferred to other units/divisions is based on market prices.

**Demerits -** Difficulty in obtaining just market prices. Sometimes it is difficult to obtain at all any market price for those very products which are manufactured only for internal consumption.

3. **Bargained or Negotiated Pricing:** Under this method, all independent units are allowed to fix the prices after negotiations or bargaining. Divisional managers have full freedom to go for outside purchases if prices quoted by other division are not acceptable to them.

**Demerit-** If the negotiating range is not mutually beneficial to both the divisions, there is clash of interest and management intervention may become necessary. The more powerful division may have its way. Goal congruence may be sacrificed, adversely affecting the overall Company profits.

—— Space to write important points for revision ———

**2016 - June [6]** (a) What do you understand by transfer pricing? State the objectives of inter-division transfer pricing. **(2+4=6 marks)**

**Answer:**

A 'Transfer Price' is that notional value at which goods and services are transferred between divisions in a decentralised organisation. Transfer Prices are normally set for intermediate products, which are goods and services that are supplied by the selling division to the buying division. Transfer pricing is one of the tools in the hands of management for measuring the performance of divisions or departments.

**Objectives of Inter-division transfer pricing:**

1. **To evaluate the current performance and profitability of each individual unit:** This is necessary in order to determine whether a particular unit is competitive and can stand on its working. When the goods are transferred from one department to another, the revenue of department becomes the cost of another and such inter transfer price affects the reported profit.
2. **To improve the profit position:** Inter company transfer will make the unit competitive so that it may maximise its profits and contribute to the overall profits of the organisation.
3. **To assist in decision making:** Correct inter company transfer price will make the costs of both the units realistic in order to take decision relating to such problems as make or buy, sell or process further, choice between alternative methods of production.
4. **For accurate estimation of earnings on proposed investment decision:** Where finance is scarce and it is required to determine the allocation of scarce resources between various divisions of the concern taking into consideration their competing claims, then this technique is useful.

— Space to write important points for revision —

## PRACTICAL QUESTIONS

**2011 - June [3]** (a) M/s Moon light Co. Ltd. fixes the inter-divisional transfer prices for its products on the basis of cost plus an estimated return on investment in its divisions. The relevant particulars of the budget for the division 'X' for the year 2010-11 is given below :

Particulars	Amount (₹)
Fixed Assets	6,00,000
Current Assets (other than Cash at Bank)	3,00,000
Cash at Bank	1,00,000
Yearly fixed cost for the division	9,00,000

Variable cost per unit	10
Budgeted volume of production per year (in units)	5,00,000
Desired return on Investment	30%

You are required to determine the transfer price for Division 'X'. (7 marks)

**Answer :**

Budgeted volume of production per year = 5,00,000 units

Profit margin per unit =  $3,00,000 / 5,00,000 = ₹ 0.60$

Transfer price for Division 'A'

	₹
Variable cost per unit	10.00
Fixed cost per unit ₹ 9,00,000/ ₹ 5,00,000	1.80
Profit margin per unit ₹ 3,00,000/ 5,00,000	<u>0.60</u>
Transfer price per unit	<u>12.40</u>

— Space to write important points for revision —

**2012 - Dec [6]** (a) XYZ Co. Ltd. has two divisions A and B. A sells half of its output on the open market and transfers the rest to Division B. Costs and revenue during 2011 are:

	A (₹)	B (₹)	Total (₹)
Sales	18,000	50,000	68,000
Cost of production in the division	26,000	22,000	<u>48,000</u>
Profit during the period			<u>20,000</u>

There are no opening or closing stocks.

You are required to find out the profit of each division and profit of the company using transfer prices:

- at cost
- at cost plus 20%
- at cost plus 20% but there is over spending in Division A by ₹ 4,000.

(4 + 3 + 3 = 10 marks)

**10.94****Scanner CMA Inter Gr. II Paper 10 A (2016 Syllabus)****Answer:****Statement of Profit of Division A**

Particulars	When transferred at cost (₹)	When transferred at costs + 20%	When transferred at cost + 20% but there is over spending in Division A by ₹ 4,000 (₹)
Sale (Outside)	18,000	18,000	18,000
Transfer sale to Division B	$(26,000 \times \frac{1}{2})$	$(26,000 \times \frac{1}{2} + 20\% \text{ of } 13,000)$	
	13,000	15,600	18,000*
Less: Own Cost	31,000	33,600	36,000
	26,000	26,000	30,000
Profit	5,000	7,600	6,000

\* Cost of Division A + overspending = 26,000 + 4,000 = 30,000

Transfer to Division B (  $\frac{1}{2}$  of 30,000 ) = 15,000

Total transfer cost = Transfer to Division B + 20% of 15,000 = 15,000 + ₹ 3,000 = ₹ 18,000

**Statement of Profit of Division B**

Particulars	When transferred at cost ₹	When transferred at cost + 20%	When transferred at cost + 20% but there is over spending in Division A by ₹ 4,000 (₹)
Sale	50,000	50,000	50,000
Transfer			
Sale to Division A	(13,000)	(15,600)	(18,000)
Own Cost	(22,000)	(22,000)	(22,000)
Profit	15,000	12,400	10,000

**Statement of Total Profit of Company**

Particulars	When transferred at cost ₹	When transferred at cost + 20%	When transferred at cost + 20% but there is over spending in Division A by ₹ 4,000 (₹)
Sale	68,000	68,000	68,000
Less: Total Cost	(48,000)	(48,000)	(52,000)
Profit	20,000	20,000	16,000

— Space to write important points for revision —

**2013 - Dec [3]** (a) GREEN ENVIRON LTD. has two divisions-M and N. Division-M manufactures product A-15 which it sells in outside market as well as to Division-N which processes it to manufacture Z-25. The Manager of Division-N has expressed the opinion that transfer price is too high. The two Divisional Managers are about to enter into discussions to resolve the conflict and Manager of Division-M to supply him with some information prior to discussions.

Division-M has been selling 50000 units to outsiders and 10000 units to Division-N, all at ₹ 25 per unit. It is not anticipated that these demand will change. The variable cost is ₹ 15 per unit and the fixed costs are ₹ 3 lakhs. Divisional investment in assets is ₹ 12 lakhs.

The Manager of Division-M anticipates that Division-N will want a transfer price of ₹ 22. If he does not sell to Division-N, ₹ 40,000 of fixed costs and ₹ 2,00,000 of assets can be avoided. The Manager of Division-M would have no control over the proceeds from the sale of the assets and is judged primarily on his rate of return.

Required:

- Should the Manager of Division-M transfer its products at ₹ 22 to Division-N?
- What is the lowest price that the Division-M should accept?

**(7 + 2 = 9 marks)**

**Answer :**

**Green Environ Ltd.**

**(i) Comparative Profitability Statement of Division M (Figures in ₹)**

Particulars	Alternative Situations		
	Sales at ₹ 25	Transfer at ₹ 22	Do not transfer
Sales Revenue: Market Sales (50,000 units × ₹ 25)	12,50,000	12,50,000	12,50,000
Transfer to Division	2,50,000 (10,000 × 25)	2,20,000 (10,000 × 22)	.....
<b>Total (A)</b>	<b>15,00,000</b>	<b>14,70,000</b>	<b>12,50,000</b>
Variable Cost (at ₹ 15/unit)	9,00,000	9,00,000	7,50,000
Fixed Cost	3,00,000	3,00,000	2,60,000
<b>Total (B) (₹)</b>	<b>12,00,000</b>	<b>12,00,000</b>	<b>10,10,000</b>
Total Profit (A - B) (₹)	3,00,000	2,70,000	2,40,000
Total Assets (₹)	12,00,000	12,00,000	10,00,000
ROI (Percentage)	25%	22.50%	24%

Manager of Division should not transfer the product at ₹ 22/unit to Division N because it is less than its selling price i.e. ₹ 25/unit and will get low rate of return at ₹ 22/unit by 2.5%(25% - 22.50%).

**(ii)** The lowest transfer price acceptable to Division M is one, which maintains its rate of return of 24% (ROI without selling to Division N):

$$= (\text{Total Sales Revenue} - \text{Total Cost}) / \text{Total Assets} = 0.24$$

$$\text{or, } [(\text{₹ } 12,50,000 + 10,000 \times \text{Transfer Price (TP)}) - 12,00,000] \div \text{₹ } 12,00,000 = 0.24$$

$$\text{or, } 10,000 \text{ TP} = 2,88,000 - 50,000 = 2,38,000$$

$$\text{or, (Transfer Price) TP} = 2,38,000 \div 10,000 = 23.80 \text{ i.e. ₹ } 23.80$$

The lowest transfer price acceptable to Division - M is ₹ 23.80 per unit.

— Space to write important points for revision —



**2014 - June [4]** (a) Division-AY of STATUSLINE LTD. is a profit centre which produces four products M, N, O and P. Each product is sold in the external market also. Data for the products are:

	M	N	O	P
Market price per unit (₹)	300	292	280	260
Variable production cost per unit (₹)	260	200	180	170
Labour hours required per unit (hrs.)	3	4	2	3

Product P can be transferred to Division-BZ, but the maximum quantity that may be required for transfer is 2500 units of P.

The maximum sales in the external market are:

M-2800 Units; N-2500 Units; O-2300 Units; and P-1600 Units. Division-BZ can purchase the same product at a price of ₹ 250 per unit from outside instead of receiving transfer of product P from division-AY.

Required:

What should be the transfer price for each unit for 2500 units of P, if the total labour hours available in Division-AY are 20000 hours? **(8 marks)**

**Answer:**

Particulars	M	N	O	P
Market price (₹)	300	292	280	260
Less: Variable cost (₹)	260	200	180	170
Contribution (₹)	40	92	100	90
Labour hours required	3	4	2	3
Contribution per labour hour (₹)	13.33	23	50	30
Priority	IV	III	I	II
Maximum Sales (Units)	2,800	2,500	2,300	1,600

If the capacity is 20,000 hours

Hours required for O	$2,300 \times 2 =$	4,600
P	$1,600 \times 3 =$	4,800
N	$2,500 \times 4 =$	10,000
M	$200 \times 3 =$	600
		<b><u>20,000</u></b>

The existing capacity is not sufficient to produce the units to meet the external sales.

In order to transfer 2500 units of P 7,500 hours are required in which division

M will give up contribution  $600 \times 13.33 = ₹ 8,000$

N will give up contribution  $6,900 \times 23 = ₹ 1,58,700$   
 $₹ 1,66,700$

Total contribution lost = ₹ 1,66,700

∴ Contribution lost / unit =  $1,66,700 / 2,500 = ₹ 66.68$

Variable cost of P = ₹ 170.00

Required transfer price = ₹ **236.68**

— Space to write important points for revision —

**2015 - Dec [2]** Answer the question:

- (c) (i) XYZ Ltd., which has a system of assessment of Divisional Performance on the basis of residual income, has two Divisions, Alfa and Beta. Alfa has annual capacity to manufacture 15,00,000 units of a special component that it sells to outside customers but has idle capacity. The budgeted residual income of Beta is ₹ 1,20,00,000 and that of Alfa is ₹ 1,00,00,000.

Other relevant details extracted from the budget for the current year are as follows:

Particulars of Alfa:

Sale (Outside customers) 12,00,000 units @ ₹ 180 per unit

Variable cost per unit ₹ 160

Divisional fixed cost ₹ 80,00,000

Capital employed ₹ 7,50,00,000

Cost of Capital 12%

Beta has received a special order for which it requires components similar to the ones made by Alfa. Fully aware of the idle capacity of Alfa, Beta has asked Alfa to quote for manufacture and supply of 3,00,000 units of the components with a slight modification during final processing. Alfa and Beta agreed that this will involve an extra variable cost to Alfa amounting to ₹ 5 per unit.

- I. Calculate the transfer price, which Alfa should quote to Beta to achieve its budgeted residual income. **(6 marks)**
- II. If Beta can buy the required components from open market at a price of ₹ 180 (situation A), ₹ 172 (situation B) or ₹ 160 (situation C), what should be its autonomous decision: buying from market at market price or buying from Alfa at the transfer price, in each of the situations? Also state with reason in what situation the decision of Beta may result in a sub-optimal decision for the company as a whole. **(6 marks)**

**Answer:**

**I. Contribution required for budgeted Residual Income of Alfa:**

	₹
Fixed Cost	80,00,000
Capital Charge on 7,50,00,000 × 12%	90,00,000
Residual Income	1,00,00,000
Total Contribution required	2,70,00,000

	₹	₹
Contribution required from existing units	$12,00,000 \times 20$	2,40,00,000
Contribution required on 300000 units	$2,70,00,000 - 2,40,00,000$	30,00,000
Required contribution per unit	$30,00,000 / 3,00,000$	10
Variable cost per unit (existing)		160
Increase in variable cost per unit		5
Transfer Price per unit	$10 + 160 + 5$	175

**II. Statement showing optimality of autonomous decision of Beta**

Situations	A	B	C
Market price per unit	180	172	160
Transfer price	175	175	175
Beta's decision (lower of the two prices)	Buy from Alfa	Buy from market	Buy from market
Cost to company for divisional transfer (variable cost only)	165	165	165
Cost to company for buying from market	180	172	160
Minimum cost decision for the company	Buy from Alfa (165<180)	Buy from Alfa (165<172)	Buy from market (160 < 165)
Optimality of Decision of Beta	Optimal	Sub-optimal (as for buying from market company suffers extra cost of ₹ 7)	Optimal

———— Space to write important points for revision ————

**2016 - Dec [1]** (b) Material costs, labour costs and variable overhead costs and ₹ 125, ₹ 150 and ₹ 50 per unit respectively. If the fixed expenses for 20000 units are ₹ 6,40,000 and required rate of return is 25% on transfer price, then find out the transfer price per unit. **(2 marks)**

**Answer:**

Particulars	₹
Per unit variable cost (125 + 150 + 50)	325
Add: Fixed expenses per unit (₹ 6,40,000/20,000)	32
Total cost per unit	357

Adding Desired return 25% on transfer price (1/3 of cost) =  $357 \times \frac{4}{3} = 476$ .

—— Space to write important points for revision ——

**2017 - June [4]** (b) A company has two divisions, manufacturing and assembly. At a normal volume of 2,50,000 units of component YPY per year, production costs per unit are:

	₹
Direct materials	40
Direct labour	20
Variable factory overhead	12
Fixed factory overhead	42
Total	<u>₹ 114</u>

The manufacturing division has been manufacturing and selling 2,50,000 components per year to outside buyers for ₹ 136 each. However, the division can manufacture 3,50,000 components per year. The assembly division has been buying the components from outside suppliers for ₹ 130 each. The assembly division has offered to purchase 90,000 units of component YPY from the manufacturing division at the rate of ₹ 104 per unit. Should the manager of Electrical Division accept the offer? Will an internal transfer be of any benefit to the company? **(6 marks)**

**Answer:**

There is surplus capacity in manufacturing division. So, the relevant cost for production will be variable cost only amounting to ₹ 72 per unit (40 + 20 + 12). This will result in a profit of ₹ 28,80,000  $[(104 - 72) \times 90,000]$ .

Therefore, manufacturing division should accept the offer.

Internal transfer will be beneficial to the company. The company is paying ₹ 130 for the component which can be made internally at an incremental cost of ₹ 72. The company will save ₹ 52,20,000.  $[(130 - 72) \times 90,000]$ .

— Space to write important points for revision —

**2017 - Dec [4]** (a) A manufacturing company has two divisions — X and Y. Division X is mainly engaged in production of an electronic device and Division Y packs and labels the product and sells it in the market. Division X supplies 25,000 units of the product per month to Y for packaging and labelling. Division X incurs ₹ 16 as the variable cost for the product and fixed cost of ₹ 8,40,000 per year. Investment in fixed assets is ₹ 9,60,000. The division plans to have 12% return on fixed assets as normal profits. Division Y incurs ₹ 10 per product as variable expenses for packaging and marketing.

- (i) Find the Transfer Price per unit of the product that Division X can charge for transfer to Y.
- (ii) What will be profit of Division Y if it can sell all the products in the market at ₹ 80 per unit?
- (iii) If Division Y can sell only 15,000 units of the product per month and asks Division X to supply only 15,000 units, what will be the effect on the Transfer Price and the profits of the divisions? **(7 marks)**

**Answer:**

- (i) **Computation of Transfer Price:**

To be charged by 'X' to 'Y'

	₹	or	₹
Variable Cost per Unit	16.00		16.00
Fixed Cost per Unit (8,40,000/3,00,000)	2.80		2.80
Return per Unit (9,60,000 × 12%)/3,00,000	0.384		4.608
	19.184		23.408

- (ii) **Computation of Profit of Division 'Y'**

Transfer Price	19.184	23.408
Variable Cost	10.000	10.000
	<b>29.184</b>	<b>33.408</b>

Contribution and Profit per Unit	= (80-29.184)	(80-33.480)
	= <b>50.816</b>	= <b>46.592</b>
Monthly Profit	= 25,000 × 50.816	= 25,000 × 46.592
	= ₹ 12,70,400	= 11,64,800
and		
Yearly Profit	= 3,00,000 × 50.816	= 3,00,000 × 46.592
	= ₹ 1,52,44,800	= 1,39,77,600

(iii) **Transfer Price:**

Variable Cost per Unit	16.00	16.00
Fixed Cost per Unit (8,40,000/ 1,80,000)	4.67	4.67
Return per Unit (9,60,000 × 12%)/ 1,80,000	0.64	7.68
	21.31	28.35
Variable Cost for Packaging and Marketing	10.00	10.00
	31.31	38.35
Contribution and Profit per Unit	48.69	41.65
	(80.00 – 31.31)	(80.00 – 38.35)

**Note:** Suitable assumptions are expected from students in case of 2<sup>nd</sup> alternative where return/unit is ₹ 4.608 or ₹ 7.68 as the case may be. In case of suitable assumptions with correct working, full marks are given. Otherwise, stepwise marking is given with justification.

———— Space to write important points for revision —————

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<b>Repeatedly Asked Questions</b>		
<b>No.</b>	<b>Question</b>	<b>Frequency</b>
<b>1</b>	Write short note on 'Limitations of market-based transfer pricing'. 09 - June [8] (b), 11 - Dec [8] (a)	2 Times



# 3

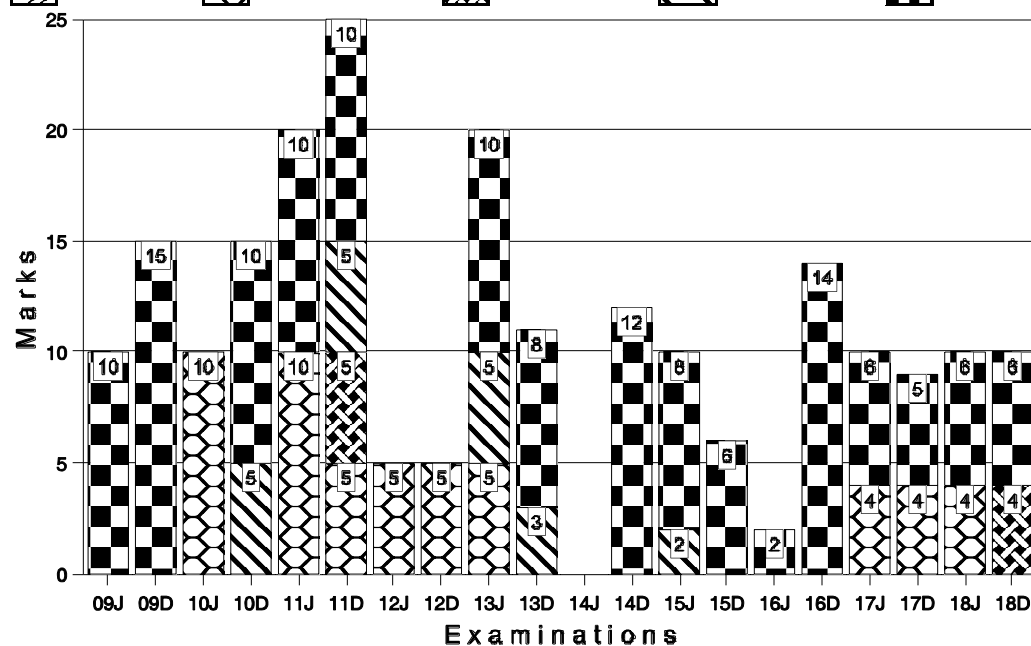
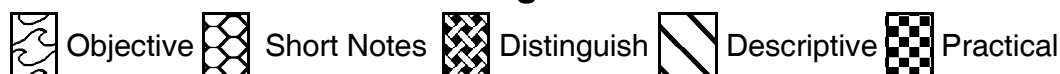
## BUDGETING & BUDGETARY CONTROL

### THIS CHAPTER INCLUDES

- Budgetary Control
- Functional Budget
- Fixed or Rigid Budget
- Flexible Budget
- Principal Budget Factor
- Responsibility Accounting
- Zero Based Budgeting (ZBB)

Marks of objective, Short Notes, Distinguish Between, Descriptive & Practical Questions

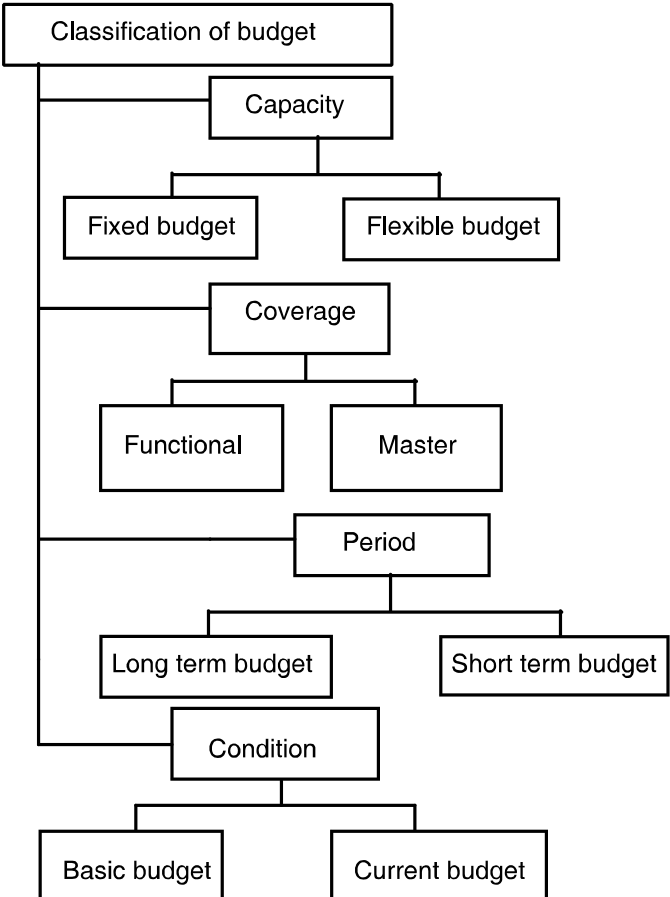
### Legend



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for registration and password see first page of this book.

## CHAPTER AT A GLANCE

Topic	Important Highlights
<b>3.1 Budget</b>	CIMA defines budget as “a financial and or quantitative statement, prepared prior to a defined period of time, of the policy to be pursued during that period for the purpose of attaining a given objective. It may include income, expenditure and employment of capital”.
<b>3.2 Budgetary control</b>	CIMA states that “Budgetary control is the establishment of budget relating to the responsibilities of executives of a policy and the continuous comparison of the actual with the budgeted result, either to secure by individual action the objective of the policy or to provide a basis for its revision”.
<b>3.2a Objectives</b>	<ul style="list-style-type: none"> <li>→ It helps in determination of targets of performance.</li> <li>→ It provides detailed plan of action.</li> <li>→ It brings coordination among managers.</li> <li>→ Setting up of responsibilities of managers.</li> <li>→ It provides a basis of comparison.</li> <li>→ Best use of resource to maximize profits.</li> <li>→ It helps in analysis of variances.</li> <li>→ Basis for revision of policies.</li> </ul>
<b>3.2b Advantages</b>	<ul style="list-style-type: none"> <li>→ Business activities are performed in an efficient manner.</li> <li>→ It coordinates the activities of different departments.</li> <li>→ Increase production efficiency.</li> <li>→ Provides a yardstick against which results can be compared.</li> <li>→ It reveals deviation.</li> <li>→ It helps in effective utilization of resources.</li> <li>→ It creates suitable condition for implementation of standard costing.</li> <li>→ Creates cost consciousness among workers.</li> </ul>

<b>3.2c Limitations</b>	<ul style="list-style-type: none"> <li>→ It is based on estimates</li> <li>→ It has a danger of rigidity.</li> <li>→ It cannot be executed automatically.</li> <li>→ Staff cooperation is usually not available.</li> <li>→ It is an expensive technique.</li> </ul>
<b>3.3 Functional budget</b>	<ol style="list-style-type: none"> <li>1. Physical Budget</li> <li>2. Cost Budget</li> <li>3. Profit Budgets</li> <li>4. Financial Budget</li> </ol>
<b>3.4 Classification of budget</b>	 <pre> graph TD     A[Classification of budget] --&gt; B[Capacity]     A --&gt; C[Coverage]     A --&gt; D[Period]     A --&gt; E[Condition]     B --&gt; F[Fixed budget]     B --&gt; G[Flexible budget]     C --&gt; H[Functional]     C --&gt; I[Master]     D --&gt; J[Long term budget]     D --&gt; K[Short term budget]     E --&gt; L[Basic budget]     E --&gt; M[Current budget]         </pre>

3.5 Preparation of Budgets	<div>1. Defining objectives of budget</div> <div>2. Setting up of location of key factors</div> <div>3. Appointment of controller</div> <div>4. Selection of budget period</div> <div>5. Standardization of output</div>	
3.6 Fixed budget VS Flexible budget	<div>Types of Budgets</div> <div><div>Fixed budget</div><div>Designed to remain unchanged irrespective of the level of activity attained.</div></div> <div><div>Flexible budget</div><div>Designed to change in relation to the level of activity attained.</div></div>	
3.7 Budgeting and standard costing		
Basis of difference	Budgeting	Standard costing
1. Scope	Compiled for different functions of the business such as sales, purchase, production, research & development.	Developed mainly for manufacturing function and sometimes also for marketing and administration function.
2. Relation to accounts	Variances are not revealed from accounts.	Variances are revealed from accounts.
3. Usefulness	Represents upper limit spending without considering the effectiveness of expenditure in terms of output.	Represents realistic yardstick hence, are more useful for controlling and reducing costs.
4. Projections	Projections of financial accounts.	Projections of cost accounts.

### 3.8 Budgeting and forecasting

Basis of difference	Budgeting	Forecasting
1. Relation to events.	Relates to planned events.	Related to probable events.
2. Authorization of management	Can be prepared only if authorized by management.	Can be prepared by anybody.
3. Pre-requisite	Budgeting is not a pre-requisite for forecasting.	Forecasting is pre-requisite of budgeting.
4. Related activities	Economic activities of business, enterprises, government and others.	Economic as well as non-economic activities.
5. Say	Usually for a short period say 1 year.	Usually for longer period, say more than 1 year.

### SHORT NOTES

**2008 - Dec [8]** Write a short note on the following :

(e) Flexible Budgeting.

**(5 marks)**

**Answer :**

According to CIMA “A flexible budget is a budget which, by recognizing different cost behaviour patterns, is designed to change as volume of output changes.” It is designed to change in relation to the level of activity actually attained. It is considered as realistic budget since this provides room for change in output. The prerequisite for flexible budget is separation of fixed and variable costs. It helps both in profit planning and operating cost control. A flexible budget constitutes a series of fixed budget i.e. one fixed budget for each level of activity. In depth cost analysis and cost identification is required for preparation of flexible budget. This cost analysis and cost identification will involve categorizing the expenses as fixed, variable and semi-variable. Fixed expenditure will remain same for all level of activity.

— Space to write important points for revision —

**2010 - June [8]** Write a short notes on the following:

(c) Zero-Base Budgeting;

**(5 marks)**

(e) Budget Manual;

**(5 marks)**

**Answer :**

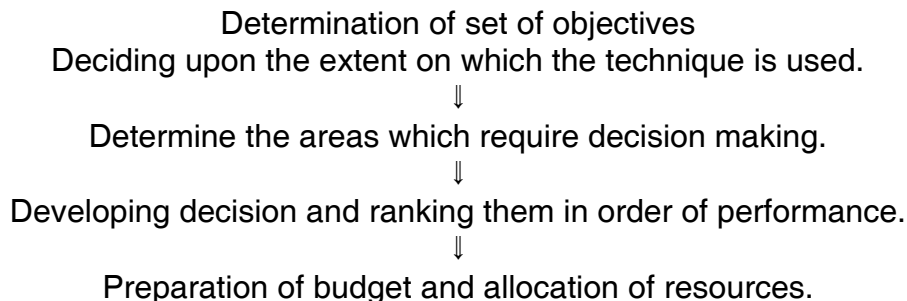
**(c) ZERO BASE BUDGETS (ZBB)**

ZBB was introduced by Peter Pnyrs in 1969 who defined it as “a planning and budgeting process which requires each manager to justify his entire budget request in detail from scratch (hence zero base). Each manager states why he should append any money at all. This approach requires that all activities be identified as decision packages which will be evaluated by systematic analysis ranked in order of importance”. According to CIMA London, ZBB is defined as “a method of budgeting whereby all activities are revalued each time a budget is set”. Discrete levels activity are valued and combination chosen to match funds available.

**Features of ZBB**

1. All budget items old or new are considered afresh.
2. Amount spent on each budget is totally justified.
3. Departmental objectives are linked to corporate goals.
4. Cost benefit analysis of each budget is undertaken.
5. Managers at all level participate in ZBB.

**Process of ZBB**



**Answer :**

**(e)** A Budget Manual is a document which sets out the responsibilities of the persons engaged in the process of budgetary control. The Budget Manual thus is a schedule documents or booklet, which contains different forms to be used, procedures to be followed, budgeting

organisation details, and set of instructions to be followed in the budgeting system. It also list out details of the responsibilities of different persons and the managers involved in the process. A typical Budget Manual contains the following :

- (i) Objectives and Managerial policies of the business concern.
- (ii) Internal lines of authorities and responsibilities.
- (iii) Functions of the Budget Committee, including the role of Budget officer.

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**2011 - June [8]** Write short notes on the following :

- (b) Budgetary Control, **(5 marks)**
- (d) Material Purchase Budget, **(5 marks)**

**Answer :**

- (b) Budgetary control:** It is a system and a technique which uses budget as a means of controlling all aspects of the business. CIMA states that “Budgetary control is the establishment of budget relating to the responsibilities of executives of a policy and the continuous comparison of the actual with the budgeted result, either to secure by individual action the objective of the policy or to provide a basis for its revision”.

**Purpose**

The purpose of budgetary control is to aid in systematic planning and control of business operations from period to period.

**Objectives**

- It helps in determination of targets of performance.
- It provides detailed plan of action.
- It brings coordination among managers.
- Setting up of responsibilities of managers.
- It provides a basis of comparison.
- Best use of resource to maximize profits.
- It helps in analysis of variances.
- Basis for revision of policies.

**Answer :**

**(d) Material Purchase Budget:** Material Purchase Budget tells about the materials to be acquired from the market during the budget period. Materials to be acquired are estimated after taking into account the closing inventory and the opening inventory of the materials for which orders have already been placed.

This budget is prepared in quantity as well as in monetary terms and helps in planning of the purchases of raw materials.

Availability of storage ,space, financial resources , various levels of raw materials like maximum level, minimum level, reorder level etc. are taken in to consideration while preparing material purchase budget.

— Space to write important points for revision —

**2011 - Dec [8]** Write a short note on the following:

(d) Principal Budget Factor

**(5 marks)**

**Answer :**

**Principal budget factors:** Principal budget factor is also known as key factor or limiting factor or governing factor.

A principal budget factor is a factor which at a particular time, or over a period, will limit the activities of an undertaking.

Principal budget factor is defined as “the factor, the extent of whose influence must first be assessed in order to exercise that the functional budget is reasonably capable of fulfillment”.

**Examples of key factors:**

**(a) Sales:**

- (i) Depression in demand,
- (ii) High price of product,
- (iii) Shortage of efficient salesman,
- (iv) Tough competition,
- (v) Strict credit terms,
- (vi) Poor customer service - failing in delivery promise, inadequate stock due to warehousing problems, failing in quick service etc.
- (vii) Poor advertising,
- (viii) Poor quality product etc.



**(b) Production :**

- (i) Shortage of capacity or unbalanced capacity between processing departments,
- (ii) Lack of proper production planning,
- (iii) Power or gas or steam shortage,
- (iv) Lack of proper maintenance resulting in frequent break-down of machines,
- (v) Lack of proper supervision and/or technical staff,
- (vi) Bottleneck in key process etc.

**(c) Raw materials**

- (i) Shortage due to non availability,
- (ii) Shortage due to import restriction, rationing through quotas,

**(d) Labour**

- (i) Shortage of particular skill,
- (ii) High absenteeism,
- (iii) Absence of incentive scheme.

**(e) Working capital**

- (i) Inadequacy of funds,
- (ii) Liberal credit policy,
- (iii) Inefficient management of funds.

The limiting factor is normally temporary in nature and is constant at a particular point of time. In long run they can be overcome by proper planning and management actions.

—— Space to write important points for revision ———

**2012 - June [8]** Write a short note on the following :

(c) Zero-Base Budgeting;

**(5 marks)**

**Answer :**

***Please refer 2010 - June [8] (c) on page no. 110***

—— Space to write important points for revision ———

**2012 - Dec [8]** Write a short note on the following:

(a) Benefits of Budgeting.

**(5 marks)**

**Answer:**

**Budgeting:** It is the process of designing, implementing and operating budgets. It is usually concerned with provision of resource to support plans which are being implemented.

**Benefit of Budgeting:**

1. Business activities are performed in an efficient manner.
2. It establishes divisional and departmental responsibility.
3. It coordinates the activities of different departments.
4. It ensures that proper planning is done in advance so that long term goals can be achieved.
5. It provides a yardstick against which result can be compared.
6. It is an effective means for planning and thus ensures sufficient availability of working capital and other resources.
7. As resources are directed to the most productive use, budgeting helps in reducing the wastages and losses.
8. It guards against undue optimism leading to over expansion because the targets are fixed by the executives after cool and careful thought.
9. It helps in effective utilization of resources.
10. It helps management in planning, co-ordination and control. It also helps to check and evaluate the performance of each department.

—— Space to write important points for revision ———

**2013 - June [8]** Answer the following:

(c) Write short note on 'flexible budget'.

**(5 marks)**

**Answer :**

***Please refer 2008 - Dec. [8] (e) on page no. 109***

—— Space to write important points for revision ———

**2017 - June [5]** Write short note on the following:

(c) Principal Budget Factor

**(4 marks)**

**Answer:**

**Principal budget factors:** Principal budget factor is also known as key factor or limiting factor or governing factor.

A principal budget factor is a factor which at a particular time, or over a period, will limit the activities of an undertaking.

Principal budget factor is defined as “the factor, the extent of whose influence must first be assessed in order to exercise that the functional budget is reasonably capable of fulfillment”.

**Examples of key factors:**

**(a) Sales:**

- (i) Depression in demand,
- (ii) High price of product,
- (iii) Shortage of efficient salesman,
- (iv) Tough competition,
- (v) Strict credit terms,
- (vi) Poor customer service - failing in delivery promise, inadequate stock due to warehousing problems, failing in quick service etc.
- (vii) Poor advertising,
- (viii) Poor quality product etc.

**(b) Production :**

- (i) Shortage of capacity or unbalanced capacity between processing departments,
- (ii) Lack of proper production planning,
- (iii) Power or gas or steam shortage,
- (iv) Lack of proper maintenance resulting in frequent break-down of machines,
- (v) Lack of proper supervision and/or technical staff,
- (vi) Bottleneck in key process etc.

**(c) Raw materials**

- (i) Shortage due to non availability,
- (ii) Shortage due to import restriction, rationing through quotas,

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(d) **Labour**

- (i) Shortage of particular skill,
- (ii) High absenteeism,
- (iii) Absence of incentive scheme.

(e) **Working capital**

- (i) Inadequacy of funds,
- (ii) Liberal credit policy,
- (iii) Inefficient management of funds.

The limiting factor is normally temporary in nature and is constant at a particular point of time. In long run they can be overcome by proper planning and management actions.

—— Space to write important points for revision ———

**2017 - Dec [5]** Write short note on the following:

(c) Zero Based Budgeting

**(4 marks)**

**Answer:**

***Please refer 2010 - June [8] (c) on page no. 110***

—— Space to write important points for revision ———

**2018 - June [5]** Write short note on the following:

(b) Performance Budgeting

**(4 marks)**

**Answer:**

***Please refer 2013 - Dec. [4] (c) on page no. 120***

—— Space to write important points for revision ———

**DISTINGUISH BETWEEN**

**2011 - Dec [3]** (b) State the difference between Forecast and Budget.

**(5 marks)**

**Answer :**

**Difference between forecast and budget**

<b>Basis of difference</b>	<b>Budgeting</b>	<b>Forecasting</b>
<b>Meaning</b>	A budget is a detailed plan of operation for some specific period	It is merely an estimate which is likely to happen. It is a statement of probable event which are likely to happen under anticipated condition during a specified period of time.
<b>Relation to events</b>	Relates to planned events.	Related to probable events.
<b>Authorization of management</b>	Can be prepared only if authorized by management.	Can be prepared by anybody.
<b>Pre-requisite</b>	Budgeting is not a pre-requisite for forecasting.	Forecasting is pre-requisite of budgeting.
<b>Related activities</b>	Economic activities of business, enterprises, government and others.	Economic as well as non-economic activities.
<b>Control</b>	It is a tool of control since it represents action which can be shaped according to will so that it can be suited to the condition which may or may not happen	It being statements of future events, do not connote any sense of control.

— Space to write important points for revision —

**2018 - Dec [5]** (iv) Difference between Fixed and Flexible Budget (Any four points) **(4 marks)**

**DESCRIPTIVE QUESTIONS**

**2010 - Dec [3]** (b) What is Zero Base Budgeting? State briefly its benefits.  
(5 marks)

**Answer :**

***Please refer 2010 - June [8] (c) on page no. 110***

— Space to write important points for revision —

**2011 - Dec [5]** (a) Budgets are classified according to Time. State how they are classified.  
(5 marks)

**Answer :**

**Budgets are divided in the following categories according to time :**

- (i) **Short Term Budget:** Any budget that is prepared for a period upto one year generally is known as Short Term Budget. Functional budgets are normally prepared for a period of one year.
- (ii) **Medium Term Budget:** Budget prepared for a period of 1-3 years is Medium Term Budget. Budget like manpower planning are prepared for Medium Term.
- (iii) **Long Term Budget:** Any Budget exceeding 3 years is known as Long Term Budgets. Master Budget is normally prepared for Long Term. In the modern days due to uncertainty, very few budgets are prepared for Long Term.

— Space to write important points for revision —

**2013 - June [8]** Answer the following:

(a) What is a principal budget factor? How is it important? List four such factors.  
(5 marks)

**Answer :**

**Principal budget factors:** Principal budget factor is also known as key factor or limiting factor or governing factor. A principal budget factor is a factor which at a particular time, or over a period, will limit the activities of an undertaking. The factor may vary from business to business or even from year to year for the same business.

It is defined as “the factor, the extent of whose influence must first be assessed in order to exercise that the functional budget are reasonably capable of fulfillment”.

**Importance of budget factor:**

- ▶ The early identification of this factor is important in the budgetary planning process because it indicates which budget should be prepared first.
- ▶ Failure to identify the principal budget factor at an early stage could lead to delays later on when managers realize that the targets they have been working with are not feasible.

**Examples of key factors:**

**(a) Sales:**

- (i) Depression in demand,
- (ii) High price of product,
- (iii) Shortage of efficient salesman,
- (iv) Tough competition,
- (v) Strict credit terms,
- (vi) Poor customer service - failing in delivery promise, inadequate stock due to warehousing problems, failing in quick service etc.,
- (vii) Poor advertising,
- (viii) Poor quality product etc.

**(b) Production:**

- (i) Shortage of capacity or unbalanced capacity between processing departments,
- (ii) Lack of proper production planning,
- (iii) Power or gas or steam shortage,
- (iv) Lack of proper maintenance resulting in frequent break-down of machines,
- (v) Lack of proper supervision and/or technical staff,
- (vi) Bottleneck in key process etc.

**(c) Raw materials**

- (i) Shortage due to non availability,
- (ii) Shortage due to import restriction, rationing through quotas,

**(d) Labour**

- (i) Shortage of particular skill,
- (ii) High absenteeism,
- (iii) Absence of incentive scheme.

**(e) Working capital**

- (i) Inadequacy of funds,
- (ii) Liberal credit policy,
- (iii) Inefficient management of funds.

— Space to write important points for revision —

**2013 - Dec [4]** (c) Explain the concept of Performance Budgeting.

**(3 marks)**

**Answer :**

**Performance Budgeting:** Performance budgeting may be described as a budgetary system where the input costs are related to the performance i.e. the end results. Performance budgeting is therefore, looked upon as a budget based on functions, activities and projects and linked to the budgetary system on objective, classification of expenditure.

**Performance budgeting in terms of responsibility accounting is as follows:** Responsibility accounting usually involves the preparation of annual and monthly budgets for each responsibility center. Then the company's actual transactions are classified by responsibility center and a monthly report is prepared. The reports will present the actual amounts for each budget line item and the variance between the budget and actual amounts. Responsibility accounting allows the company and each manager of a responsibility center to receive monthly feedback on the manager's performance.

- (i) Role of different managerial level in achieving the specified objectives are clearly demarcated and financial rules and accounting system are modified to implement the defined activities more effectively.
- (ii) It is based on a classification of managerial level for the purpose of establishing a budget for each level. The official in charge of that level should be made responsible and accountable for its performance for a given period of time.



- (iii) The starting point of the performance budgeting system rests with the organisation chart in which the areas of jurisdiction have been determined. Authority leads to the responsibility for certain cost & expenses which are reflected in the budget with the knowledge of the manager concerned.
- (iv) Each department's budget should be limited to the cost controllable by them.
- (v) The person concerned should have the authority to bear the responsibility.

**2015 - June [2]** (c) (ii) What do you mean by "Flexible Budgeting"?

**(2 marks)**

**Answer:**

***Please refer 2008 - Dec. [8] (e) on page no. 109***

—— Space to write important points for revision ———

## **PRACTICAL QUESTIONS**

**2008 - Dec [6]** (a) The following are the estimated sales of a company for eight months ending 30.11.2007.

Month	Estimated Sales (Units)
April 2007	12,000
May 2007	13,000
June 2007	9,000
July 2007	8,000
August 2007	10,000
September 2007	12,000
October 2007	14,000
November 2007	12,000

As a matter of policy, the company maintains the closing balance of finished goods and raw materials as follows :

Stock item	Closing balance of a month
Finished goods	50% of the estimated sales for the next month
Raw materials	Estimated consumption for the next month.

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Every unit of production requires 2 kg of raw material costing ₹ 5 per kg.  
 Prepare Production Budget (in units) and Raw Material Purchase Budget (in units and cost) of the company for the half year ending 30 September 2007.

**(10 marks)****Answer :**

(i) Production budget (in units) for half year ending 30th September, 2007

Months	Sales (in Units)	Closing balance 50% of the estimated Sales for the next month	Opening balance (for the month)	Production
April	12,000	6,500	6,000	12,500
May	13,000	4,500	6,500	11,000
June	9,000	4,000	4,500	8,500
July	8,000	5,000	4,000	9,000
Aug	10,000	6,000	5,000	11,000
September	<u>12,000</u>	7,000	6,000	<u>13,000</u>
<b>Total Sales</b>	<b>64,000</b>		<b>Total Production</b>	<b>65,000</b>

(ii) Purchase budget (in costs &amp; units) for half year period ending 30th September, 2007

Months	Consumption @ 2 kg. per unit (kgs.) (1)	Closing balance (2)	Opening Balance (3)	Purchase (in kg.) (4) = (1) + (2) - (3)	Rate ₹ (5)	Amount ₹ (6)
April	25,000	22,000	25,000	22,000	5	1,10,000
May	22,000	17,000	22,000	17,000	5	85,000
June	17,000	18,000	17,000	18,000	5	90,000
July	18,000	22,000	18,000	22,000	5	1,10,000
Aug	22,000	26,000	22,000	26,000	5	1,30,000
Sept	<u>26,000</u>	26,000	26,000	26,000	5	<u>1,30,000</u>
	<b>1,30,000</b>					<b>6,55,000</b>

**Notes:**

1. It should be kept in view that consumption and purchase of raw materials are two different aspects. Raw materials, as per policy of the company, are purchased one month before for the whole consumption of the next month but these are consumed subsequently to meet the sales target.
2. Closing balance of raw materials is kept relating to consumption for the next month. In April, consumption is  $12,500 \times 2 = 25,000$  kgs. as per table given above. For this reason, it is presumed that closing balance of raw materials relating to March, 1999 is 25,000 kgs.
3. In April, production will include:
  - (a) Completing the finished goods, this is already 50% complete.
  - (b) Getting the finished goods ready for closing stock equal to 50% of the estimated sales for the next month.

— Space to write important points for revision —

**2009 - June [6]** (a) The following information relates to the production activities of Good Wish Ltd. for 3 months ending on 31st December, 2006:

Particulars	Amount in Rupees
Fixed Expenses:	
Management Salaries	2,10,000
Rent and Taxes	1,40,000
Depreciation of Machinery	1,75,000
Sundry Office Expenses	2,22,000
Total Fixed Expenses	7,47,000
Semi-Variable Expenses at 50% capacity	
Plant Maintenance	62,500
Labour	2,47,000
Salesmen's salaries	72,500
Sundry Expenses	65,000
Total Semi-Variable Expenses	4,47,000
Variable Expenses at 50% capacity	
Materials	6,00,000

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Labour	6,40,000
Salesmen's commission	95,000
Total Variable Expenses	13,35,000

It is further noted that semi- variable expenses remain constant between 40% and 70% capacity, increase by 10% of the above figures between 70% and 85% capacity and increase by 15% of the above fig. between 85% and 100% capacity. Fixed expenses remain constant whatever the level of activity. Sales at 60% capacity are ₹ 25,50,000, at 80% capacity ₹ 34,00,000 and at 100% capacity ₹ 42,50,000. All items produced are sold. Prepare a flexible budget at 60%, 80% and 100% productive capacity. **(10 marks)**

**Answer :**

**Good Wish Ltd.**

**Flexible Budget for three months ending 31<sup>st</sup> December, 2006**

**(Amount in ₹)**

Particulars	60% Capacity Level	80% Capacity Level	100% Capacity Level
Sales	25,50,000	34,00,000	42,50,000
<b>(A) Variable Expenses:</b>			
Material	7,20,000	9,60,000	12,00,000
Labour	7,68,000	10,24,000	12,80,000
Salesmen's Commission	1,14,000	1,52,000	1,90,000
<b>Total (A)</b>	16,02,000	21,36,000	26,70,000
<b>(B) Semi Variable Expenses:</b>			
Plant Maintenance	62,500	68,750	71,875
Indirect Labour	2,47,000	2,71,700	2,84,050
Salesmen's Salaries	72,500	79,750	83,375
Sundry Expenses	65,000	71,500	74,750
<b>Total (B) + (A)</b>	20,49,000	26,27,700	31,84,050

<b>(C) Fixed Expenses:</b>			
Management Salaries	2,10,000	2,10,000	2,10,000
Rent and Taxes	1,40,000	1,40,000	1,40,000
Depreciation on:			
Machinery	1,75,000	1,75,000	1,75,000
Sundry Office Expenses	<u>2,22,000</u>	<u>2,22,000</u>	<u>2,22,000</u>
Total (C)	<u>7,47,000</u>	<u>7,47,000</u>	<u>7,47,000</u>
<b>Total Costs (A + B + C)</b>	<b>27,96,000</b>	<b>33,74,700</b>	<b>39,31,050</b>
<b>Profit (Loss)</b>	<b>(2,46,000)</b>	<b>25,300</b>	<b>3,18,950</b>

— Space to write important points for revision —

**2009 - Dec [7]** ABC Ltd. has prepared a flexible budget for the coming quarter. The following information is provided from the same :

Production Capacity	40%	60%	80%	100%
Costs	₹	₹	₹	₹
Direct Labour	16,000	24,000	32,000	40,000
Direct Material	12,000	18,000	24,000	30,000
Production Overheads	11,400	12,600	13,800	15,000
Administrative Overheads	5,800	6,200	6,600	7,000
Selling and Distribution				
Overheads	<u>6,200</u>	<u>6,800</u>	<u>7,400</u>	<u>8,000</u>
	<u>51,400</u>	<u>67,600</u>	<u>83,800</u>	<u>1,00,000</u>

However, due to recession the company will have to operate at 50% capacity in the coming quarter. Selling prices have to be lowered to an uneconomic level and expected sales revenue for the coming quarter will be ₹ 49,500/-. But it is projected that in the next quarter following the coming quarter, the concern will operate at 75% capacity and generate a sales revenue of ₹ 90,000.

The Management is considering a suggestion to keep the operation suspended in the coming quarter and restart operation from the quarter when it is expecting to operate at 75% capacity. If the operation is suspended in the next quarter it is estimated that :

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- (a) The present fixed cost for the quarter would be reduced to ₹ 11,000.  
 (b) There will be cost of ₹ 7,500 for closing down operations.  
 (c) There would be additional maintenance cost of ₹ 1,000 for quarter.  
 (d) There would be an one time cost of ₹ 4,000 in re-opening the plant.  
 You are required to advise whether the factory should be kept operational during the coming quarter and also what will be the profit at 75% capacity utilization level. **(15 marks)**

**Answer :**

	(percentage capacity levels)		
	0 % ₹	50 % ₹	75% ₹
<b>A Sales</b>	NIL	49,500	90,000
<b>B. Costs:</b>			
Variable Costs	Nil	40,500	60,750
Fixed Costs	11,000	19,000	19,000
<b>Special shut-down costs :</b>			
- Closing down operation ₹ 7,500			
- Maintenance cost ₹ 1,000			
- Re-opening cost ₹ 4,000	12,500		
Total Costs			
	23,500	59,500	79,750
<b>C. Profit (Loss) [A-B]</b>	(23,500)	(10,000)	10,250

**Working Notes:**

$$1. \text{ Production Overhead} = \frac{\text{Change in costs}}{\text{Change in capacity level}}$$

$$\text{Variable costs for 1\% capacity level} = \frac{12,600 - 11,400}{60 - 40} = ₹ 60$$

$$\text{Total Variable cost @40\%} = ₹ 60 \times 40\% = ₹ 2,400$$

$$\text{Fixed costs} = 11,400 - 2,400 = ₹ 9,000$$

## 2. Administration Overhead

$$\text{Variable costs for 1\% capacity level} = \frac{6,200 - 5,800}{60 - 40} = ₹ 20$$

$$\text{Total Variable cost @40\%} = ₹ 20 \times 40\% = ₹ 800$$

$$\text{Fixed costs} = 5,800 - 800 = ₹ 5,000$$

## 3. Selling & distribution costs

$$\text{Variable costs for 1\% capacity level} = \frac{6,800 - 6,200}{60\% - 40\%} = ₹ 30$$

$$\text{Total Variable cost @40\%} = ₹ 30 \times 40\% = ₹ 1,200$$

$$\text{Fixed costs} = 6,200 - 1,200 = ₹ 5,000$$

$$\text{Total Fixed cost} = ₹ 19,000$$

— Space to write important points for revision —

**2010 - Dec [3]** (a) From the following forecast of income and expenditure prepare a Cash Budget for the three months ending on June, 2008:

Month	Sales ₹	Purchase ₹	Wages ₹	Misc. ₹
2008, February	1,20,000	84,000	10,000	7,000
March	1,30,000	1,00,000	12,000	8,000
April	80,000	1,04,000	8,000	6,000
May	1,16,000	1,06,000	10,000	12,000
June	88,000	80,000	8,000	6,000

### Additional Information:

- Sales: 20% realised in the month of sales, discount allowed 2%, balance realised equally in two subsequent months.
- Purchases: These are paid in the month following the month of supply.
- Wages: 25% paid in arrears following month.
- Misc: Expenses: Paid a month in arrears.
- Rent: ₹1,000 per month paid quarterly in advance due in April.
- Income Tax: First instalment of advance tax ₹ 25,000 due on or before 15<sup>th</sup> June to be paid within the month.
- Income from Investment: ₹ 5,000 received quarterly in April, July etc.
- Cash in Hand: ₹ 5,000 in April 1, 2008. **(5 + 5 = 10 marks)**

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**Answer :****Cash budget for the month of April, May and June 2008**

Particulars	April (₹)	May (₹)	June (₹)
Opening Balance	5000	5680	(-)7,084
Cash receipt:			
Collection for debtors	1,15,680	1,06,736	95,648
Income from investments	5,000	—	—
	1,25,680	1,12,416	88,564
Cash Payment:			
Payment to supplier	1,00,000	1,04,000	1,06,000
Wages	9,000	9,500	8,500
Rent	3,000	—	—
Misc. expenses	8,000	6,000	12,000
Advance income tax	—	—	25,000
	1,20,000	1,19,500	1,51,500
Closing balance ( minus balance indicates bank overdraft)	5,680	(-)7,084	(-)62,936
	1,25,680	1,12,416	88,564

**Working Note – 1. Collection for debtors-**

Particulars	April (₹)	May (₹)	June (₹)
Collection in the month of sale (20% of total less 2% discount)	15,680	22,736	17,248
Collection in the next month (50% of 80% of total sales in the previous month)	52,000	32,000	46,400
Collection after two month (50% of 80% of total sales in the month preceding two months of sale)	48,000	52,000	32,000
	1,15,680	1,06,736	95,646



2. Payment of wages:

Particulars	April (₹)	May (₹)	June (₹)
75% of current month's wages	6,000	7,500	6,000
25% of wages of the previous month	3,000	2,000	2,500
	9,000	9,500	8,500

— Space to write important points for revision —

**2011 - June [5]** (a) Draw up a flexible budget for overhead expenses on the basis of the following data and determine the overhead rate at 70%, 80% and 90% plant capacity level:

	At 80% capacity
	₹
Variable overheads:	
Indirect labour	12,000
Indirect material	4,000
Semi-variable overheads:	
Power (30% fixed, 70% variable)	20,000
Repair and maintenance (60% fixed, 40% variable)	2,000
Fixed overhead:	
Depreciation	11,000
Insurance	3,000
Others	10,000
Total overheads	62,000
Estimated direct labour hours	1,24,000

(10 marks)

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Answer :

## Flexible budget for overhead

Particulars	Capacity Level		
	70% ₹	80% ₹	90% ₹
<b>A. Variable overhead:</b>			
(i) Indirect Labour	10,500	12,000	13,500
(ii) Indirect Material	3,500	4,000	4,500
<b>B. Variable portion of Semi- variable overhead:</b>			
(i) Power	12,250	14,000	15,750
(ii) Repair & maintenance	700	800	900
Total Variable (a)	<u>26,950</u>	<u>30,800</u>	<u>34,650</u>
<b>C. Fixed portion of semi variable overhead;</b>			
(i) Power	6,000	6,000	6,000
(ii) Repair & maintenance	1,200	1,200	1,200
<b>D. Fixed overhead</b>			
(i) Depreciation	11,000	11,000	11,000
(ii) Insurance	3,000	3,000	3,300
(iii) Others	10,000	10,000	10,000
Total Fixed(b)	<u>31,200</u>	<u>31,200</u>	<u>31,200</u>
<b>E. Total Over head[(a) + (b)]</b>	<b><u>58,150</u></b>	<b><u>62,000</u></b>	<b><u>65,850</u></b>
<b>F. Estimated Direct Cost</b>	<b>1,08,500</b>	1,24,000	1,39,500
<b>G. Overhead recovery rate per direct labour hrs.</b>	<b>0.5359</b>	0.5000	0.4720

## Working Notes:

## Variable overhead

- (i) Indirect labour  $12,000 \times \frac{70}{80} = ₹ 10,500$   
 $12,000 \times \frac{90}{80} = ₹ 13,500$
- (ii) Indirect material  $4,000 \times \frac{70}{80} = ₹ 3,500$   
 $4,000 \times \frac{90}{80} = ₹ 4,500$

**Semi variable overhead**

**Power (70% variable 30% fixed)**

(i) Variable overhead  $20,000 \times \frac{70}{100} = ₹ 14,000$

$14,000 \times \frac{70}{80} = ₹ 12,250$

$14,000 \times \frac{90}{80} = ₹ 15,750$

(ii) Repair & maintenance (40% variable 60% fixed)

Variable overhead  $2,000 \times \frac{40}{100} = ₹ 800$

$800 \times \frac{70}{80} = ₹ 700$

$800 \times \frac{90}{80} = ₹ 900$

**Estimated direct labour hour at 80% capacity = 1,24,000**

$1,24,000 \times \frac{70}{80} = 1,08,500 \text{ hrs}$

$1,24,000 \times \frac{90}{80} = 1,39,500 \text{ hrs}$

— Space to write important points for revision —

**2011 - Dec [3]** (a) The following facts are extracted from the books of Alpha Radio Manufacturing Company for the year 2010.

(i) It produces two types of radio -Type A and Type B and sells these in two markets-Kolkata and Siliguri.

(ii) The budgeted and actual sales for the year 2010 are as follows:

	Kolkata	Siliguri
Type A—Budgeted	1000 units at ₹ 200 each	800 units at ₹ 200 each
Actual	900 units at ₹ 200 each	750 units at ₹ 200 each
Type B—Budgeted	800 units at ₹ 300 each	600 units at ₹ 300 each
Actual	1000 units at ₹ 300 each	750 units at ₹ 300 each

Analysis of variance discloses that Type A is overpriced and Type B is underpriced. If the price of A Type radio set is reduced by 10% and price of

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B Type radio set is increased by 20% and if a modern and extensive advertisement campaign is introduced, then the following volume of sales could be made in the next year as expected by the Marketing Manager.

Expected increase/decrease over the current budget	Kolkata Market	Siliguri Market
Product A: Due to change in pricing policy	+ 20%	+ 15%
Due to introduction of modern advertisement campaign	+ 5%	+ 3%
Product B: Due to change in pricing policy	+ 10%	(-)2%
Due to introduction of modern advertisement campaign	+ 5%	+ 5%

On the basis of above you are required to prepare sales budget for the year 2011. **(10 marks)**

**Answer :**

**Sales Budget for the year 2011**

Product	Market	Budget for 2010			Actual for 2010			Budget for 2011		
		Units	Price per unit	Amount	units	Price per unit	Amount	units	Price per unit	Amount
A	Kolkata	1000	200	2,00,000	900	200	1,80,000	1250	180	2,25,000
	Siliguri	800	200	1,60,000	750	200	1,50,000	944	180	1,69,920
	Total	1800		3,60,000	1650		3,30,000	2194		3,94,920
B	Kolkata	800	300	2,40,000	1000	300	3,00,000	920	360	3,31,200
	Siliguri	600	300	1,80,000	750	300	2,25,000	618	360	2,22,480
	Total	1400		4,20,000	1750		5,25,000	1538		5,53,680

**Working note :**

**Budgeted sales for 2011**

	Kolkata		Siliguri	
	Product A	Product B	Product A	Product B
Budgeted sales for 2010	1000	800	800	600
Add: due to change in pricing policy	200	80	120	(-)12
Add: due to advertising campaigns	50	40	24	30
Total	1250	920	944	618

**Selling Price :** Product A (₹ 200 – 20 = ₹ 180 per unit)

Product B (₹ 300 + 60 = ₹ 360 per unit)

— Space to write important points for revision —

**2013 - June [4]** (a) The following information is given to you from the records of P Ltd. for the year 2013:

Budgeted Sales Value in 2013:

April	₹ 4,00,000
May	₹ 4,50,000
June	₹ 5,20,000
July	₹ 4,20,000
August	₹ 4,80,000
Contribution to Sales ratio	40%
Fixed Costs	₹ 12,00,000 for the whole year 2013, includes depreciation ₹ 3,00,000 per annum

Other Information:

40% of each month's sales is produced in the month prior to the sale and 60% in the month of sale. 50% of the direct materials required for production is purchased in the month prior to their use in production. The remaining 50% is purchased in the month of production. Labour costs are paid in the month in which they are incurred and constitute 30% of the variable costs. 60% of the variable costs are direct material costs. Suppliers of direct materials are paid in the month after purchase. The remaining variable costs are variable overhead costs, of which 40% are paid in the month they are incurred and the balance paid in the next month. Fixed costs are incurred at a constant rate per month and paid in the month they are incurred. The expected capital expenditure in June 2013 is ₹ 1,90,000. The sales receipts budgeted are as follows:

May 2013	₹ 4,01,700
June 2013	₹ 4,50,280
July 2013	₹ 4,25,880

The bank balance on 1.5.2013 is expected to be ₹ 40,000.

Prepare a month-wise cash budget for P Ltd. for the period May to July 2013.

**(10 marks)**

**Answer :**

Description	May 2013	June 2013	July 2013
Opening Balance	40,000	92,428	(9,860)
Receipts	<u>4,01,700</u>	<u>4,50,280</u>	<u>4,25,880</u>
Total	<u>4,41,700</u>	<u>5,42,708</u>	<u>4,16,020</u>

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Payments of Suppliers	1,61,640	1,72,440	1,66,320
Labour Payments	86,040	86,400	79,920
Variable OH Paid	26,592	28,728	27,936
Fixed OH Paid	75,000	75,000	75,000
Capital Expenditure		1,90,000	
Total Outflows	3,49,272	5,52,568	3,49,176
<b>Closing Balance</b>	<b>92,428</b>	<b>(9,860)</b>	<b>66,844</b>

Particulars	April	May	June	July	August
Budgeted Sales	4,00,000	4,50,000	5,20,000	4,20,000	4,80,000
60% of Sales - Current	2,40,000	2,70,000	3,12,000	2,52,000	2,88,000
40% Sales prior month	1,80,000	2,08,000	1,68,000	1,92,000	
Sales value of Production	4,20,000	4,78,000	4,80,000	4,44,000	
Variable cost of pdn. = 60%	2,52,000	2,86,800	2,88,000	2,66,400	
Materials required for pdn. 60%	1,51,200	1,72,080	1,72,800	1,59,840	
50% materials purchased prior month	86,040	86,400	79,920		
50% materials purchased this month	75,600	86,040	86,400	79,920	
Material Purchases	1,61,640	1,72,440	1,66,320	79,920	
Payment to suppliers		1,61,640	1,72,440	1,66,320	
Labour paid = 30% of V.C	75,600	86,040	86,400	79,920	
Var. OH = 10% of variable cost	25,200	28,680	28,800	26,640	
40% of var OH paid this month	10,080	11,472	11,520	10,656	
60% var OH paid next month		15,120	17,208	17,280	15,984
Total Variable OH paid		26,592	28,728	27,936	
Cash Fixed OH = 9 lacs/12	75,000	75,000	75,000	75,000	75,000

— Space to write important points for revision —

**2013 - Dec [3]** (c) The monthly budgets for manufacturing overhead of SHAHEEN LTD. for two levels of activity were as follows:

Capacity	60%	100%
Budgeted production (units)	600	1,000
	₹	₹
Wages	1,200	2,000
Consumable stores	900	1,500
Maintenance	1,100	1,500
Power & Fuel	1,600	2,000

Depreciation	4,000	4,000
Insurance	<u>1,000</u>	<u>1,000</u>
	<u>9,800</u>	<u>12,000</u>

Required:

- Indicate which of the items are fixed, variable and semi-variable;
- Prepare a Budget for 80% capacity; and
- Find the total cost, both fixed and variable per unit of output at 60%, 80% and 100% capacity. **(1 + 4 + 3 = 8 marks)**

**Answer:**

**(i) Shaheen Ltd.**

Fixed Items - Depreciation and Insurance

Variable - Wages and consumable stores

Semi- variable - Maintenance and power & fuel

**Answer:**

**(ii) Budget for 80% Capacity Level**  
**Budgeted Production 80% of 1000 i.e. 800 Units**

Particulars	Amount in ₹
<b>Variable Cost</b>	
Wages @ ₹2.00 per unit	1,600
Consumable stores @ ₹ 1.50 per unit	1,200
Maintenance : ₹ 1.00 per unit	800
Power & Fuel : ₹ 1.00 per unit	800
<b>Fixed cost</b>	
Maintenance	500
Power & Fuel	1,000
Depreciation	4,000
Insurance	1,000
<b>Total Cost (Variable Cost + Fixed Cost)</b>	<b>10,900</b>

**Working Notes:**

**Segregation of semi-variable costs:**

Maintenance =  $[1,500 - 1,100] / 400 = ₹ 1$  per unit variable and

Fixed cost =  $1,100 - 600 = ₹ 500$ .

Power & Fuel =  $[2,000 - 1,600] / 400 = ₹ 1$  per unit variable and

Fixed cost =  $1,600 - 600 = ₹ 1,000$

**10.136****Scanner CMA Inter Gr. II Paper 10 A (2016 Syllabus)****Answer :****(iii)** Variable Cost per unit works out to ₹ 5.50

It consists of wages: ₹ 2

Consumables Stores : ₹ 1.50

Maintenance: ₹ 1.00

Power &amp; Fuel: ₹ 1.00

Total Fixed Cost = Maintenance + Power & Fuel + Depreciation + Insurance  
= 500 + 1,000 + 4,000 + 1,000 = ₹ 6,500

**Computation of Total Costs per unit**

Particulars	Capacity		
	60%	80%	100%
Production (Units)	600	800	1000
Variable cost per unit (₹)	5.5	5.5	5.5
Fixed cost per unit (₹ 6,500 ÷ Production Units)	10.83	8.13	6.5
<b>Total Cost per unit (₹)</b>	<b>16.33</b>	<b>13.63</b>	<b>12</b>

— Space to write important points for revision —

**2014 - Dec [2]** (c) Answer the question:

- (ii) DEFALI LTD. wishes to prepare cash budget for the period of December, 2014 to March, 2015. The Budgeted/Estimated Revenue and Expenses for the said period extracted from the records of the Company are as follows:

(Amount in ₹ Lakh)

Months	Total Sales (₹)	Purchases (Materials) (₹)	Wages (₹)	Expenses (Overheads)
September, 2014	80	45	20	4
October, 2014	80	50	22	5
November, 2014	75	52	18	6
December, 2014	90	60	20	6
January, 2015	85	40	18	8



February, 2015	80	35	15	9
March, 2015	95	46	24	9.5

You are further informed that:

- 20% of purchases and the 30% of sales are for cash;
- Realisation is made from debtors 30% in the month of sale, 50% in the month of following that and the balance in the month after that;
- The credit purchases are paid of regularly after one month;
- Wages are paid half monthly;
- Rent of ₹ 50,000 per month included in expenses is paid monthly and remaining expenses are paid half monthly;
- Cash and bank balance as on 1<sup>st</sup> December, 2014 was ₹ 10,00,000 and the company wants to keep it at the end of every month below ₹ 10,00,000 but not less than ₹ 9,00,000, the excess cash being put in fixed deposit in multiples of ₹ 1,00,000.

Required:

Prepare A CASH BUDGET for the four months ending March 31, 2015.  
(3 + 3 + 2 + (2 + 1 + 1) = 12 marks)

**Answer:**

**Cash budget for the period December 2014 to March 2015**

(Amount in ₹ lakhs)

Particulars	December 2014	January 2015	February 2015	March 2015
Opening balance (A)	10	9.75	9.1	9.25
<i>Add: Receipts (B)</i>				
Cash sales	27	25.5	24	28.5
Collection from Debtors	56.35	59.85	59.15	59.85
Total (A + B)	93.35	95.1	92.25	97.6
<i>Payments (C)</i>				
Cash Purchases	12	8	7	9.2
Creditors	41.6	48	32	28
Wages	19	19	16.5	19.5
Rent	0.5	0.5	0.5	0.5

**10.138****■ Scanner CMA Inter Gr. II Paper 10 A (2016 Syllabus)**

Overheads	5.5	6.5	8	8.75
Total (C)	78.6	82	64	65.95
Balance (A+ B – C = D)	14.75	13.1	28.25	31.65
Fix Deposit (E)	5	4	19	22
<b>Closing cash balance (D - E)</b>	<b>9.75</b>	<b>9.1</b>	<b>9.25</b>	<b>9.65</b>

**Statement of collection from debtors**

<b>Particulars</b>	<b>December 2014</b>	<b>January 2015</b>	<b>February 2015</b>	<b>March 2015</b>
October, 2014	11.2			
November, 2014	26.25	10.5		
December, 2015	18.9	31.5	12.6	
January, 2015		17.85	29.75	11.9
February, 2015			16.8	28
March, 2015				19.95
<b>Total</b>	<b>56.35</b>	<b>59.85</b>	<b>59.15</b>	<b>59.85</b>

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 Space to write important points for revision
 

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**2015 - June [2]** (c) Answer the question:

- (iii) ADAMAS LTD. a newly established manufacturing company has an installed capacity to produce 1,00,000 units of a consumer product annually. However, its practical capacity is only 90%. The actual capacity utilisation may be substantially lower, as the firm is new to the market and demand is uncertain. The following budget has been prepared for 90% capacity utilisation:

**Cost per unit**

	₹
Direct Materials	12
Direct Labour	8
Direct Expense	5
Production Overheads	10 (40% variable)
Administration Overheads	5 (100% fixed)
Selling and Distribution	6 (50% variable)

You are required to prepare Flexible Budgets of a Consumer product at 70% and 80% levels of capacity utilization giving clearly the Variable Cost, Fixed Cost and the Total Costs under various heads at all stated levels. **(4 + 4 = 8 marks)**

**Answer:**

Installed capacity 1,00,000 units per annum

Practical capacity 90% i.e. 90,000 units per annum

**Cost of 90% capacity utilisation:**

Direct Material	₹ 12/unit
Direct Labour	₹ 8/unit
Direct Expense	₹ 5/unit
Production Overhead	₹ 4/unit
Fixed Production Overhead ( 6 × 90,000)	₹ 5,40,000
Administration Overhead (fixed) ( 5 × 90,000)	₹ 4,50,000
Selling & Distribution Overhead	₹ 3 per unit
Fixed Selling & Distribution Overhead	₹ 2,70,000

**Flexible Budget**

Particulars	Capacity		
	90%	80%	70%
<b>Variable Cost:</b>	(₹)	(₹)	(₹)
Direct Material @₹12/unit	10,80,000	9,60,000	8,40,000
Direct Labour @₹8/unit	7,20,000	6,40,000	5,60,000
Direct Expense @₹5/unit	4,50,000	4,00,000	3,50,000
Selling & Distribution @₹ 3 per unit	2,70,000	2,40,000	2,10,000
Production overhead @ ₹ 4/unit	3,60,000	3,20,000	2,80,000
<b>Total Variable Cost (A)</b>	<b>28,80,000</b>	<b>25,60,000</b>	<b>22,40,000</b>
<b>Fixed Cost:</b>	(₹)	(₹)	(₹)
Production overhead	5,40,000	5,40,000	5,40,000
Administration overhead	4,50,000	4,50,000	4,50,000

**10.140****■ Scanner CMA Inter Gr. II Paper 10 A (2016 Syllabus)**

Selling & Distribution overhead	2,70,000	2,70,000	2,70,000
Total Fixed Cost (B)	12,60,000	12,60,000	12,60,000
<b>Total Cost (A + B)</b>	<b>41,40,000</b>	<b>38,20,000</b>	<b>35,00,000</b>

— Space to write important points for revision —

**2015 - Dec [2]** Answer the question:

- (b) (ii) From the following data, prepare a Production Budget for ABC Co. Ltd., for the six months period ending on 30<sup>th</sup> June, 2015.

Stocks for the budgeted period:

(in units)

Product	As on 01 January, 2015	As on 30 June, 2015
A	6,000	10,000
B	9,000	8,000
C	12,000	17,500

Other relevant data:

Product	Normal loss in production	Requirement to fulfill sales programme (units)
A	4%	60,000
B	2%	50,000
C	5%	80,000

**(6 marks)**

**Answer:**

**Production Budget for ABC Co. Ltd.**

Particulars	Product A	Product B	Product C
Sales	60,000	50,000	80,000
Add: Closing Stock	10,000	8,000	17,500
	70,000	58,000	97,500

Less: Opening Stock	6,000	9,000	12,000
Production	64,000	49,000	85,500
Adjustment for Normal loss	2,667	1,000	4,500
Production Required	66,667	50,000	90,000

— Space to write important points for revision —

**2016 - June [1]** (e) The budgeted annual sales of a firm are ₹ 80 lakhs and 25% of the sales are cash sales. If the average amount of debtors of the firm is ₹ 5 lakhs, what will be the average collection period of credit sales?

**(2 marks)**

**Answer:**

Budgeted sales = ₹ 80 Lakhs  
 Cash sales = ₹ 80 × 25% = ₹ 20 Lakhs  
 Credit sales = (₹ 80 - ₹ 20) Lakhs  
 = ₹ 60 Lakhs

Average collection period =  $\frac{\text{Account Receivable}}{\text{Credit sales}} \times 12$   
 =  $\frac{5,00,000}{60,00,000} \times 12 = 1 \text{ month or } 30 \text{ days}$

— Space to write important points for revision —

**2016 - Dec [1]** (c) The budgeted cost for repairs and maintenance at 30000 and at 33000 units levels are ₹ 1,45,000 and ₹ 1,54,000 respectively. If 35000 units are to be produced, how much amount should be budgeted for repairs and maintenance?

**(2 marks)**

**Answer:**

Variable portion =  $\frac{1,54,000 - 1,45,000}{33,000 - 30,000} = \frac{9,000}{3,000} = ₹ 3 \text{ per unit}$

Fixed portion = 1,45,000 – (30,000 × 3) = ₹ 55,000

Cost of 35000 units = 55,000 + (35,000 × 3) = ₹ 1,60,000.

— Space to write important points for revision —

**2016 - Dec [9]** (a) The cost accountant of a manufacturing company has provided you with the following details for the year 2015:

	₹		₹
Direct Materials	1,75,000	Other Variable Costs	1,00,000
Direct Wages	1,00,000	Other Fixed Costs	80,000
Fixed Factory O/H	1,00,000	Profit	1,12,000
Variable Factory O/H	1,00,000	Sales	7,50,000

During the year, the company manufactured 2 products A and B and the output and costs were:

	Product A	Product B
Output (units)	200000	100000
Selling Price/unit (₹)	2	3.50
Direct Material/unit (₹)	0.50	0.75
Direct Wages/unit (₹)	0.25	0.50

Variable Factory O/H is absorbed as a % of Direct Wages. Other Variable Costs have been computed as: Product A ₹ 0.25/unit and Product B ₹ 0.30/unit.

During the year 2016, it is expected that the demand for Product A will fall by 25% and for Product B by 50%. It is decided to manufacture further a Product C, the cost for which is estimated as given below:

	Product C
Output (units)	200000
Selling Price/unit (₹)	1.75
Direct Material/unit (₹)	0.40
Direct Wages/unit (₹)	0.25

It is anticipated that the Other Variable Costs/unit will be same as for Product A.

Prepare a budget to present to the management, showing the current position and the position for 2016.

Comment on the comparative results.

(12 marks)

**Answer:**

**Budget Showing Current position & position for 2016**

₹							
	2015			2016			
Particulars	A	B	A+B	A	B	C	A+B+C
Sales (units)	2,00,000	1,00,000	-	1,50,000	50,000	2,00,000	-
(A) Sales	4,00,000	3,50,000	7,50,000	3,00,000	1,75,000	3,50,000	8,25,000
Direct Material	1,00,000	75,000	1,75,000	75,000	37,500	80,000	1,92,500
Direct Wages	50,000	50,000	1,00,000	37,500	25,000	50,000	1,12,500
Fixed OH (Var)	50,000	50,000	1,00,000	37,500	25,000	50,000	1,12,500
Other Variable Costs	50,000	30,000	80,000	37,500	15,000	50,000	1,02,500
(B) Marginal Cost	2,50,000	2,05,000	4,55,000	1,87,500	1,02,500	2,30,000	5,20,000
(C) Contribution (A-B)	1,50,000	1,45,000	2,95,000	1,12,500	72,500	1,20,000	3,05,000
Less: Fixed Factory OH			(1,00,000)				(1,00,000)
Other Fixed Costs			(80,000)				(80,000)
Profit			1,15,000				1,25,000

**Comments:** Introduction of Product C is likely to increase Profit by ₹ 10,000 in 2016 as compared to 2015.

— Space to write important points for revision —

**2017 - June [4]** (a) A company is at present working at 90% of its capacity and producing 13,500 units per annum. It operates a flexible budgetary control system. The following figures are obtained from its budget:

	90%	100%
	(₹)	(₹)
Sales	15,00,000	16,00,000
Fixed expenses	3,00,500	3,00,600

**10.144****Scanner CMA Inter Gr. II Paper 10 A (2016 Syllabus)**

Semi-fixed expenses	97,500	1,00,500
Variable expenses	1,45,000	1,49,500
Units made	13,500	15,000

Labour and material costs per unit are constant under present conditions.  
Profit margin is 10%.

- You are required to determine the differential cost of producing 1,500 units by increasing capacity to 100%?
- What would you recommend for an export price for these 1,500 units if overseas prices are much lower than indigenous prices?

**(6 marks)****Answer:**

	₹
Sales at 90% capacity utilisation	15,00,000
Less: Profits (10%)	<u>1,50,000</u>
Cost of goods sold	13,50,000
Less: Expenses (fixed, semi-fixed and variable)	<u>5,43,000</u>
Cost of materials and labour	<u>8,07,000</u>

Therefore, cost of materials and labour at 100% capacity utilisation  
= 8,07,000 × 100/90 = ₹ 8,96,667

**Differential cost analysis will be as follows:**

	<b>Capacity utilisation</b>	
	90%	100%
Production (units)	13,500	15,000
	₹	₹
Materials and labour	8,07,000	8,96,667
Variable expenses	1,45,000	1,49,500
Semi-variable expenses	97,500	1,00,500
Fixed expenses	<u>3,00,500</u>	<u>3,00,600</u>
Total Cost	<u>13,50,000</u>	<u>14,47,267</u>

(a) Differential cost = 14,47,267 – 13,50,000 = ₹ 97,267

(b) Minimum price for export = 97,267/1,500 = ₹ 64.84 per unit.



At this price there is no addition to revenue. Any price above ₹ 64.84 per unit may be accepted. A price below this may be considered, if other benefits (i.e., other than mere sales and revenue) are likely to accrue. It is assumed that no capital investment is necessary and no export charges have to be incurred and that the export price will have no effect on the home market where the product will continue to be sold at the old price, it is also assumed that necessary precautions have been taken to ensure that the product is not “dumped” back.

— Space to write important points for revision —

**2017 - Dec [4]** (b) As a Cost and Management Accountant of MJK Ltd., prepare a Sales Overhead Budget for the months of January, February and March from the estimates given below:

Expenses per month:	₹
Advertisement	2,500
Salaries of the Sales Department	5,000
Expenses of the Sales Department	1,500
Counter Salesmen's Salaries and Dearness Allowance	6,000
Commission to counter salesmen @ 1% on their sales. Travelling salesmen's commission @ 10% on their sales and expenses @ 5% on their sales.	

The sales during the period were estimated as under:

Month	Counter Sales ₹	Travelling Salesmen Sales ₹	
January	80,000	10,000	
February	1,20,000	15,000	
March	1,40,000	20,000	(5 marks)

**Answer:**

**Sales Overhead Budget  
(for the period ending...)**

Estimated Sales (₹)	90,000	1,35,000	1,60,000
<b>Fixed Overhead:</b>			
Advertising	2,500	2,500	2,500
Salaries of Sales department	5,000	5,000	5,000

**10.146****■ Scanner CMA Inter Gr. II Paper 10 A (2016 Syllabus)**

Expenses of Sales department	1,500	1,500	1,500
Counter Salesman Salaries & Dearness Allowances	6,000	6,000	6,000
	15,000	15,000	15,000
<b>Variable Overhead:</b>			
Counter Salesman Commission @ 1% on Sales	800	1,200	1,400
Traveling Salesman Commission @ 10%	1,000	1,500	2,000
Expenses 5%	<u>500</u>	<u>750</u>	<u>1,000</u>
	2,300	3,450	4,400
<b>Total Sales Overhead</b>	<b>17,300</b>	<b>18,450</b>	<b>19,400</b>

———— Space to write important points for revision ————

**2018 - June [4]** (a) PENTAX LTD., has prepared its Expense Budget for 20,000 units in its factory for a year as detailed below:

<b>Particulars</b>	<b>₹/ Unit</b>
Direct Material	50
Direct Labour	20
Variable Overhead	15
Direct Expenses	6
Selling Expenses (20% Fixed)	15
Factory Expenses (100% Fixed)	7
Administrative Expenses (100% Fixed)	4
Distribution Expense (85% Variable)	12
<b>Total (₹)</b>	<b>129</b>

**Required:**

Prepare an Expenditure Budget for the Production of 15,000 Units and 18,000 Units. **(6 marks)**

**Answer:**

**Expenditure Budget**

Particulars	20000	Per unit	18000	Per unit	15000	Per unit
Direct Material	10,00,000	50	9,00,000	50	7,50,000	50
Direct Labour	4,00,000	20	3,60,000	20	3,00,000	20
Variable O/H	3,00,000	15	2,70,000	15	2,25,000	15
Direct Exp.	1,20,000	6	1,08,000	6	90,000	6
Selling Exp. - Variable	2,40,000	12	2,16,000	12	1,80,000	12
Selling Fixed	60,000	3	60,000	3.33	60,000	4
Factory Exp. 100% Fixed	1,40,000	7	1,40,000	7.78	1,40,000	9.33
Administrative 100% Fixed	80,000	4	80,000	4.44	80,000	5.33
Distribution Exp. - variable	2,04,000	10.2	1,83,600	10.2	1,53,000	10.2
Dis. Fixed	36,000	1.8	36,000	2	36,000	2.4
<b>Total Cost</b>	<b>25,80,000</b>	<b>129</b>	<b>23,53,600</b>	<b>130.75</b>	<b>20,14,000</b>	<b>134.26</b>

— Space to write important points for revision —

**2018 - Dec [4]** (a) You are given the following particulars concerning MINTEX LTD, a manufacturing organisation:

	At 80% capacity (₹)
<i>Variable Overheads.</i>	
Indirect Labour	12,000
Stores (including Spares)	4,000
<i>Semi-Variable Overheads:</i>	
Power (30% Fixed)	20,000

**10.148****■ Scanner CMA Inter Gr. II Paper 10 A (2016 Syllabus)**

Repairs & Maintenance (60% Fixed)	2,000
<i>Fixed Overheads:</i>	
Depreciation	11,000
Insurance	3,000
Salaries	10,000
Total Overheads	62,000
Estimated Directed Labour Hours	1,24,000 Hours.

**You are required to:**

- (i) Draw a Flexible Budget for Overhead expenses on the basis of the above data at 80% and 90% Plant Capacity.
- (ii) Determine the Overhead Rates at 80% and 90% Plant Capacity.

**(4+2 = 6 marks)**

<b>Repeatedly Asked Questions</b>		
<b>No.</b>	<b>Question</b>	<b>Frequency</b>
<b>1</b>	Write short note on Flexible budget. 13 - June [8] (c), 15 - June [2] (c) (ii)	2 Times
<b>2</b>	Write short note on Zero Base Budgeting. 10 - June [8] (c), 10 - Dec [3] (b), 12 - June [8] (c)	3 Times
<b>3</b>	Write short note on Principal Budget Factor. 11 - Dec [8] (d), 17 - June [5] (c)	2 Times

# 4A





## STANDARD COSTING AND VARIANCE ANALYSIS

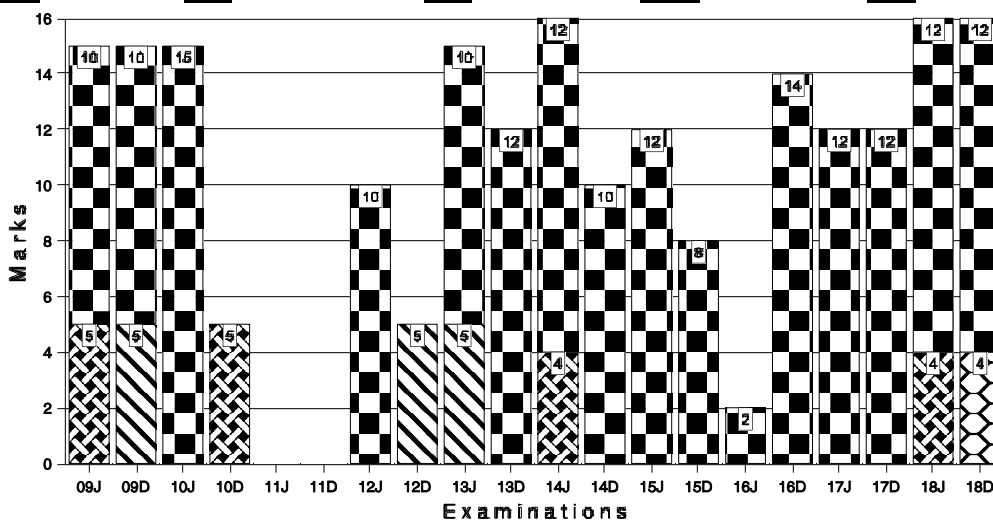
### THIS CHAPTER INCLUDES

- General Principles of Standard Costing
- Difference between Standard Costing and Budgetary Control
- Advantages of Standard Costing
- Limitations of standard costing
- Variance Analysis
- Material Variance
- Labour Variance
- Idle time Variance
- Overhead Variance
- Sales Variance
- Reporting of Variances
- Valuation of Stock Under Standard Costing

Marks of objective, Short Notes, Distinguish Between, Descriptive & Practical Questions

### Legend

 Objective
  Short Notes
  Distinguish
  Descriptive
  Practical



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for registration and password see first page of this book.

## CHAPTER AT A GLANCE

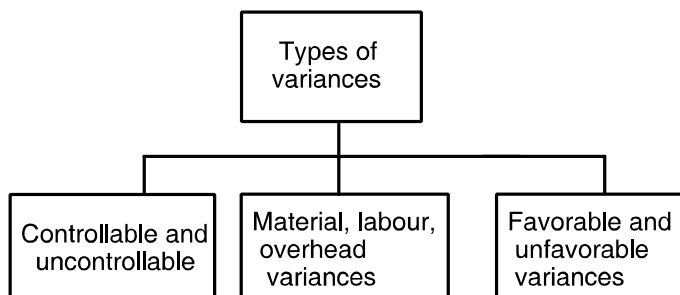
Topic	Important Highlights
<b>4A.1 Standard cost</b>	Standard costing is a predetermined cost to be used as a measure with which actual cost may be compared. According to CIMA standard cost is “a predetermined cost which is computed in advance of production on the basis of specification of all the factors affecting cost and used in standard costing.”
<b>4A.2 Standard costing</b>	It is a technique of cost accounting which compares the standard cost of each product with the actual cost to determine the efficiency of operation. According to CIMA standard costing is “the preparation and use of standard costs, their comparison with actual costs and analysis of variances to their causes and points of incidence.”
<b>4A.2a Advantages/ Uses</b>	<ul style="list-style-type: none"> <li>◆ It helps in effective cost control</li> <li>◆ It provides incentives.</li> <li>◆ It helps in planning.</li> <li>◆ It helps in price fixation.</li> <li>◆ It helps in formulating policies.</li> <li>◆ It helps in reducing wastages.</li> <li>◆ It simplifies valuation of stock.</li> <li>◆ It facilitates delegation of authority.</li> <li>◆ It facilitates coordination</li> <li>◆ It is economical and simple.</li> <li>◆ It serves as a basis for comparison.</li> </ul>
<b>4A.2b Disadvantages</b>	<ul style="list-style-type: none"> <li>◆ It may become inappropriate for a business.</li> <li>◆ It is expensive.</li> <li>◆ It has unreliable standards.</li> <li>◆ It is unsuitable for job order.</li> <li>◆ It cannot be afforded by small firms.</li> <li>◆ Incapable staff for operation of system.</li> </ul>

<b>4A.3 Process of standard costing</b>	<ol style="list-style-type: none"> <li>1. Setting of standards</li> <li>2. Ascertaining of actual cost</li> <li>3. Comparison of actual and standards</li> <li>4. Calculation of variances and analysis of variances</li> </ol>
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#### 4A.4 Types of standards

<b>Ideal standards</b>	<b>Normal standards</b>	<b>Basic or bogey standards</b>	<b>Current standards</b>	<b>Expected standard</b>
Standards which may be achieved when conditions are most favorable and efficiency is high.	Standards which may be attained under normal operating conditions.	Standard established to use for indefinite period and are likely to remain constant.	Represent actual cost of current period.	Standards which are expected to be attained in future period.

#### 4A.5 Types of Variances



<b>Controllable and Uncontrollable variance</b>	<b>Material, labour &amp; overhead variances</b>	<b>Favourable and Unfavourable</b>
Controllable can be controlled by departmental heads. Uncontrollable variances which are beyond the control of management.	Explained below in detailed.	Favourable – actual cost is less than standard cost. Unfavourable – actual cost is more than standard cost.

**4A.6a Material variance**

Material cost variance = Standard cost for actual output – Actual cost  
 =  $SP \times SQ \text{ for actual output} - AP \times AQ$

Material price variance =  $AQ (SP - AP)$

Material usage variance =  $SP (SQ \text{ for actual output} - AQ)$

Material mix variance =  $SP (RSQ - AQ)$

Material yield variance =  $SR (AY - SY \text{ from actual input})$

Where,

SP = standard price

SQ = standard quantity

RSQ = revised standard quantity = actual input in standard proportions.

SR = standard rate =  $\frac{\text{Standard cost of standard mix}}{\text{Standard output (Standard input - Loss)}}$

AP = Actual price

AQ = actual quantity

AY = actual yield

SY = standard yield

(F) = favorable

(A) = Adverse

**4 A . 6 b Labour variance**

Labour cost variance = Standard labour cost for actual output – Actual labour cost

Labour Rate variance =  $AHP (SR - AR)$

Labour efficiency variance =  $SR (\text{Standard hours for actual output} - AHP)$

Labour mix variance =  $SR (RSH - AHW)$

Labour yield variance = Standard labour cost per unit of output (AY – SY from actual input)

Idle time variance = Idle hours  $\times$  SR ( it is always adverse)

Where,

SR = standard rate

AHP = actual hours paid

AR = actual rate



RSH = revised standard hours = Actual hours worked in standard proportion  
 AY = actual yield  
 SY = standard yield  
 AHW = actual hours worked

#### 4A.6c Overhead variance

Fixed overhead cost variance =  $SR \times SH$  for actual output - actual fixed overhead incurred

Fixed overhead expenditure variance = Budgeted fixed overhead – actual fixed overhead incurred.

Fixed overhead volume variance =  $SR \times SH$  for actual output – Budgeted Fixed overhead

Fixed overhead capacity variance =  $SR (AH - RBH)$

Fixed overhead calendar variance =  $SR (RBH - BH)$

Fixed overhead efficiency variance =  $SR (SH \text{ for actual output} - AH)$

Variable overhead cost variance =  $SR \times SH$  for actual output – Actual variable overhead incurred

Variable overhead expenditure variance =  $AH \times SR - \text{Actual variable overhead incurred}$

Variable overhead efficiency variance =  $SR (SH \text{ for actual output} - AH)$

Where,

SR = standard rate

SH = standard hour

AH = actual hours

AR = actual rate

RBH = revised budgeted hours

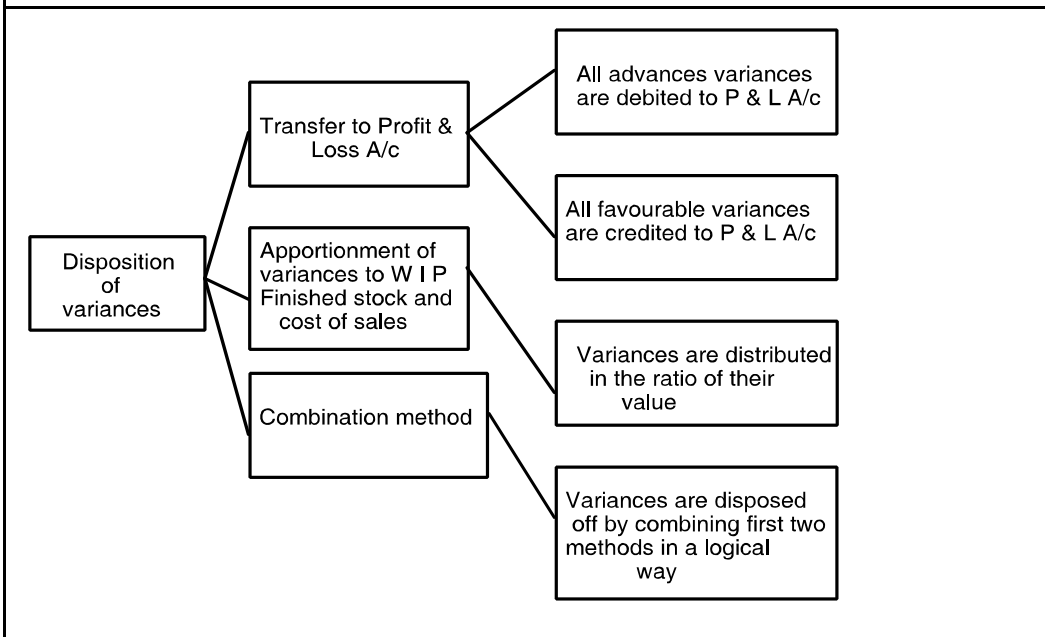
=  $\frac{\text{Budgeted no. of working hours}}{\text{Budgeted no. of days}} \times \text{actual no. of working days}$

Standard variable overhead rate =  $\frac{\text{Budgeted fixed overhead}}{\text{Budgeted hours}}$

Standard fixed overhead rate =  $\frac{\text{Budgeted hours}}{\text{Budgeted output}} \times \text{Actual output}$

**4A.7 Reporting of variances****Purpose of reporting**

- ▶ To keep top management informed about the cost performance.
- ▶ To know the variance i.e. difference between actual and standard cost.
- ▶ To know the causes of variances.
- ▶ To know the magnitude of variance.
- ▶ Reporting of variance should be based on management by exception.

**4A.8 Disposition of variances**

— Space to write important points for revision —

**SHORT NOTES**

**2018 - Dec [5]** Write short notes on the following:

(ii) Advantages of Standard Costing.

(4 marks)

## DISTINGUISH BETWEEN

**2009 - June [5]** (b) Distinguish between Standard Costing and Budgetary Control. **(5 marks)**

**Answer :**

Basic	Standard costing	Budgetary control
Meaning	It is a system of accounting where predetermined costs are used for analysis of variance and control of the entire organisation.	It is planning exercise made by the management in setting budget for the forthcoming period and analysis of actual with budgeted figure.
Expressed	It may be expressed both in terms of quantitative and monetary measure.	It is expressed in monetary terms only.
Objective	It is ascertainment and control of cost.	It is concerned with the overall profitability and financial position of the concern.
Emphasis	It emphasizes on what should be the cost.	It emphasizes on the level of cost not to be exceeded.
Projection	It is projection of cost accounts.	It is projection of financial accounts.
Used by	Standards are usually limited to manufacturing activities only.	Budgets are used by all departments.

— Space to write important points for revision —

**2010 - Dec [6]** (b) What are the differences between Labour Rate Variance and Labour Efficiency Variance? **(5 marks)**

**Answer :**

**Labour Rate Variance:** This arises when there is a difference between the actual wage rate paid and the predetermined standard wage rate. The Labour rate variance ignores the question of whether the actual labour hours worked during the period were more or less than the standard labour hours required to complete that work. It is concerned only with actual worked hours.

Thus, the Labour rate variance is a function of the difference between the actual wage rate and the standard wage rate and the actual total labour hours worked.

$$\text{Labour Rate Variance} = (\text{SR} - \text{AR}) \text{ AH} \times \text{AO}$$

**Labour Efficiency Variance-** The variance which seeks to isolate the impact of working greater or lesser number of hours than the standard hours in production is called the LEV or Labour Time Variance. The time required by the labour force is an index of its efficiency LEV is concerned only with the standard wage rate.

Labour efficiency variance is a function of the difference between the hours worker should have consumed in actual production and the actual hours worked and the standard wage rate.

$$\text{Labour Efficiency Variance} = [(\text{SH} \times \text{AO}) - (\text{AH} \times \text{AO})] \times \text{SR}$$

This variance will be favourable if the actual time taken is less than the standard time.

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**2014 - June [4]** (c) Briefly distinguish between the two Cost Control Techniques “Budgetary Control” and “Standard Costing”. **(4 marks)**

**Answer:**

***Please 2009 - June [5] (b) on page no. 155***

—— Space to write important points for revision ———

**2018 - June [5]** (d) Difference between Standard Costing and Budgetary Control. **(4 marks)**

**Answer:**

***Please refer 2009 - June [5] (b) on page no. 155***

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## DESCRIPTIVE QUESTIONS

**2008 - Dec [5]** (a) State the distinguishing features of standard cost. **(5 marks)**

**Answer :**

Features of Standard Cost

- (a) It is a pre-determined cost which is computed before the cost is incurred (i.e., in advance of production).
- (b) It is based on engineering specification of all the factors affecting cost.
- (c) It is computed for a specific period of time.
- (d) It is to be attained under a given set of efficient operating conditions.

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**2009 - Dec [6]** (a) State the principle reasons which give rise to variances between actual and standard in standard costing. **(5 marks)**

**Answer :**

The variances between actuals and standards arise mainly due to the following reasons:

- (i) Inefficient operations due to inadequate machine usage/faulty machinery
- (ii) Departure from laid down procedure
- (iii) Human error
- (iv) Inappropriate setting of standards
- (v) Frequent changes in market prices of various inputs in an unstable condition
- (vi) Errors in recording actual results

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**2012 - Dec [3]** (b) Discuss the advantages of standard costing system.

**(5 marks)**

**Answer:**

The various advantages of standard costing system are as under:

- (i) It helps in effective cost control, planning.
- (ii) It helps the management in fixation of prices.
- (iii) It helps in formulating policies like business planning, budgeting and managerial decision making.
- (iv) It enables objective judgement of people, thus promoting and rewarding the deserving person.

- (v) It helps the management in measuring and improving operational efficiency and evaluates performance by comparing actual costs with standard costs.
- (vi) An atmosphere of cost consciousness is created among the staff, managerial as well as workmen, of the business. Standard costing also provides incentives to workers and middle and top executive personnel for efficient work.
- (vii) It serves as a basis of comparison.
- (viii) It through variance analysis provides a ready means of interpretation of information for the management for the purpose of control and decision making. Ready reporting enhances the value of reports.
- (ix) It facilitates the use of management by Exception principle since the management need to concentrate only on the areas and problems which require its attention through study of variance analysis.
- (x) It facilitates co-ordination between different functions such as purchasing, production, selling, accounting together while fixing standards.

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**2013 - June [8]** Answer the following:

- (d) How are normal and abnormal idle time dealt with in Standard Costing in computing idle time variance? **(5 marks)**

**Answer :**

**Normal Idle Time:** It is inherent in any work situation and cannot be eliminated.

**Abnormal Idle time:** Apart from normal idle time, there may be some factors which may give rise to abnormal idle time.

In standard costing, standard labour time is fixed after taking into account the normal idle time. However, if the actual idle time is more than this normal level, it is considered as abnormal idle time and is therefore shown as variance which is always adverse. It indicates the loss caused due to abnormal idle time. Since we need to exclude the influence of the actual rate, we have idle time variance = Abnormal idle time × standard rate.

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## PRACTICAL QUESTIONS

**2008 - Dec [5]** (b) The following information was obtained from the records of a manufacturing unit using standard costing system :

Particulars	Standard	Actual
Production	4000 units	3800 units
Working days	20	21
Fixed overheads	₹ 40,000	₹ 39,000
Variable overheads	₹ 12,000	₹ 12,000

*Calculate :*

- (a) Variable overhead variance;
- (b) Fixed overhead expenditure variance;
- (c) Fixed overhead volume variance;
- (d) Fixed overhead efficiency variance;
- (e) Fixed overhead calendar variance.

**(10 marks)**

— Space to write important points for revision —

**Answer :**

- (a) Standard variable overhead (per Unit) =  $\frac{12,000}{4,000} = ₹ 3$  per unit

Variable overhead variance = STD variable overhead for actual production – Actual variable overheads  
 $= 11,400 - 12,000 = 600$  (A)

- (b) Fixed overhead Expenditure variance = Budgeted fixed overheads – Actual fixed overheads  
 $= 40,000 - 39,000$   
 $= ₹ 1,000$  (F)

- (c) Standard overhead Rate per unit =  $40,000 / 4,000 = ₹ 10/-$  per unit.  
 Fixed overhead Volume variance = Standard fixed overhead for actual output - Budgeted fixed overhead  
 $= (3,800 \times 10) - 40,000$   
 $= ₹ 2,000$  (A)

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- (d) Fixed overheads Efficiency variance = (Standard production for actual days × standard rate per unit) – (Actual production × Standard rate )  
 $= (200 \times 21 \times 10) - 3,800 \times 10$   
 $= ₹ 4,000 \text{ (A)}$
- (e) Fixed overhead Calendar variance = (Standard working days × standard rate per day) – (actual days × standard rate per day)  
 $= \frac{40,000}{20} \times 21 - 40,000$   
 $= ₹ 2,000 \text{ (F)}$

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**2009 - June [5]** (a) The standard process cost card for a processed item is as under :

	₹ Per kg of Finished Product
Direct Material - 2 kgs @ ₹ 10 per kg	20
Direct Labour -3 hours @ ₹ 20 per hour	60
Fixed Overhead	<u>90</u>
Total	170

Budgeted output for the period is 1000 kgs.

Actual production and cost data for a month are as under :

Actual production (on equivalent production basis)

Material =	1400 kgs	
Labour =	1140 kgs	
Overheads =	1140 kgs	
Direct Material	2900 kgs	= cost ₹ 32,000
Direct Labour	3300 hours	= cost ₹ 68,000
Fixed Overhead		₹ 88,000

You are required to work out the following variances:

- Material Price and Usage Variances;
- Labour rate and Efficiency Variances; and
- Fixed Overhead Budget Variance.

**(10 marks)**



**Answer :**

			₹
Material price variance	(Std. price – Actual price) × Actual Qty.	29,000 – 32,000	3,000(A)
Material Usage variance	(Std. Qty – Actual Qty.) × Std. rate	28,000 – 29,000	1,000(A)
Labour rate variance	(Std. rate - Actual rate) × Actual hours	66,000 – 68,000	2,000(A)
Labour efficiency variance	Std. rate × (Standard hours – Actual hours)	20 × (3,420 – 3,300)	2,400(F)
Fixed overhead budget variance	Budgeted expenditure – Actual expenditure	(1,000 × 90) – 88,000	2,000 (F)

**Working Note:**

**Std. Qty. for actual output = 1,400kg × 2kgs = 2,800kgs**

— Space to write important points for revision —

**2009 - Dec [6]** (b) The following information are provided to you for a month in respect of a workshop :

- (i) Overhead cost variance — ₹ 1,400 adverse
- (ii) Overhead volume variance — ₹ 1,000 adverse
- (iii) Budgeted hours — 1,200 hrs.
- (iv) Budgeted overhead — ₹ 6,000
- (v) Actual rate of recovery of overheads — ₹ 8 per hour

You are required to compute :

1. Overhead expenditure variance
2. Actual overheads incurred
3. Actual hours for actual production
4. Overheads capacity variance
5. Overheads efficiency variance
6. Standard hours for actual production

**(10 marks)**

**Answer :**

Let Standard Hours for Actual Output be x

And Actual Hours be y

Fixed overhead efficiency variance

$$= SH \times SR - AH \times SR = x \times 5 - y \times 5 = 5x - 5y$$

Fixed overhead capacity variance

$$= AH \times SR - BH \times SR = 5x - 6,000$$

Fixed overhead expenditure variance

$$= BH \times SR - AH \times AR = 6,000 - 8y$$

Fixed overhead cost variance = 1,400(A)

1. Fixed overhead expenditure variance

= Fixed overhead cost variance - Fixed overhead Volume variance

$$= 1,400(A) - 1,000(A)$$

$$= 400(A)$$

2. Actual Overhead incurred (AH × AR)

$$= 800 \times 8 = ₹ 6400$$

3. Actual Hours for Actual Production

Fixed overhead expenditure variance

$$= 6,000 - 8y = 400(A)$$

$$8y = 6,400$$

$$Y = 800 \text{ hrs.}$$

4. Fixed overhead capacity variance

$$= AH \times SR - BH \times SR = 5x - 6,000 = 5 \times 800 - 6,000 = 2,000(A)$$

5. Fixed overhead efficiency variance

= Fixed overhead volume variance – Fixed overhead Capacity variance

$$= 1,000(A) - 2,000(A)$$

$$= 1,000(F)$$

6. Standard Hours for Actual production

Fixed overhead efficiency variance

$$= SH \times SR - AH \times SR = x \times 5 - y \times 5$$

$$5x - 5y = 1,000(F)$$

$$5x - 5 \times 800 = 1,000(F)$$

$$5x = 5,000$$

$$x = 1,000 \text{ hrs.}$$

— Space to write important points for revision —

**2010 - June [5]** B. Ltd. started trading on 1st November 2008, manufacturing and selling one product. The standard cost per unit was :

Direct material: Standard price ₹10 per kilogram

Standard quantity: 20 kilogram per unit

Direct labour: Standard rate of pay ₹5.50 per hour

Standard time allowance: 12 hours per unit

Production overhead costs, all classified as fixed, were budgeted at ₹ 9,00,000 per annum. The standard time for producing one unit is 12 machine hours and normal capacity is 60,000 machine hours per annum. Production overhead is absorbed on machine hours.

For the year ended 31st October 2009, the costs incurred and other relevant information is given below:

Direct material used — 1,00,000 kilograms at a cost of ₹ 10,50,000

Direct wages paid — ₹3,10,000 for 62,000 hours

Production overhead — ₹ 9,26,000

Machine capacity used — 60,000 hours

Actual output — 4,800 units

Assuming no stocks of work-in-progress or finished goods at year end.

You are required to:

- Show the standard product cost for one unit.
- Calculate variances for material (usage and price), labour (rate and efficiency) and overhead. **(5 + 10 = 15 marks)**

**Answer :**

**Standard Cost Card (per unit)**

	₹
A. Direct Material (20K.g's @ ₹10 per K.g.)	200
B. Direct Labour (12 hours @ ₹5.50 per hour)	66
C. Overheads (12 hours @ ₹ 15 per hour)	<u>180</u>
D. Total Standard Cost (A+B+C)	446

**Calculation of material costs Variances**

Standard quantity for actual output =  $4,800 \times 20 = 96,000$

**Statement showing the basic calculation for the computation of Material Cost Variances**

SQ for AQ	SP	SQ × SP (1)	AQ	AP	AQ × AP (2)	AQ × SP (3)
96,000	10	9,60,000	1,00,000	10.5	10,50,000	10,00,000

- A. Material Cost Variances (1 – 2) = ₹ 9,60,000 – ₹ 10,50,000  
= ₹ 90,000 (A)
- B. Material Usage Variances (1 – 3) = ₹ 9,60,000 – ₹ 10,00,000  
= ₹ 40,000 (A)
- C. Material Price Variances (3 – 2) = ₹ 10,00,000 – ₹ 10,50,000  
= ₹ 50,000 (A)

**Verification**

Material Costs Variances

$$= \text{Material Usage Variances} + \text{Material Price Variances}$$

$$= ₹ 40,000 (A) + ₹ 50,000 (A) = ₹ 90,000 (A)$$

**Calculation of Labour cost variances**

Standard hour for actual output =  $4800 \times 12 = ₹ 57,600$

**Statement showing the basic calculation for the Computation for Labour Cost Variances**

SH for AO	SR	SH × SR (1)	AH	AR	AH × AR (2)	AH × SR (3)
57,600	5.5	3,16,800	62,000	5	3,10,000	3,41,000

- A. Labour Cost Variance (1 – 2) = ₹ 3,16,800 – ₹ 3,10,000  
= ₹ 6,800 (F)
- B. Labour Efficiency Variances (1 – 3) = ₹ 3,16,800 – ₹ 3,41,000  
= ₹ 24,200 (A)
- C. Labour Rate Variances (3 – 2) = ₹ 3,41,000 – ₹ 3,10,000  
= ₹ 31,000 (F)

**Verification**

Labour Cost Variance = Labour Efficiency Variance + Labour Rate Variance  
= ₹ 24,200 (A) + ₹ 31,000 (F)  
= ₹ 6,800 (F)

**Calculation of Overhead Cost Variances**

Budgeted Hours = ₹ 9,00,000 / ₹ 15 = 60,000

Assumption : All overheads are fixed.

**Statement showing the basic Calculation for the computation of material cost Variances**

SH for AO	SR	SH × SR (1)	AH	AR	AH × AR (2)	AH × SR (3)	BH	BH × SR (4)
57,600	15	8,64,000	60,000	15.43	9,26,000	9,00,000	60,000	9,00,000

- A. Fixed Overhead Efficiency Variance  
 $(1 - 3) = ₹ 8,64,000 - ₹ 9,00,000 = ₹ 36,000 \text{ (A)}$
- B. Fixed Overhead Capacity Variance  
 $(3 - 4) = ₹ 9,00,000 - ₹ 9,00,000 = ₹ 0$
- C. Fixed Overhead Expenditure Variance  
 $(4 - 2) = ₹ 9,00,000 - ₹ 9,26,000 = ₹ 26,000 \text{ (A)}$
- D. Total Fixed Overhead Cost Variance  
 $(A+B+C) = ₹ 36,000 + ₹ 26,000 = ₹ 62,000$

— Space to write important points for revision —

**2012 - June [7]** (a) From the following particulars furnished by M/s. Starlight Co. Ltd. find out (i) Material cost variance : (ii) Material usage variance and (iii) Material price variance.

Value of Material purchased	. . ₹ 9,000
Quantity of Material purchased	. . 3,000 units
Standard quantity of materials required per tonne of finished product	. . 25 units
Standard rate of material	. . ₹ 2 per unit
Opening Stock	. . Nil
Closing Stock of material	. . 500 units
Finished production during the period	. . 80 tonnes.

**(4 + 3 + 3 = 10 marks)**

**Answer :**

Particulars	Formulae	Workings	Variances
Material Cost Variance	Total Standard cost - Total Actual cost	4,000-7,500	3,500 (A)
Material Price Variance	(Standard Price - Actual price) Actual Qty.	(2 -3) 2,500	2,500 (A)

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Material Usage Variance	(Standard Qty. - Actual Qty.) Standard Price	(2,000-2,500)2	1,000 (A)
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**Workings :**

- (1) Standard Quantity =  $80 \times 25 = 2,000$  units
- (2) Standard Rate = ₹ 2.00 per unit
- (3) Actual Rate =  $9,000/3,000 = ₹ 3.00$  per unit
- (4) Actual Quantity =  $3,000 - 500 = 2,500$  units

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— Space to write important points for revision —

**2013 - June [3]** (a) The following information is available in respect of fixed overheads for a production period:

Overheads Cost Variance	₹ 1,400 (Adverse)
Overheads Volume Variance	₹ 1,000 (Adverse)
Budgeted Hours	1200 hours
Budgeted Overheads	₹ 6,000

Actual rate of recovery of Overhead ₹ 8 per hour

You are required to compute the following for the given production period:

- (i) Actual Overheads Incurred
- (ii) Overhead Expenditure Variance
- (iii) Overheads Capacity Variance
- (iv) Actual Hours for Actual Production **(2 + 2 + 3 + 3 = 10 marks)**

**Answer :**

Fixed overhead cost variance = ₹ 1,400(A) given

Fixed overhead Volume variance = ₹ 1,000(A) given

Budgeted Over Head = ₹ 6,000 (given)

Standard rate = Budgeted Overhead /budgeted hours  
 $= 6,000/1,200 = 5$

Over head cost variance = Overhead expenditure variance + over head volume variance

$-1,400 = \text{Overhead Exp. Variance} - 1000$

Overhead Exp. Variance = ₹ 400(A)

Overhead Exp. Variance = Budgeted overhead – Actual Overhead  
 $- 400 = 6,000 - \text{Actual Overhead}$

Actual Over Head incurred = ₹6,400

Actual Hours for Actual Production =  $6,400/8 = 800$  hours

Overhead capacity variance

= (Actual hours – Budgeted hours)  $\times$  standard rate

=  $(800 - 1,200) \times 5 = ₹ 2,000$  (A)

—— Space to write important points for revision ——

**2013 - Dec [1] {C}** (c) In a factory of ARITAN LTD. operating Standard Costing System, 2000 kgs of a material @ ₹ 12 per kg were used for a product, resulting in price variance of ₹ 6,000 (FAV) and usage variance of ₹ 3000 (ADV). What is the standard material cost of actual production of a product? **(2 marks)**

**Answer :**

Given, Actual quantity = 2,000kg

Actual rate = ₹ 12/kg

Actual Material cost =  $2,000 \times 12 = ₹ 24,000$

Total material cost variance usage = Material price variance + Material variance  
= 6,000 (FAV) + 3,000(ADV)  
= 3,000 (FAV)

Hence, the standard material cost of Actual production: =  $24,000 + 3,000$  (F)  
= ₹ 27,000.

—— Space to write important points for revision ——

**2013 - Dec [2]** (b) ESKAY LTD. operates a system of standard costing throughout its division. The company produces an alloy by mixing and processing three materials P, Q and R as per standard data given below:

Materials	Ratio of Input	Cost per kg (₹)
P	2	40
Q	2	60
R	1	85

Note : Loss during processing is 5% of input and this has no realizable value. During the month of June, 2013, 580000 kg of finished alloy was obtained from inputs as per details given below:

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Materials	Quantity Consumed (kg)	Cost per kg (₹)
P	240000	38
Q	250000	59
R	110000	88

You are required to calculate the following variances:

- (a) Material Cost Variance;
- (b) Material Price Variance;
- (c) Material Mix Variance;
- (d) Material Yield Variance;
- (e) Material Usage Variance.

(2 × 5 = 10 marks)

**Answer :**

**ESKAY LTD.**

**Working: Standard Cost of Finished Alloy**

Material	Ratio	Quantity (kg)	Cost/kg (₹)	Total (₹)
P	2	2	40	80
Q	2	2	60	120
R	1	1	85	85
Total Input		5		285
(Less) 5% Loss in process		(0.25)		---
Net Output		4.75 Kg		(₹) 285

Standard Cost per kg of output  $\frac{285}{4.75} = ₹ 60$

**COMPUTATION OF VARIANCES:**

**Total Material Cost Variance:** [Standard Cost of Actual Production (Output) - Actual Material Cost for production]

$5,80,000 \times ₹ 60 - [P: 2,40,000 \times ₹ 38 + Q: 2,50,000 \times ₹ 59 + R: 1,10,000 \times ₹ 88]$

$= ₹ 3,48,00,000 - ₹ 3,35,50,000$

$= ₹ 12,50,000 (F)$

**Material Price Variance:** (Standard Price - Actual Price) × Actual Quantity Consumed

P:  $(40 - 38) \times 2,40,000 = ₹ 4,80,000 (F)$

Q:  $(60 - 59) \times 2,50,000 = ₹ 2,50,000 (F)$

R:  $(85 - 88) \times 1,10,000 = ₹ 3,30,000 (A)$

$= ₹ 4,00,000 (F)$



**Material Mix Variance:** (Input in Standard proportion- Actual input) × Standard Cost of input/kg

$$P \quad (2,40,000 - 2,40,000) \times ₹ 40 = \text{Nil}$$

$$Q \quad (2,40,000 - 2,50,000) \times ₹ 60 = ₹ 6,00,000 \text{ (A)}$$

$$R \quad \frac{(1,20,000 - 1,10,000)}{6,00,000} \times ₹ 85 = ₹ \frac{8,50,000}{6,00,000} \text{ (F)}$$

$$\frac{6,00,000}{6,00,000} \quad ₹ 2,50,000 \text{ (F)}$$

Yield variance = (Standard yield from actual input - Actual input) × Standard Cost of finished product

$$= (6,00,000 \times \frac{95}{100} - 5,80,000) \times ₹ 60$$

$$= 10,000 \times ₹ 60$$

$$= ₹ 6,00,000 \text{ (F)}$$

Usage Variance = Standard cost (Output) of Actual production/(Output) - Standard Cost of Actual quantity Consumed.

$$= (5,80,000 \times 60) -$$

$$P: (2,40,000 \times 40)$$

$$+ Q: (2,50,000 \times 60)$$

$$+ R: (1,10,000 \times 85)$$

$$= ₹ 3,48,00,000 - ₹ 3,39,50,000 = ₹ 8,50,000 \text{ (F)}$$

Mix Variance + Yield variance

$$₹ 2,50,000 \text{ (F)} + ₹ 6,00,000 \text{ (F)} = ₹ 8,50,000 \text{ (F)}$$

— Space to write important points for revision —

**2014 - June [1] {C}** (b) In a factory of ZEE LTD., where Standard Costing is followed, the budgeted fixed overheads for a budgeted production of 4800 units is ₹ 24,000. For a certain period actual (FOH) expenditure was ₹ 22,000 resulting in a fixed overhead volume variance of ₹ 3,000 (Adv.)

Calculate the actual production of ZEE LTD. for the period. **(2 marks)**

**Answer:**

$$\text{Budgeted Production} = 48,000$$

$$\text{Budgeted fixed overheads} = ₹ 24,000$$

$$\text{Actual fixed overheads} = ₹ 22,000$$

$$\text{Fixed overhead volume variance} = 3000 \text{ (A)}$$

$$\text{Fixed overhead volume variance} = \text{Budgeted fixed overheads} - \text{Standard fixed overhead for actual production}$$

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$$\begin{aligned}\text{Budgeted overhead} &= 24,000 \\ \text{Overhead for actual production} &= \frac{24,000}{4,800} \times X\end{aligned}$$

Where, X = Actual production

$$\text{Fixed overhead volume variance} = 3,000 \text{ (A)}$$

$$-3,000 = 24,000 - \frac{24,000}{4,800} \times X$$

$$\therefore X = 5,400 \text{ Units}$$

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**2014 - June [3]** (a) AKASH LTD. operates a system of Standard Costing. The company has normal monthly machine-hour capacity of 100 machines working 8 hours per day for 25 working days in the month of April 2014.

- (i) The standard time Required to manufacture one unit of products is 4 hours. The Budgeted fixed overhead was ₹ 1,50,000.
- (ii) In the month of April 2014, the company actually worked for 24 days for average 750 machine-hours per day.
- (iii) The Actual production was 4500 units, and the actual fixed overhead was ₹ 1,60,000.

You are required to compute:

- (A) Fixed overhead efficiency variance
- (B) Fixed overhead capacity variance
- (C) Fixed overhead calender variance
- (D) Fixed overhead expenditure variance
- (E) Fixed overhead volume variance
- (F) Fixed overhead cost variance

**(1 + 2 × 4 + 1 = 10 marks)****Answer:****Computation of Variance**

Name of Variance	Formula	Value	Variance (F/A)
Efficiency Variance	Std. Rate/hr (Std. hrs for actual prod. - Actual hrs.)	7.5(18,000 - 18,000)	nil
Capacity Variance	Std. Rate/hr (Actual hrs.- Bud. hrs.)	7.5(18,000-19,200)	9,000(A)
Calendar Variance	Std. Rate/day(Actual days – Bud. days)	6,000(24-25)	6,000(A)

Expense Variance	(Budgeted fixed overheads – Actual fixed overheads)	1,50,000 - 1,60,000	10,000(A)
Variance	Std. Rate/unit(Actual output-Budgeted output)	30(4,500 - 5,000)	15,000(A)
Total Fixed Overhead Variance	Fixed overheads recovered for actual output – Actual fixed overheads	30×4,500 - 1,60,000	25,000(A)

**(b) Summary of Variances**

Particulars	Variance	Variance
Expense Variance		10,000(A)
Volume Variance		
Efficiency Variance	Nil	
Capacity Variance	9,000(A)	
Calendar Variance	6,000(A)	15,000(A)
Fixed Overhead Variance		25,000(A)

**Working Notes:**

**(i) Standard Rates**

Standard fixed Overhead rate per unit	1,50,000/5,000	30
Standard fixed Overhead rate per hour	1,50,000/20,000	7.5
Standard fixed Overhead rate per day	1,50,000/25	6,000
Standard hours for actual production	4,500×4	18,000

**(ii) Budgeted and Actual Information**

Particulars	Budget	Actual
Fixed overheads for the month	1,50,000	1,60,000
Working days per month	25	24
Working hours per month	20,000(100× 8×25)	18,000 (750 ×24)
Production per month	5,000 (20,000/4)	4,500
Budgeted Hours	19,200(100×8×24)	

— Space to write important points for revision —

**2014 - Dec [2]** (a) Answer the question:

- (i) The following information pertains to labour force of UDHAMI LTD. engaged in a week of November 2014 for a JOB-PH.

	Skilled	Semi-skilled	Unskilled	Total
No. of workers in standard gang:	16	12	8	36
Standard rate per hour (₹)	60	30	10	—
No. of workers in actual gang:	—	—	—	—
Actual rate per hour (₹)	70	20	20	—

In a 40 hours week, the gang produced 1080 standard hours. The actual number of semi-skilled workers is two times of the actual number of unskilled workers. Total number of actual workers are same as standard gang. The rate variance of semi-skilled workers is ₹ 6,400 (F).

You are required to find the following:

- The actual number of workers/labours in each category.
- Labour gang (mix) variance.
- Labour sub-efficiency variance.
- Labour rate variance.
- Labour cost variance.

**[(2 + 1 × 4) + 4 = 10 marks]**

**Answer:**

Rate variance of Semi – skilled workers = 6400 (F)

Rate Variance = (Standard Rate – Actual Rate) × Actual hours

6400 = (30-20) × Actual hours

Actual hours = 640

No. of Semi-skilled workers =  $\frac{640}{40} = 16$

No. of Un-skilled workers =  $\frac{16}{2} = 8$

No. of skilled workers = 36 - 16 - 8 = 12

**Analysis of Given Data**

			Standard		Actual			
	No.	Hours	Rate	Amount	No.	Hours	Rate	Amount
Skilled	16	640	60	38,400	12	480	70	33,600
Semi skilled	12	480	30	14,400	16	640	20	12,800
Un-skilled	8	320	10	3,200	8	320	20	6,400
				56,000				52,800

**Computation of standard hours:**

$$SH = \frac{\text{SH hours for that worker}}{\text{SH for all the workers}} \times \text{Actual Quantity for that worker}$$

$$\text{For Skilled workers SH} = \frac{640}{1440} \times 1080 = 480$$

$$\text{For Semi-skilled workers SH} = \frac{480}{1440} \times 1080 = 360$$

$$\text{For Un-skilled workers SH} = \frac{320}{1440} \times 1080 = 240$$

**Computation of Required Values**

	SRSH (1) ₹	SRRSH (2) ₹	SRAH (3) ₹	ARAH (4) ₹
Skilled	480 × 60 = 28,800	38,400	480 × 70 = 33,600	33,600
Semi skilled	360 × 30 = 10,800	14,400	640 × 20 = 12,800	12,800
Un-skilled	240 × 10 = 2,400	3,200	320 × 20 = 6,400	6,400
	42,000	56,000	51,200	52,800

Where

1. SRSH = Standard Cost of Standard Labour = ₹ 42,000
2. SRRSH = Revised Standard Cost of Labour = ₹ 56,000
3. SRAH = Standard Cost of Actual Labour = ₹ 51,200
4. ARAH = Actual Cost of Labour = ₹ 52,800

**Computation of Labour Variances:**

$$\begin{aligned} \text{a. Labour Mix or Gang Variance} &= (2) - (3) = [₹(56,000 - 51,200)] \\ &= 4,800 \text{ (F)} \end{aligned}$$

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- b. Labour Sub-Efficiency Variance = (1) – (2) = [₹(42,000 – 56,000)]  
= 14,000 (A)
- c. Labour Rate Variance = (3) – (4) = [₹(51,200 – 52,800)]  
= 1,600 (A)
- d. Labour Cost Variance = (1) – (4) = [₹(42,000 – 52,800)]  
= 10,800 (A)

—— Space to write important points for revision ———

**2015 - June [1]** Answer the question:

- (b) In a factory of ASHLIN LTD., where Standard Costing System is followed, the production department consumed 1100 kgs. of a material @ ₹ 8 per kg. for a Product-A resulting in material price variance of ₹ 2,200 (FAV) and material usage variance of ₹ 1,000 (Adv.). What is the standard material cost of Actual Production of a Product-A? **(2 marks)**

**Answer:**

Actual quantity consumed = 1100Kg @ ₹ 8

Material price variance = ₹ 2,200 (F)

Material usage variance = ₹ 1,000 (A)

Material price variance = Actual quantity (Standard Price – Actual Price)  
= 2,200 = 1,100 (SP - 8)  
SP = ₹ 10

Material usage variance = Standard price (Standard Quantity – Actual Quantity)  
-1,000 = 10 (SQ – ₹ 1,100)  
SQ = 1000 Kg

**Standard Material Cost of actual production of product A**

= ₹ 1,000 × 10 = ₹ 10,000

—— Space to write important points for revision ———

**2015 - June [2]** Answer the question:

- (c) (i) ABOKASH LTD., operates a System of Standard Costing. The Company manufactures a Chemical Product by mixing three ingredients Chemical A, B and C and processes the same. The Standard Cost data for the product are as follows:

Chemical	Percentage of total input	Standard Cost per kg. (₹)
A	50%	40
B	30%	60
C	20%	95

Note: Loss during processing is 5% of input and this has no realizable value.

During the month of May, 2015, 10200 kg. of finished product was obtained from the Inputs as per details given below:

Chemical Consumed	Quantity purchased and issued	Actual Cost (₹)
A	5200 kg.	2,34,000
B	3600 kg.	2,19,600
C	1700 kg.	1,58,100

**You are required to calculate:**

- (1) Material Cost Variance
- (2) Material Price Variance
- (3) Material Mix Variance
- (4) Material Yield Variance
- (5) Material Usage Variance

(2 + 2 + 2 + 2 + 2 = 10 marks)

**Answer:**

Type of Material	Standard			Actual		
	Qty. Kg.	Rate (₹)	Amount (₹)	Qty. Kg.	Rate (₹)	Amount (₹)
<b>A</b>	5,250	40	2,10,000	5,200	45	2,34,000
<b>B</b>	3,150	60	1,89,000	3,600	61	2,19,600
<b>C</b>	2,100	95	1,99,500	1,700	93	1,58,100
	10,500		5,98,500	10,500		6,11,700
	(525)			(300)		
	9,975			10,200		

- (1) **Direct Material Cost Variance = Standard Cost for Actual output - Actual Cost**

$$= \frac{5,98,500}{9,975} \times 10,200 - 6,11,700$$

$$= 6,12,000 - 6,11,700 = 300(\text{F})$$

Material Yield Variance + Material Mix Variance + Material Price Variance  
 Total Material cost Variance OR,  
 = Material Price Variance + Material Usage Variance  
 = 26,200 (ADV) + 26,500 (F)  
 = 300 Fav.

- (2) **Direct Material Price Variance = (Standard Rate – Actual Rate) × Actual Quantity**

For Material A:	$(40 - 45) \times 5,200$	26,000 (A)
For Material B:	$(60 - 61) \times 3,600$	3,600 (A)
For Material C:	$(95 - 93) \times 1,700$	3,400 (F)
		26,200 (A)

- (3) **Direct Material Mix Variance = (Revised Std. Qty. – Actual Qty.) × Std. Rate:**

For Material A:	$(5,250 - 5,200) \times 40$	2,000 (A)
For Material B:	$(3,150 - 3,600) \times 60$	27,000 (A)
For Material C:	$(2,100 - 1,700) \times 95$	38,000 (F)
		13,000 (F)

- (4) **Direct Material Yield Variance:**

$$= \text{Std. cost per unit} \times (\text{Std. output for Actual Mix} - \text{Actual Output})$$

$$= \frac{5,98,500}{9,975} \times (9,975 - 10,200)$$

$$= 60 (225)$$

$$= 13,500 (\text{F})$$



(5) **Direct Material Usage Variance = (Standard Qty. for Actual Output - Actual Qty.) × Standard Rate:**

For Material A:	$\left( \frac{5,250}{9,975} \times 10,200 - 5,200 \right) \times 40$	6,737 (F)
For Material B:	$\left( \frac{3,150}{9,975} \times 10,200 - 3,600 \right) \times 60$	22,737 (A)
For Material C:	$\left( \frac{2,100}{9,975} \times 10,200 - 1,700 \right) \times 95$	42,500 (F)
		26,500 (F)

— Space to write important points for revision —

**2015 - Dec [1]** Answer the question:

(e) Calculate the efficiency ratio from the following figures:

Budgeted production	160 units	
Actual production	120 units	
Standard time per unit	10 hours	
Actual hours worked	1000	(2 marks)

**Answer:**

Standard Hours for Actual Output =  $120 \times 10$   
= 1,200

$$\begin{aligned} \text{Efficiency Ratio} &= \frac{\text{Standard Hours}}{\text{Actual Hours}} \\ &= \frac{1,200}{1,000} \\ &= 1.2 \text{ or } 120\%. \end{aligned}$$

— Space to write important points for revision —

**2015 - Dec [2]** Answer the question.

(b) (i) A manufacturing company operates a costing system and showed the following data in respect of the month of November, 2015.

Budgeted		Actual	
Working days	20	Working days	22
Man hours	4,000	Man hours	4,200

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Fixed Overhead Cost (₹)	2,400	Fixed Overhead Cost (₹)	2,500
Output (units)	800	Output (units)	900

You are required to calculate fixed overhead variances from the above data. (6 marks)

**Answer:**

SR SH(1)(₹)	SRAH(2)(₹)	SRR BH(3)(₹)	SR BH(4)(₹)	AR AH(5)(₹)
0.6 x 4,500 = 2,700	0.6 x 4,200 = 2,520	0.6 x 4,400 = 2,640	0.6 x 4,000 = 2,400	2,500

$$SR = \frac{\text{Budgeted FO}}{\text{Budgeted Hours}} = \frac{2,400}{4,000} = 0.60$$

$$\text{Standard Man Hours per unit} = \frac{4,000}{800} = 5$$

$$\text{Standard Hours for Actual Output} = 900 \times 5 = 4,500$$

$$\text{Revised Budgeted Hours} = \left( \frac{22}{20} \times 4,000 \right) = 4,400$$

**Fixed Overhead Variances:**

- (a) FOH Efficiency Variance = (1) - (2) = ₹ 180 (F)
- (b) FOH Capacity Variance = (2) - (3) = ₹ 120(A)
- (c) FOH Calendar Variance = (3) - (4) = ₹ 240 (F)
- (d) FOH Volume Variance = (1) - (4) = ₹ 300 (F)
- (e) FOH Budget Variance = (4) - (5) = ₹ 100 (A)
- (f) FOH Cost Variance = (1) - (5) = ₹ 200 (F)

— Space to write important points for revision —

**2016 - June [1]** (d) Standard cost of material for output of 2,600 units is ₹ 71,500 and actual output is 2,550 units. If material mix variance is ₹ 1,095 adverse, find out material usage variance. (2 marks)

**Answer:**

Material Usage Variance = Material Yield variance + Material Mix variance.

Material Yield variance = Std. Mat. Cost per unit × (Actual Output – Std. Output)

=  $(71,500/2,600) \times (2,550 - 2,600) = 27.5 \times 50 = 1,375$  (adv)

Material Usage Variance = 1,375 (adv) + 1,095 (Adv) = ₹ 2,470(Adv)

—— Space to write important points for revision ——

**2016 - Dec [1]** (f) From the following data compute total profit variance:

Budgeted Sales ₹ 48,000 (2400 units)

Actual Sales ₹ 55,000 (2500 units)

Actual Cost ₹ 45,000 (2500 units)

Budgeted Costs ₹ 38,400 (2400 units)

**(4 marks)**

**Answer:**

Budgeted Quantity (BQ) = 2,400; Actual Quantity (AQ) = 2,500;

Budgeted Selling Price (BSP) = ₹ 48,000/2,400 = ₹ 20;

Standard Cost per unit (SC) = ₹ 38,400/2,400 = ₹ 16;

Actual Selling Price (ASP) = ₹ 55,000/2,500 = ₹ 22;

SR = BSP-SC = ₹ 4;

AR = ASP-SC = ₹ 6;

Total Profit Variance = AR × AQ - SR × BQ

=  $6 \times 2,500 - 4 \times 2,400 = ₹ 5,400$  (FAV).

—— Space to write important points for revision ——

**2016 - Dec [7]** (a) The standard cost of a chemical mixture is as follows:

60% material A at ₹ 40 per kg

40% material B at ₹ 60 per kg

A standard loss of 10% of input is expected in production. The cost record for the month of November, 2016 showed the following usage:

1100 kg of material A at a cost of ₹ 49,500

900 kg of material B at a cost of ₹ 50,400

The actual production was 1820 kg of good products.

**10.180****■ Scanner CMA Inter Gr. II Paper 10 A (2016 Syllabus)**

You are required to calculate:

- (i) Material yield variance
- (ii) Material mix variance
- (iii) Material usage variance
- (iv) Material price variance
- (v) Material cost variance

**(10 marks)**

**Answer:**

Material	Standard data			Actual data		
	Qty	Price (₹)	(2) RSQSP (₹)	Qty	Price (₹)	(4) AQAP (₹)
A	1,200	40	48,000	1,100		49,500
B	800	60	48,000	900		50,400
	2,000		96,000	2,000		99,900
	200			180		
	1,800		96,000	1,820		99,900

Material	SQ for AY		(1) SQSP	AQ	(3) AQSP
A	$(1,200/1,800) \times 1,820 = 1213.333$	40	48533.33	1,100	44,000
B	$(800/1,800) \times 1,820 = 808.8889$	60	48533.33	900	54,000
	2022.222		97066.67		98,000

- (i) Material Yield variance [(1) - (2)]
- (ii) Material Mix variance [(2) - (3)]
- (iii) Material Usage variance [(1) - (3)]
- (iv) Material Price variance [(3) - (4)]
- (v) Material Cost Variance [(1) - (4)]

	(1) - (2) ₹	(2) - (3) ₹	(1) - (3) ₹	(3) - (4) ₹	(1) - (4) ₹
A	533.33	4000	4533.33	5500(ADV)	966.67(ADV)
B	533.33	6000(ADV)	5466.67(ADV)	3600	1866.67(ADV)
	1066.66	2000(ADV)	933.34(ADV)	1900(ADV)	2833.34(ADV)

— Space to write important points for revision —

**2017 - June [3]** (a) In MJ Limited the standard set for material consumption was 100 kg. @ ₹ 2.25 per kg.

In a cost period:

Opening stock was 100 kg. @ ₹ 2.25 per kg.

Purchases made 500 kg. @ ₹ 2.15 per kg.

Consumption 110 kg.

As a Cost and Management Accountant you have to calculate:

- (i) Material Usage Variance, and
- (ii) Material Price Variance in the following three situations:
  - (A) When variance is calculated at point of purchase.
  - (B) When variance is calculated at point of issue on FIFO basis.
  - (C) When variance is calculated at point of issue on LIFO basis.

**(6 marks)**

**(b)** From the following information compute the Fixed Overhead Variance, Expenditure Variance and Volume Variance:

	Budget Expenses (₹)	Actual Expenses (₹)
Fixed Overheads	40,000	40,800
Units of Production	20,000	20,800
Time for each unit of production	2 hours	
Actual Hours worked		40,200

**(6 marks)**

**Answer:****(a) Computation of Material Usage Variance**

$$\begin{aligned}
 \text{Material Usage Variance} &= \text{SQSP} - \text{AQSP} \\
 &= \text{SP} (\text{SQ} - \text{AQ}) \\
 &= 2.25 (100 - 110) \\
 &= 22.50 \text{ (A)}
 \end{aligned}$$

**(b) Computation of Price Variance:****(1) When Variance is calculated at the point of purchase:**

$$\begin{aligned}
 \text{Price variance} &= \text{AQSP} - \text{AQAP} \\
 &= (110 \times 2.25) - (110 \times 2.15) \\
 &= 11 \text{ (F)}
 \end{aligned}$$

**(2) When variance is calculated at the point of issue on FIFO basis**

$$\begin{aligned}
 \text{Price variance} &= \text{AQSP} - \text{AQAP} \\
 &= (110 \times 2.25) - ([100 \times 2.25] + [10 \times 2.15]) \\
 &= 1 \text{ (F)}
 \end{aligned}$$

**(3) When variance is calculated at the point of issue on LIFO basis**

$$\begin{aligned}
 \text{Price variance} &= \text{AQSP} - \text{AQAP} \\
 &= (110 \times 2.25) - (110 \times 2.15) \\
 &= 247.50 - 236.50 \\
 &= 11 \text{ (F)}
 \end{aligned}$$

**(b) Fixed Overhead Cost Variance = 41600 – 40800 = 800 (F)**

$$\text{Expenditure Variance} = 40000 - 40800 = 800 \text{ (A)}$$

$$\text{Volume Variance} = 41600 - 40000 = 1600 \text{ (F)}$$

— Space to write important points for revision —

**2017 - Dec [3]** (a) X Ltd. uses budgetary control and standard costing system. The following data are available:

Product	Budgeted		Actual	
	Units to be sold	Sales value (₹)	Units sold	Sales value (₹)
A	100	1,200	100	1,100
B	50	600	50	600
C	100	900	200	1,700
D	75	450	50	300
	<b>325</b>	<b>3,150</b>	<b>400</b>	<b>3,700</b>

Calculate:

- (i) Sales Volume Variance
- (ii) Sales Price Variance
- (iii) Sales Variance

(4  $\frac{1}{2}$  marks)

(b) The standard labour and the actual labour engaged in a week for a job are as under:

	Skilled workers	Semi-skilled workers	Unskilled workers
A. Standard number of workers in the gang	32	12	6
B. Standard rate of wages per hour (₹)	3	2	1
C. Actual number of workers employed in the gang during the week	28	18	4
D. Actual rate of wages per hour (₹)	4	3	2

During the 40-hour working week, the gang produced 1800 standard labour hours of work.

Calculate:

- (i) Labour Sub-efficiency Variance
- (ii) Labour Mix or Gang Variance
- (iii) Labour Efficiency Variance
- (iv) Labour Rate Variance
- (v) Labour Cost Variance

(7  $\frac{1}{2}$  marks)

**Answer:**

(a) (i) Sales Volume Variance = Standard Price × (Budgeted Qty. – Actual Qty.)

$$A \quad 12 \times (100 - 100) = \text{NIL}$$

$$B \quad 12 \times (50 - 50) = \text{NIL}$$

$$C \quad 9 \times (100 - 200) = 900 \text{ (Favourable)}$$

$$D \quad 6 \times (75 - 50) = \underline{150} \text{ (Adverse)}$$

750 Favourable

(ii) Sales Price Variance = Actual Quantity  $\times$  (Std. price – Actual price)

A  $100 \times (12 - 11) = 100$  (Adverse)

B  $50 \times (12 - 12) = \text{NIL}$

C  $200 \times (9 - 8.5) = 100$  (Adverse)

D  $50 \times (6 - 6) = \text{NIL}$

₹ 200 Adverse

(iii) Sales Variance = Sales Price Variance – Sales Volume Variance

= ₹ 200 (A) – ₹ 750 (F)

= ₹ 550 (Favourable)

(b)

Category of Worker	Standard			Actual		
	Hrs.	Rate	Amount	Hrs.	Rate	Amount
Skilled	1280	3	3,840	1120	4	4,480
Semi - skilled	480	2	960	720	3	2,160
Unskilled	240	1	240	160	2	320
	2000		5,040	2000		6,960

(i) Labour Sub-efficiency Variance = Standard Cost  $\times$  (Standard Output for Actual per Hrs. of work Mix – Actual output)

=  $2.52 \times (2,000 - 1,800)$

= 504 (Adverse)

(ii) Labour Mix Variance = Standard Rate  $\times$  (Revised St. time – Actual time)

Skilled =  $3 \times (1,280 - 1,120) = 480$  (F)

Semi skilled =  $2 \times (480 - 720) = 480$  (A)

Unskilled =  $1 \times (240 - 160) = 80$  (F)

₹ 80 (F)

(iii) Labour Efficiency Variance

= Standard Rate  $\times$  (Standard time for Actual output – Actual time)

Skilled =  $3 \times (1,152 - 1,120) = 96$  (F)

Semi skilled =  $2 \times (432 - 720) = 576$  (A)

Unskilled =  $1 \times (216 - 160) = 56$  (F)

₹ 424 (A)



(iv) Labour Rate Variance = Actual time × (St. Rate – Actual Rate)

Skilled =  $1,120 \times (3 - 4) = 1,120$  (A)

Semi skilled =  $720 \times (2 - 3) = 720$  (A)

Unskilled =  $160 \times (1 - 2) = 160$  (A)

₹ 2,000 (A)

(v) Labour Cost Variance = Standard cost for actual output – Actual cost  
 =  $4,536 - 6,960$   
 =  $2,424$  (A)

**Working Note:**

1. Standard cost for Actual output =  $\frac{5,040}{2,000} \times 1,800 = ₹ 4,536$

2. Standard time for Actual output

Skilled =  $\frac{1,800}{2,000} \times 1,280 = 1,152$  Hrs.

Semi skilled =  $\frac{1,800}{2,000} \times 480 = 432$  Hrs.

Unskilled =  $\frac{1,800}{2,000} \times 240 = 216$  Hrs.

3. Standard cost per Hrs. of Standard work =  $\frac{5,040}{2,000} = ₹ 2.52$

— Space to write important points for revision —

**2018 - June [3]** (a) The Standard Material Cost to produce a tonne of prefabricated building material of AJANTA LTD. is:

300 kgs. of material X @ ₹ 10 per kg.

400 kgs. of material Y @ ₹ 5 per kg.

500 kgs. of material Z @ ₹ 6 per kg.

During December 2017, 100 tonnes of mixture prefabricated building material were produced from the uses of:

35 tonnes of material X at a Cost of ₹ 9,000 per tonne

42 tonnes of material Y at a cost of ₹ 6,000 per tonne

53 tonnes of material Z at a cost of ₹ 7,000 per tonne

**Required:**

Calculate the following variances:

(i) Total material cost variance

(ii) Total and individual material price variances

(iii) Total and individual material usage variances

**(2×3 = 6 marks)**

**10.186****■ Scanner CMA Inter Gr. II Paper 10 A (2016 Syllabus)**

(b) The followings details are available for ABC LTD. A manufacturing company:

	Budgeted Expenses, units and hours.	Actual Expenses, units and hours.
Variable Overheads (₹)	5,00,000	5,20,000
Output in units	50,000	40,000
Working hours	2,50,000	2,20,000

**You are Required to** Calculate the following variances:

- (i) Variable Overhead Expenditure variance
- (ii) Variable Overhead Efficiency Variance
- (iii) Total Variable Overhead Variance.

**(2×3 = 6 marks)**

**Answer:**

**(a)**

Material	Standard			Actual		
	Quantity kg	Rate ₹	Amount ₹	Quantity kg	Rate ₹	Amount ₹
X	30,000	10.00	3,00,000	35,000	9.00	3,15,000
Y	40,000	5.00	2,00,000	42,000	6.00	2,52,000
Z	50,000	6.00	3,00,000	53,000	7.00	3,71,000
Total	1,20,000		8,00,000	1,30,000		9,38,000

(a) Material Cost Variance:

Standard Cost for Actual Quantity – Actual Cost  
= ₹ 8,00,000 – ₹ 9,38,000 = ₹ 1,38,000 (A)

(b) Material Price Variances. AQ (AP – SP)

X: 35,000 (9 – 10) = ₹ 35,000 (Favourable)

Y: 42,000 (6 – 5) = ₹ 42,000 (Adverse)

Z: 53,000 (7 – 6) = ₹ 53,000 (Adverse)

Total MPV = ₹ 60,000 (Adverse)

(c) Material Usage Variances SP (AQ – SQ)

X : 10 (35,000 – 30,000) = ₹ 50,000 (Adverse)

Y : 5 (42,000 – 40,000) = ₹ 10,000 (Adverse)

Z : 6 (53,000 – 50,000) = ₹ 18,000 (Adverse)

Total MUV = ₹ 78,000 (Adverse)

(b) Standard variable Overhead per unit ₹ 5,00,000/50,000 = ₹ 10

Standard Variable Overhead per hour 5,00,000/2,50,000 = ₹ 2

Time allowed per unit of output = 2,50,000/50,000 = 5 hours

(a) variable Overhead Expenditure Variance = AH × SR – AOVH  
 = (2,20,000 × 2) – 5,20,000  
 = ₹ 80,000 Adverse

(b) Variable Overhead Efficiency Variance = {standard time for actual production (2,00,000 hrs.) × SR per hour (2)} – {Actual hrs (2,20,000) × SR per hour (2)} = ₹ 40,000 Adverse.

(c) Total Variable Overhead Variance = Actual output (40,000) × SR-per unit (10) – Actual Overhead (5,20,000) = 1,20,000 Adverse.

— Space to write important points for revision —

**2018 - Dec [3]** (a) The following information is available from the records of REEDYAAH LTD. a manufacturing company using Standard Costing System for the week ended April 30, 2018:

	Standard		Actual	
	Qty.	Unit Price	Qty.	Unit Price
Material 'A'	60%	₹ 20	44kg	₹ 25
Material 'B'	40%	₹ 10	66 kg	₹ 5
Processing loss	10%	—	—	—
			Actual output 90 kg.	

**Required:**

Calculate from the information stated Supra:

- Material Cost Variance
- Material Price Variance

- (6 marks)**

	Budget	Actual
Production (Units)	4000	3800
Working days	20	21
Fixed overhead (₹)	40,000	39,000

- (i) Fixed overhead expenditure variance;
- (ii) Fixed overhead volume variance;
- (iii) Fixed overhead efficiency variance;
- (iv) Fixed overhead calendar variance;
- (v) Fixed overhead cost variance;

**(6 marks)**

[illegible]

# 4B






## UNIFORM COSTING AND INTER-FIRM COMPARISON

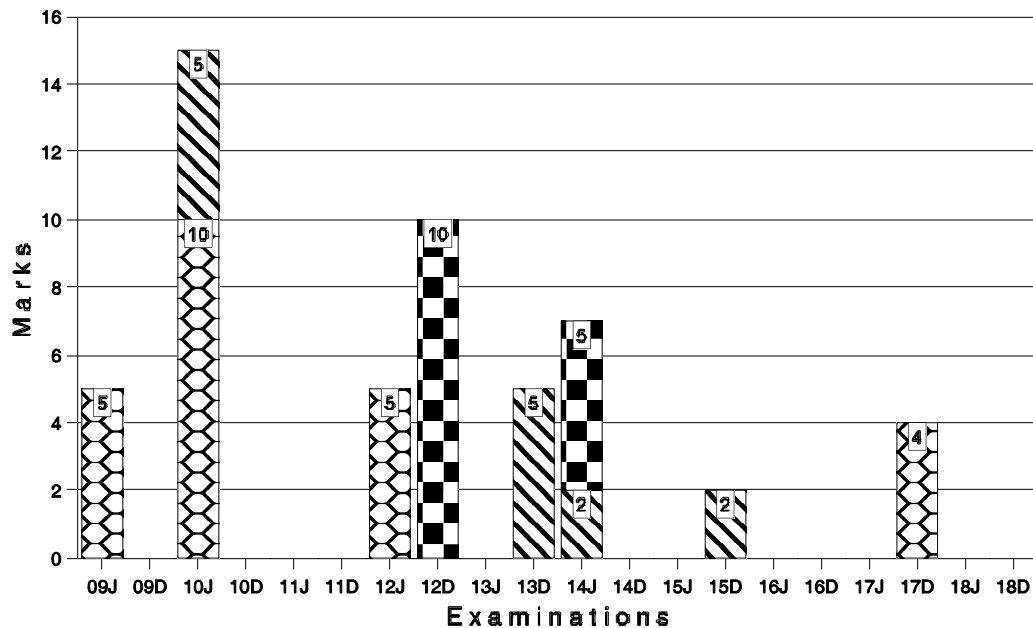
### THIS CHAPTER INCLUDES

- Uniform Costing: Scope
- Installation of a Uniform Costing System
- Fields Covered
- Advantages
- Limitations
- Inter Firm Comparison

Marks of objective, Short Notes, Distinguish Between, Descriptive & Practical Questions

### Legend

 Objective
  Short Notes
  Distinguish
  Descriptive
  Practical



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**CHAPTER AT A GLANCE**

Topic	Important Highlights
	CIMA defines uniform accounting as a “system, using common concepts, principles and standard accounting practices, adopted by different entities in the same industries to facilitate inter-firm comparisons”. Thus, uniform costing is a distinct system of cost accounting where system members of same industry use a common method of costing and apply the same principles and techniques for better inter- firm comparison.
<b>Objectives of uniform costing</b>	<ul style="list-style-type: none"><li>• To have reliable data for comparing cost and performance of different members of same industry.</li><li>• To eliminate unhealthy competition.</li><li>• To improve production level.</li><li>• To provide relevant cost information to government for regulation of prices in market.</li><li>• To bring uniformity in operation of units.</li><li>• To reduce production, selling &amp; distribution &amp; administration costs.</li></ul>
<b>Requisite for installation of uniform costing</b>	<ul style="list-style-type: none"><li>• Firms in industry should share information.</li><li>• There should be a spirit of working with mutual trust and cooperation between firms.</li><li>• Sharing of information and ideas should be done freely and frequently.</li><li>• Bigger firms to share their experience to help the small firm, in improving their performance.</li><li>• Uniformity between firms should be established.</li></ul>

<b>Advantages of uniform costing</b>	<ul style="list-style-type: none"> <li>• The members will adopt a common method which will save the costs of introducing a costing system of the firm.</li> <li>• The costing system could be readily adopted and successfully implemented.</li> <li>• It facilitates comparison between cost figures of various firms.</li> <li>• Services of cost expert can be received jointly by each firm.</li> <li>• Unhealthy competition is avoided.</li> <li>• Uniform wage system.</li> <li>• Helps in negotiating with government.</li> <li>• Research and development work of bigger firms are carried over to smaller firms.</li> <li>• Provides as basis of comparison.</li> <li>• Helps government in regulation of prices.</li> </ul>
<b>Limitations of uniform costing</b>	<ul style="list-style-type: none"> <li>• Uniform costing requires adoption of uniform standards and principles which sometimes due to different circumstances become difficult.</li> <li>• Uniform costing involves sharing of information which sometimes becomes undesirable for some firms.</li> <li>• Uniform costing sometimes becomes expensive for small firms.</li> <li>• Uniform costing promotes monopolistic tendency.</li> <li>• The standards of uniform costing are sometimes misunderstood by member firms.</li> </ul>
<b>Inter- firm comparison</b>	<p>A technique of analyzing the performance, costs, efficiency and profits of one firm with another firm within an industry is known as inter firm comparison.</p> <p>Procedure of inter firm comparison:-</p>

	<p>Collection of data</p> <p>↓</p> <p>Analysis of data</p> <p>↓</p> <p>Presentation of information</p> <p>↓</p> <p>Comparison of performance and efficiency</p> <p>↓</p> <p>Weakness of firm are highlighted</p> <p>↓</p> <p>Requisites of inter firm comparison</p>
<b>Centre for inter-firm comparison</b>	A centralized body required for collection and analysis of data received from various firms in an industry.
<b>Membership</b>	All the firms within an industry should become a member of centralized body for inter firm comparison.
<b>Nature of information required to be collected</b>	<p>Following are the kinds of information to be collected for inter firm comparison</p> <ul style="list-style-type: none"> <li>• Costs and cost structure.</li> <li>• Labour efficiency and labour utilization</li> <li>• Raw material consumption</li> <li>• Stock of raw material, wastage, etc.</li> <li>• Machine utilization and efficiency</li> <li>• Capital employed and return on capital employed</li> <li>• Liquidity position of organization</li> <li>• Reserves and appropriation of profit</li> <li>• Creditors and debtors</li> <li>• Methods of production</li> <li>• Other technical support</li> <li>• Methods of collection and presentation of information</li> </ul>



	The centralized body collects information at regular interval of time from its members. The information provided by the firm is in the form of ratio. This information is analysed and presented to member in the form of report.
<b>Advantages of inter firm comparison</b>	<ul style="list-style-type: none"> <li>• Gives an overall view of the industry.</li> <li>• Weakness of each firm in industry is revealed and therefore suitable remedial action is taken.</li> <li>• Promotes cost consciousness among the members.</li> <li>• Ensure specialized reporting on problems.</li> <li>• Helps government in effective price regulation.</li> <li>• Helps in improving product quality.</li> </ul>
<b>Limitation of inter firm comparison</b>	<ul style="list-style-type: none"> <li>• Top management shows resistance in sharing of information.</li> <li>• Middle management is not convinced with sure comparison.</li> <li>• When suitable basis of comparison is not available inter firm comparison becomes meaningless.</li> <li>• When suitable cost accounting system is not present the figures supplied are of non relevance as they cannot be relied upon for comparison.</li> </ul>

## SHORT NOTES

**2009 - June [8]** Write a short note on :

(d) Essentials of Inter firm comparison.

**(5 marks)**

**Answer :**

**Requisites of inter-firm comparison system:** The following requisites should be considered while installing a system of inter-firm comparison:

1. **Centre for Inter-firm Comparison:** For collection and analyzing data received from member units, for doing a comparative study and for dissemination of the results of study a Central body is necessary. The functions of such a body may be:
  - (a) Collection of data and information from its members;
  - (b) Dissemination of results to its members;
  - (c) Undertaking research and development for common and individual benefit of its members;
  - (d) Organizing training programmes and publishing magazines.
2. **Membership:** Another requirement for the success of inter-firm comparison is that the firms of different sizes should become members of the Centre entrusted with the task of carrying out inter-firm comparison.
3. **Nature of information to be collected:** Although there is no limit to information, yet the following information useful to the management is in general collected by the Centre for inter-firm comparison.
  - (a) Information regarding costs and cost structures.
  - (b) Raw material consumption.
  - (c) Stock of raw material, wastage of materials, etc.
  - (d) Labour efficiency and labour utilization.
  - (e) Machine utilization and machine efficiency.
  - (f) Capital employed and Return on capital.
  - (g) Liquidity of the organization.
  - (h) Reserve and appropriation of profit.
  - (i) Creditors and debtors.
  - (j) Methods of production and technical aspects.
4. **Method of Collection and presentation of information:** The Centre collects information at fixed intervals in a prescribed form from its members, sometimes a questionnaire is sent to each member; the replies of the questionnaire received by the Centre constitute the information/data. The information is generally collected at the end of the year as it is mostly related with final accounts and Balance Sheet. The information collected as above is stored and presented to its members in the form of a report. Such reports are not made available to non-members.

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**2010 - June [8]** Write short notes on the following:

(b) Inter-Firm Comparison;

**(5 marks)**

(d) Uniform Costing;

**(5 marks)**

**Answer :**

**(b)** Inter- Firm comparison is a management technique by the use of which it is made possible for an organization to compare its performance with that of the other units engaged in the same activity. Thus, it is a technique of evaluation and is based upon a comparison of productivity, efficiency, cost & profit as yard stick among the different business units in a same industry. There are two ways available for such a comparison.

- (i) Where such comparison is made from freely available published information and
- (ii) Where there is voluntary and authentic exchange of information among the different units systematically and scientifically.

**Answer :**

**(d)** Uniform costing is the use by several undertakings of the same costing principles and/or practices. The goal is set with uniformity of principles and similarity of methods with the understanding that in a particular undertaking there may exist conditions which require variations in some respects from absolute uniformity.

Features of uniform costing are as follows:

- (i) Common bases for the apportionment and allocation of overhead to be followed by all units in the same industry.
- (ii) The department sections or production centres to be used for analysis and comparison of costs to be determined.
- (iii) What items shall be regarded as factory or distinct from administration expenses to be clearly indicated.
- (iv) Common basis for recovery of overheads.
- (v) Common rates of depreciation should be applied to plant and machinery.
- (vi) Uniform method of arriving service departments cost.
- (vii) To set up an organization to prepare comparative statistics for the use of those adopting the uniform system. Privacy of individual data and confidence in the co-ordinating office are essential factors.

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10.196

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**2012 - June [8]** Write short note on the following :

(d) Uniform Costing;

**(5 marks)**

**Answer :**

***Please refer 2010 - June [8] (d) on page no. 195***

—— Space to write important points for revision ———

**2017 - Dec [5]** Write short note on the following:

(d) Uniform Costing

**(4 marks)**

**Answer:**

***Please refer 2010 - June [8] (d) on page no. 195***

—— Space to write important points for revision ———

## DESCRIPTIVE QUESTIONS

**2010 - June [4]** (a) What is Inter Firm Comparison? Enumerate some of its advantages. **(2 + 3 = 5 marks)**

**Answer :**

Inter firm comparison, as the name indicates, is a technique by which a company evaluates its performance with those of other firms in the same industry. Uniform cost accounting is a must for such meaningful comparison. To facilitate such comparison and evaluation, generally a central organization is formed to collect the necessary data periodically in a standard format from all member industries. To safeguard the confidentiality of the individual firm's performance details, the data are collected as a ratio or percentage by the central organization in the industry. Information collected may relate to costs, capacity utilisation, raw material usage, labour productivity, ROI etc.

This comparison has many advantages which are as follows:

- (i) It promotes a sense of cost consciousness among member units and helps to improve their efficiency.
- (ii) It throws light on weak-areas and enables member units to take remedial action.
- (iii) It prevents unhealthy price cutting.

- (iv) It enables the members to present a united stand before Government and other regulatory bodies.
- (v) An overall improvement in the industry will result in higher profit for member, more benefit to labour, lower prices to consumers and high revenue to the Government by way of taxes/duties.

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**2013 - Dec [1] {C}** (e) What are the limitations of Inter-firm comparison?

**(2 marks)**

**Answer :**

**Limitations of Inter firm comparison:**

- (a) Top management shows resistance in sharing of information.
- (b) Middle management is not convinced with sure comparison.
- (c) When suitable basis of comparison are not available inter firm comparison becomes meaningless.
- (d) When suitable cost accounting system is not present the figures supplied are of non relevance as they cannot be relied upon for comparison.

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**2013 - Dec [3]** (b) What are the Pre-requisites for Installation of a Uniform Costing System?

**(3 marks)**

**Answer :**

**Pre-requisite for installation of uniform costing**

- Firms in industry should share information.
- There should be a spirit of working with mutual trust and cooperation between firms.
- Sharing of information and ideas should be done freely and frequently.
- Bigger firms to share their experience to help the small firm, in improving their performance.
- Uniformity between firms should be established.

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**2014 - June [1] {C}** (e) What are the limitations of Uniform Costing?  
(2 marks)

**Answer:**

**Limitations of Uniform Costing**

- Uniform costing requires adoption of uniform standards and principles which sometimes due to different circumstances become difficult.
- Uniform costing involve sharing of information which sometimes becomes undesirable for some firms.
- Uniform costing sometimes becomes expensive for small firms.
- Uniform costing promotes monopolistic tendency.
- The standards of uniform costing are sometimes misunderstood by member firms.

— Space to write important points for revision —

**2015 - Dec [1]** Answer the question:  
(d) State any two limitations of inter-firm comparison. (2 marks)

**Answer:**

***Please refer 2013 - Dec [1] {C} (e) on page no.197***

— Space to write important points for revision —

## PRACTICAL QUESTIONS

**2012 - Dec [5]** (a) The share of production and the cost-based fair price computed separately for a common product for each of the four companies in the same industry are as follows:

	Company			
	A	B	C	D
Share of Production (%)	40	25	20	15
Costs:				
Direct materials (₹/Unit)	75	90	85	95
Direct Labour (₹/Unit)	50	60	70	80

Depreciation (₹/Unit)	150	100	80	50
Other Overheads (₹/Unit)	150	150	140	120
Total (₹/Unit)	425	400	375	345
Fair Price (₹/Unit)	740	615	550	460
Capital employed per Unit:				
(i) Net Fixed Assets (₹/Unit)	1,500	1,000	800	500
(ii) Working Capital (₹/Unit)	70	75	75	75
Total (₹/Unit)	1,570	1,075	875	575

*Required:*

What should be the uniform price that should be fixed for the common product? (10 marks)

**Answer:**

Total production percentage for all companies is  $40 + 25 + 20 + 15 = 100$   
Let us assume that total production be 100 units.

Particulars	Company A	Company B	Company C	Company D
Sale value	$740 \times 40$ = 29,600	$615 \times 25$ = 15,375	$550 \times 20$ = 11,000	$460 \times 15$ = 6,900
Total cost	$425 \times 40$ = 17,000	$400 \times 25$ = 10,000	$375 \times 20$ = 7,500	$345 \times 15$ = 5,175
Profit (Fair price-cost)	$315 \times 40$ = 12,600	$215 \times 25$ = 5,375	$175 \times 20$ = 3,500	$115 \times 15$ = 1,725
Return on Capital employed	$\frac{315}{1,570} \times 100$ = 20.06%	$\frac{215}{1,075} \times 100$ = 20%	$\frac{175}{875} \times 100$ = 20%	$\frac{115}{575} \times 100$ = 20%

Total Sale Value =  $29,600 + 15,375 + 11,000 + 6,900 = ₹ 62,875$

Uniform Price for Industry =  $62,875/100 = ₹ 628.75$

— Space to write important points for revision —

**2014 - June [2]** (b) The share of total production and the cost-based fair price computed separately for each of the four units in industry are as follows:

**10.200****■ Scanner CMA Inter Gr. II Paper 10 A (2016 Syllabus)****(Amount in ₹)**

<b>Units</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
Share of Production (%)	40	25	20	15
Direct Material	300	360	340	380
Direct Labour	200	240	280	320
Depreciation	600	400	320	200
Other Overheads	600	600	560	480
20% Return on Capital Employed	1,700 1,260	1,600 860	1,500 700	1,380 460
<b>FAIR PRICE</b>	<b>2,960</b>	<b>2,460</b>	<b>2,200</b>	<b>1,840</b>
Capital Employed per unit				
Net Fixed Assets (₹ per unit)	6,000	4,000	3,200	2,000
Working Capital (₹ per unit)	300	3,000	300	300
Total Capital (₹ per unit)	6,300	4,300	3,500	2,300

Required:

What should be the uniform price fixed for the product of the industry?

**(5 marks)****Answer:****Computation of Uniform Price :**

Weighted Average Cost =  $[1,700 \times 40\%] + [1,600 \times 25\%] + [1,500 \times 20\%]$   
 $+ [1,380 \times 15\%]$

=  $680 + 400 + 300 + 207 = ₹ 1,587$

Weighted Average Return on Capital Employed (profit)

=  $[1,260 \times 40\%] + [860 \times 25\%] + [700 \times 20\%] +$   
 $[460 \times 15\%]$

=  $504 + 215 + 140 + 69$

= ₹ 928

Uniform Price

=  $1,587 + 928 = ₹ 2,515$

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# 5A






## LEARNING CURVE

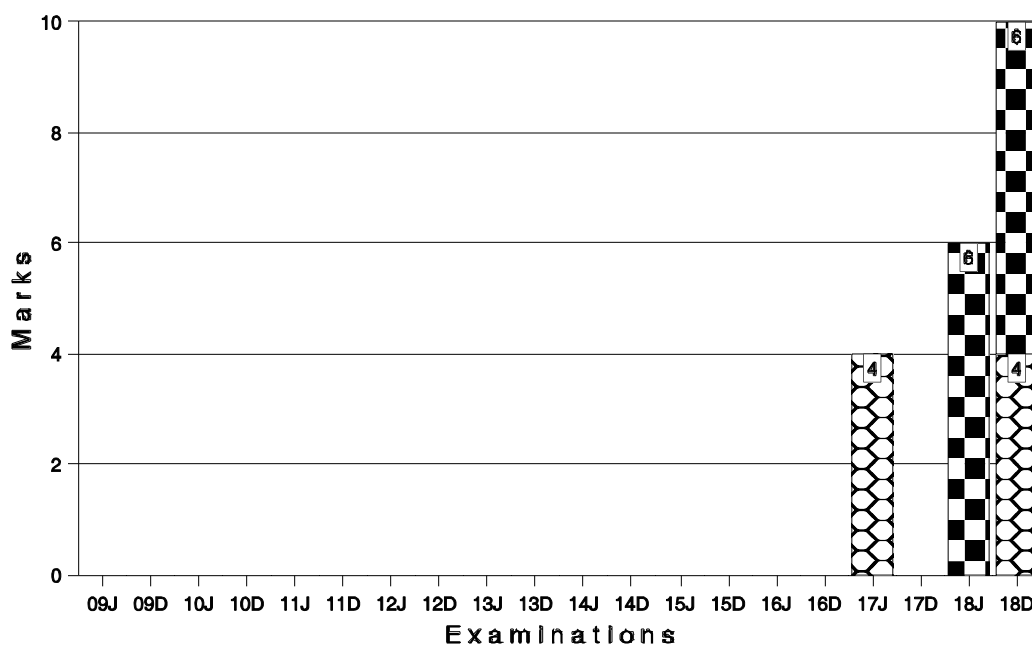
### THIS CHAPTER INCLUDES

- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li>• Phases in Learning Curve</li> <li>• Graphical Presentation</li> <li>• Uses of Learning Curve</li> <li>• Limitations to the usefulness of the Learning Curve</li> </ul> | <ul style="list-style-type: none"> <li>• Factors Affecting Learning Curve</li> <li>• Experience Curve</li> <li>• Application of Learning Curve</li> </ul> |
|---|---|

Marks of objective, Short Notes, Distinguish Between, Descriptive & Practical Questions

### Legend

 Objective
  Short Notes
  Distinguish
  Descriptive
  Practical



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for registration and password see first page of this book.

**SHORT NOTES**

**2017 - June [5]** Write short note on the following:

(d) Learning Curve

**(4 marks)**

**Answer:**

**Learning Curve:** It is essentially a measure of the experience gained in production of an article by an organization. As more and more units are reproduced, workers involved in production become more efficient than before. Each subsequent unit takes fewer man hour to produce. The learning curve exists during a worker's start up or familiarization period on a particular job. After the limits of experimental learning are reached, productivity tends to stabilize and no further improvement is possible.

The learning curve will pass through three different phases. In the first phase, there will be gradual increase in production rate until the maximum expected rate is reached and this phase is generally steep. In the second phase, the learning rate will gradually deteriorate because of the limitations of equipment. In the third phase, the production rate begins to decrease due to a reduction in customer requirements and increase in costs.

Under the Learning curve model, the cumulative average time per unit produced is assumed to fall by a constant percentage every time total output of the unit doubles. Learning curve is a geometrical operation, as the identical operation is increasingly repeated.

Learning curve is essentially a measure of the experience gained in production of an article by an organization. As more and more units re-produced, workers involved in production become more efficient than before. Each subsequent unit takes fewer man-hours or produce. The Learning curve exists during a worker's start up or familiarization period on a particular job. After the limits of experimental learning are reached, productivity tends to stabilize and no further improvement is possible. The learning curve ratio can be calculated with the help of the following formula:

$$\text{Learning curve ratio} = \frac{\text{Average Cost of First 2 Units}}{\text{Average Labour Cost of First Units}}$$

### Graphical presentation of learning curve

The learning curve (not to be confused with experience curve) is a graphical representation of the phenomenon explained by Theodore P. Wright in his “Factors Affecting the Cost of Airplanes”, 1936. It refers to the effect that learning had on labour productivity in the aircraft industry, which translates into a relation between the cumulative number of units produced (X) and the average time (or labour cost) per unit (Y), which resulted in a convex downward slope, as seen in the adjacent diagram.

#### There is a simple rationalisation behind all this:

The more units produced by a given worker, the less time this same worker will need to produce the following units, because he will learn how to do it faster and better. Therefore, when a firm has higher cumulative volume of production, its time (or labour cost) per unit will be lower. Wright’s learning curve model is defined by the following function:

$$Y = a \times \frac{\text{Log}_b}{\text{Log}_2}$$

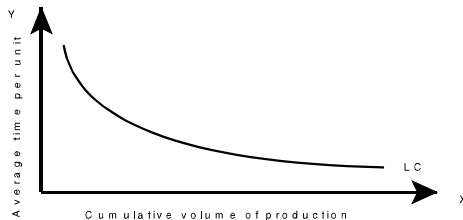
where:

Y = average time (or labour cost) per unit

a = time (or labour cost) per unit

X = cumulative volume of production

b = learning rate (%)



Some important implications arise from this curve. If the time (or labour cost) per unit decreases as the cumulative output increases, this will mean that firms that have been producing more and for a longer period, will have lower average time per unit and thus dominate the market.

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**2018 - Dec [5]** Write short notes on the following:

(iii) Distinctive Features of Learning Curve Theory.

**(4 marks)**

### **DESCRIPTIVE QUESTIONS**

**2010 - Nov [7]** (b) Explain distinctive features of learning curve theory in manufacturing environment. **(4 marks) [CAFG - II]**

**Answer:**

The production quantity of a given item doubled the cost of that item decrease at a fixed rate. This phenomenon is the basic premise on which the theory of learning curve has been formulated.

The distinctive features of a learning curve are:

1. Better tooling methods are developed and used.
2. More productive equipments are designed and used to make the product.
3. Design bugs are detected and corrected.
4. Better design engineering reduces material and labour costs.
5. Early teething problems are overcome. As production progresses management is prompted to achieve better planning and better management.
6. Rejections and rework tend to diminish over time.
7. As quantity produced increases the Cost per unit decreases, since each unit entails:  
(i) Lesser labour (ii) Greater productivity of material and labour (iii) Fewer delays and lesser time losses.

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**2011 - Nov [7]** Answer the following question:

(b) What are the limitations of the learning curve theory?

**(4 marks) [CAFG - II]**

**Answer:**

**Limitations of Learning Curve Theory:**

1. All activities of a firm are not subject to learning effect. (Activities that have not been performed in the present operational mode, those

performed by new or unfamiliar employees are subjected to learning effect, while those performed by familiar or experienced workmen will not be subjected to learning effect).

2. It is correct that learning effect does take place and average time taken is likely to reduce. But in practice it is highly unlikely that there will be a regular consistent rate of decrease. Therefore any cost prediction based on conventional learning curves should be viewed with caution.
3. Considerable difficulty arises in obtaining valid data that will form basis for computation of learning effect.
4. Even slight change in circumstances quickly renders the learning curve obsolete. While the regularity of conventional learning curves can be questioned, it would be wrong to ignore learning effect altogether in predicting costs for decision purposes.

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**2012 - Nov [5]** (b) What are the distinctive features of learning curve theory in manufacturing environment? Explain the learning curve ratio.

**(4 marks) [CAFG - II]**

**Answer:**

**Distinctive Feature of**

***Please refer 2010 - Nov [7] (b) on page no. 205***

**Learning Curve Ratio :** The learning effect can also be expressed in the form of ratio called learning curve ratio. It may be expressed as follows :

$$\frac{\text{Average Labour Cost per unit of Second Batch Units}}{\text{Average Labour Cost per unit of First Batch Units}}$$

For instance, if the first batch of a product consists of 500 units and the cost of labour per unit is ₹ 40, while if the second batch consists of 1,000 units the cost per unit comes to ₹ 30; the learning curve ratio can be obtained as follows:

$$\text{Learning Curve Ratio} = \frac{30}{40} \times 100 = 75\%$$

This means that every time when the output doubles the average cost per unit will decline to 75% of the previous cost per unit.

The areas in which the application of learning curve theory can help a manufacturing organisation are as follows :

- (i) **Product designing:** Learning curve theory helps in product designing where the design engineers can take decisions based on expected rates of improvement predictable from past experience.
- (ii) **Work scheduling:** Learning curve helps in preparation of accurate delivery schedules by predicting the input requirement.
- (iii) **Improving the productivity:** Learning curve when applied improves the performance of workers which in turn improves the productivity of the enterprise.
- (iv) **Cost Prediction:** Learning curve enables better cost production to enable price quotations to be preferred for potential orders.
- (v) **Controlling:** Learning curve is useful in setting standards in learning phase. If budgets and standards are set without considering learning curve. It is meaningless because variance will arise.

**Meaning:** The term learning curve refers to the curve obtained with the data showing the tendency of decrease in average time per unit when each time the production is doubled.

**Definition:** According to the Chartered Institute of Management Accountants, London; learning curve “shows the relationship between labour time per unit and cumulative units produced and tends to result in a straight line when plotted on double logarithmic scale”.

**Concept of Learning Curve:** It is known fact that when a task of operation is performed repeatedly, the time required to perform the repeat task is, in many cases, less than the time required to perform it originally. The concept of learning curve or learning ratio is based on this phenomenon. The concept states that every time the cumulative production quantity or volume doubles, the cumulative average time per unit (and so the average unit cost) will decline by a given percentage. For example, if the learning curve is 80%, this indicates that as the production doubles, the cumulative average hours per batch for a batch of production will be 80% of the hours of the previous batch. As a result, the average cost per unit per batch goes on declining with increase in volume of production.

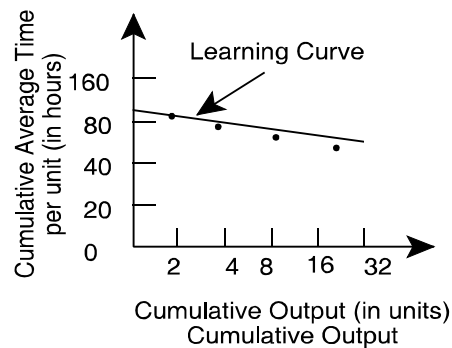
The above concept, that a task when performed repeatedly, it continues to take less and less time is based on the premise that in the process of doing the job repeatedly, the individual concerned acquires skill, knowledge and ability. As a result, the performance by the individual improves, the time taken by him per unit gets reduced and his productivity

goes up. The effect of this learning due to repeat performance can be expressed either in the form of curve or a ratio.

**Graphical representation:**

Cumulative Quantity Manufactured (Units)	Average Time per unit in Hours (with 80% learning curve)	Cumulative Hours
1	100	100
2	$(100 \times 80/100) = 80$	$80 \times 2 = 160$
4	$(80 \times 80/100) = 64$	$64 \times 4 = 256$
8	$(64 \times 80/100) = 51$	$51 \times 8 = 408$
16	$(51 \times 80/100) = 41$	$41 \times 16 = 656$

From the above data the learning curve can be plotted as follows:



#### Relevance of learning curve in pricing decision :

- (i) **CVP analysis:** Learning curve helps to analyse CVP relationship and thus it is very useful for cost estimates.
- (ii) **Cost prediction:** Learning curve helps in cost prediction which enables price quotations to be prepared for potential orders.
- (iii) **Budgeting:** The budget team selects costs that reflect learning effect and incorporates this effect in process of developing budgets.
- (iv) **Price reduction:** Learning curve enables suitable price reduction which in turn provides unbeatable lead over competitors as reduced price further increases the volume and market share.



**Application of learning curve in cost management:** Application of learning curve leads to reduction in average cost per unit.

The following are the possible causes for decrease in average cost per unit according to the learning curve theory:

1. Development of better tools and methods with increase in work.
2. More productive equipments and designs.
3. Early location of faults and errors.
4. Overcoming of the earlier teething problems.
5. Reduction in rejections and re-work over a period of time.

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**2013 - Dec [8]** (d) What is meant by 'Learning Curve'? Mention two areas where learning curve technique is useful in business.

**(4 marks) [CMAFG - III]**

**Answer :**

Learning Curve Theory is concerned with the idea that when a new job, process or activity commences for the first time it is likely that the workforce involved will not achieve maximum efficiency immediately.

Learning curve techniques are now widely used in business. Some of the uses are as follows:

- (i) It is useful in exercising control.
- (ii) It may be used for make-or-buy decisions especially if the outside manufacturer has reached the maximum on the learning curve. Helps to calculate the sensitive rates in wage bargaining.
- (iii) A knowledge of learning curve techniques assists in planning the inventories of materials, work-in-progress and finished goods.
- (iv) It is frequently used in conjunction with establishing bid price for contracts.
- (v) It suggests a basis for correct staffing in continuously expanding production.

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**2014 - June [8]** (c) What are the impacts of 'learning curve model' on labour variances? **(4 marks) [CMAFG - III]**

**Answer:**

**Impact on Labour Variances**

The learning curve model will affect labour variances since:

- (i) The initial standard time taken to produce the item will become rapidly out of date.
- (ii) Variances calculated using out of date standards will quickly become meaningless for planning and control.

In many respects the easiest way of incorporating learning effects is to build them into the standards used.

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**2015 - Dec [8]** (a) What are the main uses of knowledge of 'learning curve' in business? **(5 marks) [CMAFG - III]**

**(b)** Mention the names of three industries where learning curve can be applied. **(3 marks) [CMAFG - III]**

**Answer:**

**(a)** Knowledge of learning curve can be useful both in planning and control. Standard cost for new operations should be revised frequently to reflect the anticipated learning pattern.

**Its main uses are summarized below:**

- (i) Helps to analyze Cost-Volume-Profit (CVP) relationship during familiarization phase of product or process. Learning curve can be used as a tool for forecasting.
- (ii) Helps in developing budgets and profit planning of the project.
- (iii) Helps in development of advantageous pricing policy.
- (iv) It helps design engineers in making decisions based upon expected (predictable from past experience) rates of improvement.
- (v) It is very useful to the Government in negotiations about the contracts.
- (vi) It is quite helpful in setting standards in learning phase.

**(b) Learning curve can be applied in the following industries:**

- (i) Learning curve theory was first developed in aircraft industry.
- (ii) It can be applied even in non-production activities like marketing.
- (iii) It can be very effective in labour oriented industries.
- (iv) It can be effective with the job which is repetitive in nature particularly with same machinery and tools.

— Space to write important points for revision —

## PRACTICAL QUESTIONS

**2008 - May [2]** (c) M Ltd. manufactures a special product purely carried out by manual labour. It has a capacity of 20,000 units. It estimates the following cost structure :

Direct material	30 ₹/unit
Direct labour	20 ₹/unit
(1 hour/unit)	
Variable overhead	10 ₹/unit

Fixed overheads at maximum capacity is ₹ 1,50,000.

It is estimated that at the current level of efficiency, each unit requires one hour for the first 5,000 units. Subsequently it is possible to achieve 80% learning rate. The market can absorb the first 5,000 units at ₹ 100 per unit. What should be the minimum selling price acceptable for an order of 15,000 units for a prospective client ?

**(7 marks) [CAFG - II]**

**Answer:**

	5,000 units	20,000 units
Material	1,50,000	6,00,000
Direct Labour	1,00,000	2,56,000
		(Refer to W Note I)
Variable Overhead	<u>50,000</u>	<u>2,00,000</u>
Total Variable Cost	3,00,000	10,56,000
Fixed Cost	<u>1,50,000</u>	<u>1,50,000</u>
Total cost	4,50,000	12,06,000

**10.212****Scanner CMA Inter Gr. II Paper 10 A (2016 Syllabus)**

Total cost / unit	90	60.3
Sales (100 × 5,000)	5,00,000	<u>5,00,000</u>
15,000 × x (assumed selling price)		15,000 x
Total sales less Total Cost = Profit	50,000 =	15,000 x – 7,06,000
Or minimum selling price = 50.4 (Refer to Working Note II)		

**Working Note: I**

Units	Hours
5,000	5,000
10,000	10,000 × 1 × .8 = 8,000 hours
20,000	20,000 × 1 × .8 × .8 = 12,800 hours

**Working Note : II**

$$15,000 \times -7,06,000 > 50,000$$

$$15,000 \times > 7,56,000$$

$$\text{or } x > 50.4$$

\_\_\_\_\_ Space to write important points for revision \_\_\_\_\_

**2009 - May [1] {C}** (b) PQ Ltd. makes and sells a labour-intensive product. Its labour force has a learning rate of 80%, applicable only to direct labour and not to variable overhead.

The cost per unit of the first product is as follows :

Direct materials	10,000	
Direct labour	8,000	( @ ₹ 4 per hour)
Variable overhead	<u>2,000</u>	
Total variable cost	20,000	

PQ Ltd. has received an order from X Ltd. for 4 units of the product. Another customer, Y Ltd. is also interested in purchasing 4 units of the product. PQ Ltd. has the capacity to fulfil both the orders. Y Ltd. presently purchases this product in the market for ₹ 17,200 and is willing to pay this price per unit of PQ's product. But X Ltd. lets PQ choose one of the following options :

- (i) A price of ₹ 16,500 per unit for the 4 units it proposes to take from PQ.

**(Or)**

- (ii) Supply X Ltd.'s idle labour force to PQ, for only 4 units of production, with PQ having to pay only Re. 1 per labour hour to X Ltd.'s workers. X Ltd.'s workers will be withdrawn after the first 4 units are produced. In this case, PQ need not use its labour for producing X Ltd.'s

requirement. X Ltd. assures PQ that its labour force also has a learning rate of 80%. In this option, X Ltd. offers to buy the product from PQ at only ₹ 14,000 per unit.

X and Y shall not know of each other's offer.

If both orders came before any work started, what is the best option that PQ may choose?

Present suitable calculations in favour of your argument.

(4 marks) [CAFG - II]

**Answer:**

Units	Average/hrs/u.
1	2,000
2	1,600
4	1,280
8	1,024
Material Cost/u	= 10,000
Variable Cost	= <u>2,000</u>
Variable Cost	= <u>12,000</u>

**Option I**

If both the orders came together, learning rate 80% applies and 8 units can be made, with average time of 1,024 hours per unit.

Cost to PQ:

Variable cost excl. labour	= ₹ 12,000
Labour cost 1,024 hrs × 4 ₹/hr	= ₹ <u>4,096</u>
	= ₹ <u>16,096</u>

In this case,

	Y	X	
Selling Price p.u.	₹ 17,200	₹ 16,500	→(under option I)
Variable Cost p.u.	<u>₹ 16,096</u>	<u>₹ 16,096</u>	
Contribution p.u.	₹ 1,104	₹ 404	
No. of units	4	4	
Contribution (₹)	4,416	1,616	6,032

**Option II**

If X Ltd. supplies its labour. 80% learning curve will apply to 4 units each of PQ & X.

**10.214****Scanner CMA Inter Gr. II Paper 10 A (2016 Syllabus)**

Hence: hrs/u = 1,280

	Y	X	
Selling Price	₹ 17,200	₹ 14,000	
Variable Cost (excl. labour)	₹ 12,000	₹ 12,000	
Labour cost :			
1,280 × 4	₹ 5,120		
1,280 × 1		₹ 1,280	
Total Variable Cost	<u>₹ 17,120</u>	<u>₹ 13,280</u>	
Contribution	₹ 80	₹ 720	
Units	4	4	
Contribution (₹)	320	2,880	3,200

PQ should not take labour from X Ltd. It should choose option I.

— Space to write important points for revision —

**2009 - Nov [6]** (c) The Gifts Company makes mementos for offering chief guests and other dignitaries at functions. A customer wants 4 identical pieces of hand-crafted gifts for 4 dignitaries invited to its function.

For this product, the Gifts Company estimates the following costs for the 1st unit of the product :

	₹/unit
Direct variable costs (excluding labour)	2,000
Direct labour (20 hours @ ₹ 50 per hour)	1,000

90% learning curve ratio is applicable and one labourer works for one customer's order.

- What is the price per piece to be quoted for this customer if the targeted contribution is ₹ 1,500 per unit ?
- If 4 different labourers made the 4 products simultaneously to ensure faster delivery to the customer, can the price at (i) above be quoted ? Why ?

**(6 marks) [CAFG - II]**

**Answer:**

(i)

₹

	<i>1<sup>st</sup> unit</i>	<i>Avg/u after 4<sup>th</sup> at</i>
Variable Cost	2,000	2,000
Labour	1,000	810
Target Contribution		1,500
Price to be quoted		4,310 (₹/u)

- (ii) No, the company cannot quote this price for varying products because the learning curve ratio does not apply to non-repeated jobs. Each product will carry a different price according to its direct labour hours.

— Space to write important points for revision —

**2010 - May [4]** (a) An electronics firm which has developed a new type of fire-alarm system has been asked to quote for a prospective contract. The customer requires separate price quotations for each of the following possible orders:

Order	Number of fire-alarm systems
First	100
Second	60
Third	40

The firm estimates the following cost per unit for the first order :

Direct Materials ₹ 500

Direct Labour

Deptt. A (Highly automatic) 20 hours at ₹ 10 per hour.

Deptt. B (Skilled labour) 40 hours at ₹ 15 per hour.

Variable overheads absorbed 20% of direct labour

Fixed overheads absorbed

Deptt. A ₹ 8 per hour

Deptt. B ₹ 5 per hour

Determine a price per unit for each of the three orders, assuming the firm uses a mark up of 25% on total costs and allows for an 80% learning curve.

Extract from 80% learning curve table :

X	1.0	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0
Y (%)	100.0	91.7	89.5	87.6	86.1	84.4	83.0	81.5	80.0

**10.216****Scanner CMA Inter Gr. II Paper 10 A (2016 Syllabus)**

X represents the cumulative total volume produced to date expressed as a multiple of the initial order.

Y is the learning curve factor, for a given X value, expressed as a percentage of the cost of the initial order.

**(11 marks) [CAFG - II]****Answer:****(i) Price/Unit for First 100 Units**

		₹
Direct materials		500
Direct labour : Deptt. A 20 hrs. @ 10	200	
Deptt. B 40 hrs. @ 15	600	800
Variable O/H 20% of ₹ 800		160
Fixed O/H Deptt. A 20 hrs. @ 8	160	
Deptt. B 40 hrs. @ 5	200	<u>360</u>
Total cost		1,820
Profit		455
Selling price per unit		2,275

**(ii) Price/Unit for Second Order of 60 Units :**

Learning will be applicable only in Deptt. B

Cumulative output becomes 100 units + 60 units = 160 units

i.e. 1.6 times for which learning is 86.1% from the table.

∴ total hours for 160 units =  $160 \times 40 \times 0.861 = 5,510.4$  units.

∴ hours for 60 units = Hrs. for 160 units – Hrs for 100 units.

=  $5,510.40 - 4,000 \text{ hrs} = 1,510.40 \text{ hrs.}$

∴ Hours per unit =  $1,510.40/60 = 25.17 \text{ hrs.}$

Calculation of selling price per unit :

		₹
Direct materials		500.00
Direct labour : Deptt. A 20 hrs. @ 10	200.00	
Deptt. B 25.17 hrs. @ 15	<u>377.55</u>	577.55
Variable O/H 20% of ₹ 577.55		115.51
Fixed O/H : Deptt. A 20 hrs. @ 8	160.00	
Deptt. B 25.17 hrs. @ 5	<u>125.85</u>	<u>285.85</u>
Total Cost		1,478.91
Profit		<u>369.73</u>
Selling price per unit		1,848.64



(iii) **Price/Unit for Third Order of 40 Units :**

Cumulative Output becomes  $100 + 60 + 40 = 200$  units

i.e. 2 times for which Learning is 80% from the table

∴ Total hours for 200 units =  $200 \times 40 \times .80 = 6,400$  hrs.

∴ Hours for 40 units = Hrs. for 200 units – Hrs. for 160 units =  $6,400 - 5,510.4 = 889.6$  hrs.

∴ Hours per unit =  $889.6/40 = 22.24$  hrs.

Calculation of selling price/unit :

	₹
Direct material	500.00
Direct labour : Deptt. A 20 hrs. @ 10	200.00
Deptt. B 22.24 hrs. @ 15	333.60
Variable O/H 20% of ₹ 533.60	106.72
Fixed O/H : Deptt. A 20 hrs. @ 8	160.00
Deptt. B 22.24 hrs. @ 5	111.20
Total Cost	1,411.52
Profit	352.88
Selling Price/Unit	1,764.40

(a) **Alternative solution**

Particulars

*Amt. in First    Second    Third Order*  
*order    Order at    at \*\* 80%*  
*\*86.1%*

	(₹)	(₹)	(₹)
Direct Material	500.00	500.00	500.00
Direct Labour			
Deptt. A (20 hours @ ₹ 10 per hour)	200.00	200.00	200.00
Deptt. B (40 hours @ ₹ 15 per hour)	600.00	516.60	480.00
Variable overheads (20% of direct labour)	160.00	143.32	136.00
Fixed Overheads			
Deptt. A (20 hours @ ₹ 8 per hour)	160.00	160.00	160.00
Deptt. B (40 hours @ ₹ 5 per hour)	200.00	172.20	160.00
Total Cost	1,820.00	1,692.00	1,636.00
Profit (25% of Cost)	455.00	423.03	409.00
Selling Price per Alarm	2,275.00	2,115.15	2,045.00

**Note:** Learning Curve is not applicable for Department A as it is highly automated.

\*Second Order – 60 fire-alarms, Cumulative Total = 160 fire-alarms

The cumulative total is now 160 Alarm, which is denoted by the multiple of 160/100 i.e. 1.6. From the 80% learning curve table the relevant percentage factor is 86.1% of the labour cost.

Cumulative order 160 @ ₹ 2,115.15	3,38,424
Previous order 100 @ ₹ 2,275	2,27,500
Increment order 60	1,10,924
Therefore, charge price per Alarm	1,848.73

\*\*Third, Order-40 Alarm, Cumulative Total = 200 Alarm

The cumulative total is now 200 fire alarms, which is denoted by the multiple of 200/100 i.e. 2. From the 80% learning curve table the relevant percentage factor is 80% of the labour cost.

Cumulative orders 200 @ ₹ 2,045	4,09,000
Previous order 160 @ ₹ 2,115.15	3,38,424
Incremental order 40	70,576
Therefore, charge price per Alarm (₹)	1,764.40

— Space to write important points for revision —

**2014 - Dec [7]** (b) A Company has just completed the manufacture of 40 units of a new product. The manufacturing costs are:

	₹
Direct Material	2,00,000
Direct Labour: 8,000 hour @ ₹ 20/hr	1,60,000
Variable Overheads	80,000
Special tools (re-usable)	10,000
Fixed overheads apportioned	1,00,000
<b>Total</b>	<b>5,50,000</b>

The Company policy is to add a profit of 12% on selling price.

The Company received another order for 120 units of this product for which the company quoted, based on its policy on absorption cost basis, a price of ₹ 15,625 per unit. The customer struck the order to ₹ 11,000 per unit.

The Company is short of work and so is keen to take up more orders but it is reluctant to accept this order price because it is against the policy to accept any price below its cost. The Company experiences a learning curve of 90%.

- (i) Compute the gain or loss arising from acceptance of the order of ₹ 11,000 per unit.
- (ii) Advice whether the company should accept this order for 120 units or not.

(5 + 2 = 7 marks) [CMAFG - III]

**Answer:**

**(i) Computation of Selling Price of First Order for 40 units**

a.	Total Costs (As given)	₹ 5,50,000
b.	Number of units	40 units
c.	Average cost per unit	₹ 13,750
d.	Since profit is 12% on price, it is 12/28 on cost	₹ 1,875
e.	Price Quoted (Cost + Profit)	₹ 15,625

**(ii) Computation of Time required for 120 units**

No. of Units	Time Required per unit	Total Time Required	Cumulative Time
40	8000hrs/ 40 units = 200 hours	(given) 8000 hours	8000 hours
80	200×90% = 180 hours	80 units × 180 hours per unit	14400 hours
160	180×90% = 162 hours	160 units × 162 hours per unit	25920 hours

Time required for 120 units = Cumulative Time required for 162 units – Time required for first 40 units = 25,920 - 8,000 = 17,920 hours

**Cost Sheet for order of 120 units:**

Particulars	Computation	₹
Direct Material	( ₹ 2,00,000/40)×120 Units	6,00,000
Direct Labour	17,920 hours × ₹20 per hour	3,58,400

**10.220****■ Scanner CMA Inter Gr. II Paper 10 A (2016 Syllabus)**

Variable Overheads	17,920 hours × ₹10 per hour	1,79,200
Special Tools (Re-usable)	Hence, Relevant Cost is Nil	Nil
Fixed Overheads	Idle Capacity-Not Relevant	Nil
Total Cost		11,37,600
Cost per unit	₹ 11,37,600/120	9,480
Price offered		11,000
Hence, Profit per unit		1,520
Total profit from 120 units	₹ 1,520×120 units	1,82,400

**Decision:** The order should be accepted.

— Space to write important points for revision —

**2018 - June [4]** (b) JANAK LTD. received an order to make and supply sixteen units of standard product which involves intricate labour operations. The first unit was made in 8 hours. It is understood that this type of operations is subject to 90% learning rate. The workers are getting a wage rate of ₹ 15 per hour.

**Required:**

What is the total time and labour cost required to execute the above order?  
(6 marks)

**Answer:**

90% Learning Curve results are as given below:

Production (units)	Cumulative Average Time (Hours)	Total time (Hours)
1	8	8
2	7.2	14.4
4	6.48	25.92
8	5.832	46.66
16	5.2488	83.98

Labour time required for first 16 units = 83.98 hrs.

Labour cost required for 16 units = 83.98 hours × ₹ 15/- hr = ₹ 1,259.70

— Space to write important points for revision —

**2018 - Dec [4]** (b) RADIANCE ENGINES LTD. manufacture engines mounting for Akash airline. They have been asked to bid on a prospective contract for 30 engines mounting for the Jet aircraft. They have just completed and initial run of 10 of these mounting at the following costs:

Particulars	Amount in (₹)
Direct materials	7,000
Direct labour (2000 hours @ ₹ 4)	8,000
Variable overhead (₹ 0.50 per labour hour)	1,000
Fixed overhead (₹ 1 per labour hour)	2,000
	18,000

An 80% learning curve is thought to be pertinent in this case. Marketing Director believes that the quotation is unlikely to be accepted if it exceeds ₹ 38,000 and as the company are short of work, he believes the contract to be vital.

**You are required to comment** whether it is worth accepting at ₹ 38,000.

**(6 marks)**

# 5B

## **OBJECTIVE QUESTIONS** **COST & MANAGEMENT** **ACCOUNTING**

**2008 - Dec [1] {C}** (b) Fill in the blanks :

- (ii) Sales minus Break-even sales is called \_\_\_\_\_.
- (iii) Material usage variance is the sum of \_\_\_\_\_.
- (iv) In absorption costing \_\_\_\_\_ cost is added to inventory.

**(1 × 3 = 3 marks)**

**(c)** State whether the following statements are True (T) or False (F).

- (i) If an expense can be identified with a specific cost unit, it is treated as direct expense.
- (iii) Fixed costs vary with volume rather than time.
- (iv) Future costs are not relevant, while making managerial decisions.
- (v) In break-even analysis it is assumed that variable costs fluctuate inversely with time.

**(1 × 4 = 4 marks)**

**(d)** Identify the correct answer from the given alternatives of the following questions :

- (i) Which of the following concept is known as cost behaviour oriented approach to product costing ?
  - (A) Standard costing
  - (B) Marginal costing
  - (C) Process costing
  - (D) Absorption costing
- (ii) "Conversion cost" refers to
  - (A) Manufacturing costs incurred to produce units of output.
  - (B) All costs associated with manufacturing other than direct labour costs.
  - (C) The sum of direct material costs and all factory overhead costs.
  - (D) The sum of raw material costs and overheads costs.

- (iii) Which of the following is the correct valuation base for finished goods stock for balance sheet purposes ?  
 (A) Variable cost per unit  
 (B) Marginal cost per unit  
 (C) Production cost per unit  
 (D) Total cost per unit
- (iv) Which of the following is true at break-even point ?  
 (A) Total Sales revenue = Variable cost  
 (B) Profit = Fixed cost  
 (C) Sales revenue = Total cost - Variable cost  
 (D) Contribution = Fixed cost **(1 × 4 = 4 marks)**
- (e) Choose the correct answer from the brackets :**
- (ii) The variable cost of a product increases by 10% and the management raise the unit selling price by equal amount. The fixed costs remain unchanged. Then BEP of the firm \_\_\_\_\_ [increase, decrease, unchanged].
- (iii) The factory where standard costing is followed, 4600 kg of materials at ₹ 10.50/kg were actually consumed resulting in a price variance of ₹ 4,800 (A) and usage variance of ₹ 4,000 (F). The standard cost of actual production is ₹ \_\_\_\_\_ [1,00,000, 96,000, 1,20,000]
- (iv) If the capacity usage ratio of a production department is 90% and activity ratio is 99%, then the efficiency ratio of the department is \_\_\_\_\_ %.[120,110,90] **(1 × 3 = 3 marks)**

**Answer :**

- (b)** (ii) Margin of safety;  
 (iii) Mix Variance and yield variance;  
 (iv) Fixed cost.
- (c)** (i) True;  
 (iii) False;  
 (iv) False;  
 (v) False.
- (d)** (i) (B);  
 (ii) (A);  
 (iii) (C);  
 (iv) (D).

- (e) (ii) Unchanged;  
(iii) 1,00,000;  
(iv) 110.

— Space to write important points for revision —

**2009 - June [1] {C}** (b) State whether the following statement is True (T) or False (F):

- (i) If an expense can be identified with a specific cost unit, it is treated as direct expense; **(1 mark)**

**(c)** Choose the correct answer from the brackets:

- (iii) A company's fixed cost amounts to ₹ 120 lakhs p.a. and its overall P/V ratio is 0.4. The annual sales of the company should be ₹ \_\_\_\_\_ lakhs to have a Margin of Safety of 25%. (400, 500, 600). **(1 mark)**

**(d)** Fill in the blanks suitably:

- (i) Margin of safety is \_\_\_\_\_ or \_\_\_\_\_.  
(ii) Material usage variance is the sum of \_\_\_\_\_ and \_\_\_\_\_.  
(iii) A flexible budget recognizes the behaviour of \_\_\_\_\_ and \_\_\_\_\_.  
(iv) Profit volume graph shows the relationship between \_\_\_\_\_ and \_\_\_\_\_.  
(v) Efficiency is basically a ratio of \_\_\_\_\_ and \_\_\_\_\_. **(1 × 5 = 5 marks)**

**(e)** In the following cases, choose the correct answer.

- (ii) A Company maintains a margin of safety of 25% on its current sales and earns a profit of ₹ 30 lakhs per annum. If the company has a profit volume (P/V) ratio of 40%. Its current sales amount to  
(a) ₹ 200 lakhs;  
(b) ₹ 300 lakhs;  
(c) ₹ 325 lakhs;  
(d) None of the above.
- (iii) In a factory of PEE Ltd. where standard costing is followed, the budgeted fixed overhead for a budgeted production of 4800 units is ₹24,000. For a certain period actual expenditure incurred was ₹ 22,000 resulting in a fixed overhead volume variance of ₹ 3,000(Adv.). Then actual production for the period was



- (a) 5400 units;
- (b) 4200 units;
- (c) 3000 units;
- (d) None of the above.

(1 × 2 = 2 marks)

**Answer :**

- (b) (i) True
- (c) (iii) 400
- (d) (i) Sales minus Break Even sales, Profit/PV ratio
  - (ii) Mix variance, Yield variance
  - (iii) Variable and Fixed costs.
  - (iv) Profit and Sales
  - (v) Input, Output
- (e) (ii) B : ₹ 300 lakhs
- (iii) B : 4,200 Units

\_\_\_\_\_ Space to write important points for revision \_\_\_\_\_

**2009 - Dec [1] {C} (b)** State whether the following statement is *True* (T) or *False* (F) :

- (ii) Cost of tube used for packing tooth paste is indirect material cost.

(1 mark)

**(c)** In the following cases one out of four answers is correct. You are required to indicate the correct answer (1 mark) and give your reason for answer: (1 mark)

- (ii) Sales of two consecutive months of a company are ₹ 3,80,000 and ₹ 4,20,000. The company's net profits for these months amounted to ₹ 24,000 and ₹ 40,000 respectively. There is no change in P/V ratio or fixed costs. The P/V ratio of the company is  
 (A) 33.33%      (B) 40%      (C) 25%      (D) None of these
- (iii) The repairs and maintenance of machinery in factory is a semi-variable cost having some relationship with the no. of machine hours run. It was ₹ 17,500 during October 2009 for 7,500 machine hours worked and ₹ 15,400 for November 2009 when only 5,400 machine hours were worked. The budgeted cost of repairs and

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maintenance for December 2009 when 6,200 machine hours are expected to be worked will be

- (A) 17,200 (B) 16,800  
(C) 16,200 (D) None of these

- (iv) The budgeted annual sales of firm is ₹ 80 lakhs and 25% of the same is cash sales. If the average amount debtors of the firm is ₹ 5 lakhs, the average collection period of credit sales will be months

- (A)  $\frac{1}{2}$  (B) 1 (C)  $1\frac{1}{2}$  (D) None of these

- (v) The budgeted fixed overhead for a budgeted production of 10,000 units is ₹ 20,000. For a certain period, the actual production was 11,000 units and the actual expenditure came to ₹ 24,000. The volume variance would be

- (A) ₹ 4,000 (Adv.) (B) ₹ 2,000 (Fav.) (C) ₹ 2,000 (Adv.) (D) None of these  
(2 × 4 = 8 marks)

- (d) Fill in the blanks suitably :

- (v) A flexible budget recognizes the behaviour of \_\_\_\_\_ and \_\_\_\_\_ costs. (1 mark)

**Answer :**

- (b) (ii) False  
(c) (ii) B - 40%  
(iii) C - 16,200  
(iv) B - 1  
(v) B - ₹ 2,000 (Fav.)  
(d) (v) Variable, Fixed.

\_\_\_\_\_ Space to write important points for revision \_\_\_\_\_

**2010 - June [1] {C}** (b) Which of the following statements are 'True' or 'False'?

- (i) In ZBB important reference is made to the previous level of expenditure.  
(iii) Production Budget is prepared before Sales Budget.

- (iv) A key factor, which at a particular time or over a period, will not limit the activities of the organization.
- (v) Profit planning and control is not a part of budgetary control mechanism. **(1 × 4 = 4 marks)**
- (c)** State whether the following statements are 'True' or 'False'.
- (i) Standard hour is the standard time required per unit of production.
  - (iii) Fixed Cost vary with volume rather than time.
  - (iv) Future costs are not relevant while making managerial decisions.
  - (v) In break-even analysis it is assumed that variable costs fluctuate inversely with time. **(1 × 4 = 4 marks)**
- (d)** Fill up the blanks suitably:
- (i) A cost which does not involve any cash outflow is called \_\_\_\_\_ or \_\_\_\_\_.
  - (ii) Contribution earned after reaching Break Even Point is \_\_\_\_\_ of the firm.
  - (iv) Idle time variance is always \_\_\_\_\_.
  - (v) Profit-volume graph shows the relationship between \_\_\_\_\_ and \_\_\_\_\_. **(1 × 4 = 4 marks)**
- (e)** Choose the correct answer from the following:
- (ii) The scarce factor of production is known as
    - (1) Linking factor;
    - (2) Key factor;
    - (3) Production factor
  - (iv) If actual hours worked exceed the standard hours allowed, the variance which will occur is called as
    - (1) Favourable labour efficiency variance;
    - (2) Adverse labour rate variance;
    - (3) Adverse labour efficiency variance;
    - (4) Favourable labour rate variance. **(1 × 2 = 2 marks)**

**Answer :**

- (b)** (i) False  
(iii) True  
(iv) False  
(v) False

- (c) (i) False  
(iii) False  
(iv) False  
(v) False
- (d) (i) Notional Cost, Imputed Cost  
(ii) Profit  
(iv) Adverse  
(v) Profit, Sales
- (e) (ii) Key Factor  
(iv) Adverse Labour efficiency variance

— Space to write important points for revision —

**2010 - Dec [1] {C}** (b) State whether the following statements are True or False :

- (i) Cost Accounting is a branch of Financial Accounting.  
(iii) The relationship of value, function and cost can be represented as  
Cost = Value/Function. **(1×2=2 marks)**

**(c)** Fill up the blanks suitably :

- (iii) Variable costs go on changing with the \_\_\_\_\_ level.  
(iv) \_\_\_\_\_ is a must for meaningful inter-firm comparison.

**(1 × 2 = 2 marks)**

**(d)** In the following cases one out of four answers is correct. You are required to indicate the correct answer (1 mark) and give your reason for answer **(1 mark)**

- (iv) A chemical is manufactured by combining two standard items of input A (standard price ₹ 60/kg.) and B (standard price ₹ 45/kg.) in the ratio 60%: 40%. During processing there is a loss of 10% of input. If during a month 1,200 kg. of the chemical is produced incurring a total cost of ₹ 69,600, the total material cost variance will be
- (1) ₹ 2,400 (A)  
(2) ₹ 2,400 (F)  
(3) ₹ 3,000 (A)  
(4) ₹ 2,000 (F)

- (v) A company has fixed costs of ₹ 6,00,000 per annum. It manufactures a single product which it sells for ₹ 200 per unit. Its contribution to sales ratio is 40%. Its break-even in units is

- (1) ₹ 7,500  
(2) ₹ 8,000  
(3) ₹ 3,000  
(4) ₹ 1,500

(2 × 2 = 4 marks)

— Space to write important points for revision —

**Answer :**

- (b) (i) False  
(iii) False  
(c) (iii) Production  
(iv) Uniform Costing  
(d) (iv) (2) 2,400 (F)

Standard

Input	Qty.	Rate	Amt.
A	60	60	3,600
B	40	45	1,800
Total input	100		
Loss	10		
Output	90		

Actual Output is 1,200 Kgs. at a cost of ₹ 69,600

Standard cost for actual output of 1,200 Kg. =  $5,400/90 \times 1,200 = 72,000$

Material Cost Variance = Standard Cost – Actual Cost =  $72,000 - 69,600 = 2,400$  (F)

- (v) (1) 7,500 units

Selling Price = 200

Contribution @ 40% on 200 = ₹ 80

Break Even Point =  $6,00,000/80 = 7,500$  units

— Space to write important points for revision —

**2011 - June [1] {C}** (b) State whether the following statements are true or false:

- (i) Marginal costing is useful for long term planning. **(1 mark)**
- (v) Opportunity cost is the value of benefit sacrificed in favour of an alternative course of action. **(1 mark)**

**(c)** Fill up the blanks suitably :

- (ii) \_\_\_\_\_ cost is the difference in total cost that results from two alternative courses of action. **(1 mark)**
- (v) \_\_\_\_\_ costing is a must for Inter-firm comparison. **(1 mark)**

**(d)** In the following cases, one out of four answers is correct. You are required to indicate the correct answer and give brief workings:

- (ii) Monthly cost of maintenance of machinery in a company for 12,000 machine hours run is ₹ 1,70,000 and for 18,500 hours it is ₹ 3,02,500. Cost of maintenance for 14,000 hours will be.
  - (a) ₹ 1,90,000
  - (b) ₹ 1,80,000
  - (c) ₹ 1,85,000
  - (d) None of the above **(2 marks)**
- (iii) In two consecutive periods, sales and profit were ₹ 1,60,000 and ₹ 8,000 respectively in the first period and ₹ 1,80,000 and ₹ 14,000 respectively during the second period. If there is no change in fixed cost between the two periods, then what would be profit if sales are ₹ 2,00,000 ?
  - (a) ₹ 16,000
  - (b) ₹ 18,000
  - (c) ₹ 20,000
  - (d) ₹ 22,000 **(2 marks)**

- (iv) The budgeted annual sales of a firm is ₹ 80 lakhs and 25% of the same is cash sale. If the average amount of debtors of the company is ₹ 5 lakhs, the average collection period of credit sales is.
- (a) 2 months
  - (b) 1 month
  - (c) 15 days
  - (d) None of the above.
- (2 marks)**

**Answer :**

- (b)** (i) False  
(v) True
- (c)** (ii) Differential  
(v) Uniform
- (d)** (ii) (b)  
(iii) (c)  
(iv) (b)

\_\_\_\_\_ Space to write important points for revision \_\_\_\_\_

**2011 - Dec [1] {C}** (b) State whether the following statements are True or False:

- (iv) Differential costing and Marginal costing mean the same thing.
- (v) Standards are arrived at based on past performance.

**(1 × 2 = 2 marks)**

**(c)** Fill-up the blanks suitably:

- (i) In absorption costing \_\_\_\_\_ cost is added to inventory.
- (ii) \_\_\_\_\_ becomes more effective in a firm with the use of standard costing.
- (iii) In 'make or buy' decision, it is profitable to buy from outside only when the supplier's price is below the firm's own \_\_\_\_\_.
- (iv) A cost which does not involve any cash outflow is called \_\_\_\_\_.
- (v) \_\_\_\_\_ costing reduces the possibility of under pricing.

**(1 × 5 = 5 marks)**

- (d) In the following cases, one out of four answers is correct. You are required to indicate the correct answer and give brief workings:
- (ii) A factory operates a standard cost system, where 2000 kgs of raw materials @ ₹ 12 per kg were used for a product, resulting in price variance of ₹ 6,000 (F) and usage variance of ₹ 3,000 (A). Then standard material cost of actual production was.
- (a) ₹ 20,000
  - (b) ₹ 30,000
  - (c) ₹ 25,000
  - (d) ₹ 27,000
- (iii) A company maintains a margin of safety of 25% on its current sales and earns a profit of ₹ 30 lakhs per annum. If the company has a p/v ratio of 40%, its current sales amount to
- (a) ₹ 200 lakhs
  - (b) ₹ 300 lakhs
  - (c) ₹ 325 lakhs
  - (d) None of the above
- (v) Sales for two consecutive months of a company are ₹ 3,80,000 and ₹ 4,20,000. The company's net profits for these months amounted to ₹ 24,000 and ₹ 40,000 respectively. There is no change in P/V ratio or fixed costs. The P/V ratio of the company is
- (a)  $33\frac{1}{3}\%$
  - (b) 40%
  - (c) 25%
  - (d) None of the above
- (2 × 3 = 6 marks)**

**Answer :**

- (b) (iv) False  
(v) False
- (c) (i) Fixed  
(ii) Budgetary Control  
(iii) Variable Cost  
(iv) Imputed cost  
(v) Absorption



- (d) (ii) (d) Standard cost variance = std. cost of actual production – actual cost  
 Standard cost variance = Material price variance + material usage variance  
 = 6,000(F) + 3,000(A) = 3,000(F)  
 3,000 = std. cost of actual production – 2,000 × 12  
 Std. cost of actual production = 24,000 + 3,000 = ₹ 27,000
- (iii) (b) (Margin of Safety = profit/PV ratio = 30/40 = 75 lakhs. Total Sales = 75/.25 = ₹ 300 lakhs)
- (v) (b) (PV Ratio =  $\frac{\text{Change in profit}}{\text{Change in sales}} \times 100 = \frac{16,000}{40,000} \times 100 = 40\%$ )

— Space to write important points for revision —

**2012 - June [1] {C}** (b) State whether the following statements are True or False:

- (i) Standard Costing may not be suitable for small concerns.
- (ii) Cost Accounting is a branch of Financial Accounting.
- (iv) Transfer Pricing has significance for the purpose of measurement of divisional performance. **(1 × 3 = 3 marks)**

**(c)** Fill up the blanks suitably:

- (ii) The success of the \_\_\_\_\_ costing is based on mutual belief and understanding.
- (iii) A Budget is a statement that is always prepared \_\_\_\_\_ to a defined period of time.
- (iv) \_\_\_\_\_ is the difference between the actual sales and the break-even sales. **(1 × 3 = 3 marks)**

**(d)** In the following cases one out of four answers is correct. You are required to indicate the correct answer (1 mark) and give brief workings (1 mark):

- (v) The cost per unit of a product manufactured in a factory amounts to ₹ 160 (75% variable) when the production is 10,000 units. When production increases by 25%, the cost of production will be ₹ \_\_\_\_\_ per unit.

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- (a) ₹ 145
- (b) ₹ 152
- (c) ₹ 150
- (d) ₹ 140

(2 marks)

**Answer :**

- (b) (i) **True.** The process of setting standard is a difficult task, as it requires technical skills. The time and motion study is required to be undertaken for this purpose. These studies require a lot of time and money. Small concerns may not be able to afford.
- (ii) **False.** Financial Accounting aims at finding the results of an accounting year in terms of profits or losses and assets and liabilities. Cost Accounting primarily deals with collection, analysis of relevant cost data for interpretation and presentation for various problems of management.
- (iv) **True.** 'Transfer Price' is that notional value at which goods and services are transferred between divisions in a decentralized organization. Divisional profitability is measured by fixation of 'transfer price' for inter divisional transfers.
- (c) (ii) Uniform
- (iii) Prior
- (iv) Margin of Safety
- (d) (v) (b) – ₹ 152

Variable Cost per unit = ₹160 × 75% = ₹ 120

Fixed Cost per unit = ₹ 40

Total fixed cost = 10,000 × 40 = ₹ 4,00,000

Fixed Cost per unit when production is 12,500 unit = 400,000/12,500  
= ₹ 32

Cost per unit = 120 + 32 = 152

———— Space to write important points for revision —————

**2012 - Dec [1] {C}** (b) State whether the following statements are TRUE or FALSE.

- (ii) Future costs are not relevant in making management decisions.
- (iii) Sales Budget is prepared before Production Budget.

**(1 x 2 = 2 marks)**

**(c)** Fill in the blanks suitably:

- (i) When P/V ratio is 20% and margin of safety ratio is 30%, profit is \_\_\_\_\_ % of sales.
- (ii) \_\_\_\_\_ costing is a must for meaningful inter-firm comparison.
- (iii) \_\_\_\_\_ costs are the future costs affected by decision taken.
- (v) A \_\_\_\_\_ is the notional value at which goods and services are transferred between divisions in a decentralised organisation.

**(1 x 4 = 4 marks)**

**(d)** In the following cases, one out of four answers is correct. You are required to indicate the correct answer (= 1 mark) and give brief workings (= 1 mark):

- (v) Selling price of a product is ₹ 5 per unit, variable cost is ₹ 3 per unit and fixed cost is ₹ 10,000. Then B.E. point in units will be:
  - (a) 10,000
  - (b) 5,000
  - (c) 7,500
  - (d) None of the above

**(2 marks)**

**Answer:**

- (b)** (ii) False
- (iii) True
- (c)** (i) 6%
- (ii) Uniform
- (iii) Relevant
- (v) Transfer Price

**10.236****■ Scanner CMA Inter Gr. II Paper 10 A (2016 Syllabus)****(d) (v)** (b) 5,000 units

$$\begin{aligned}\text{Break -even point (in units)} &= \frac{\text{FC}}{\text{CONT PER UNIT}} \\ &= \frac{10,000}{2} = 5,000 \text{ units}\end{aligned}$$

Here, FC = Fixed Cost;

CONT PER UNIT = Contribution per unit = ₹ (5 - 3) = ₹ 2.

—— Space to write important points for revision ———

**2013 - June [1] {C}** (b) State whether the following statement is 'True or 'False':

- (i) Fixed cost per unit remains constant irrespective of the number of units of output. **(1 mark)**

**(c)** Fill in the blanks suitably:

- (i) \_\_\_\_\_ centre is defined as a business entity's segment by which both revenues are earned and costs are incurred.
- (v) Where there are two raw materials A and B, and the total material mix variance is favourable and if A has a favourable mix variance, then B will have a mix variance that is \_\_\_\_\_.

**(1 × 2 = 2 marks)****(d)** In the following cases, one of the four given answers is correct. You are required to indicate the correct answer (= 1 mark) and give brief workings:

- (iii) If break-even sales is 60% of current sales and profit is ₹ 60,000, then the amount of contribution will be
- (a) ₹ 1,00,000
- (b) ₹ 36,000
- (c) ₹ 1,50,000
- (d) ₹ 1,86,000

- (v) A production process has the capacity to produce either 4,000 units of A or 3,500 units of B or 5,000 units of C. Only one product can be made in a production period. The contributions per unit of A, B and C are ₹ 10, 11 and 8 respectively. The opportunity cost of A would be
- (a) ₹ 44,000
  - (b) ₹ 38,500
  - (c) ₹ 50,000
  - (d) ₹ 40,000
- (2 × 2 = 4 marks)**

**Answer:**

- (b) (i) False  
(c) (i) Profit, (v) Adverse.  
(d) (iii) (c), (v) (d).

\_\_\_\_\_ Space to write important points for revision \_\_\_\_\_

**2017 - June [1]** (a) Choose the correct answer from the given four alternatives:

- (i) Type of accounting which measures, reports and analyse non-financial and financial information to help in decision making is called:
  - (a) Financial Accounting
  - (b) Management Accounting
  - (c) Cost Accounting
  - (d) Green Accounting
- (ii) Which one of the following is not considered as a method of Transfer Pricing?
  - (a) Negotiated Transfer Pricing
  - (b) Market Price Based Transfer Pricing
  - (c) Fixed Cost Based Transfer Pricing
  - (d) Opportunity Cost Based Transfer Pricing
- (iii) In cost accounting, purpose of variance analysis is to:
  - (a) understand reasons for variances.
  - (b) take remedial measures.

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- (c) improve future performance.  
(d) All of the above
- (iv) Absorption Costing is also known as:  
(a) Total Costing  
(b) Committed Costing  
(c) Target Costing  
(d) Discretionary Costing
- (v) Which of the following is not correct with regard to Margin of Safety (MOS)?  
(a)  $MOS = \frac{\text{Profit}}{\text{PV Ratio}}$   
(b)  $MOS = \text{Total Sales} - \text{Sales at BEP}$   
(c)  $MOS = \frac{\text{Total Sales} - \text{Sales at BEP}}{\text{Total Sales}} \times 100$   
(d)  $MOS = \text{PV Ratio} \times \text{Sales} - \text{Fixed Cost}$
- (vi) Which one of the following is not to be considered for preparing a production budget?  
(a) The production plan of the organization  
(b) The Sales Budget  
(c) Research and Development Budget  
(d) Availability of Raw Materials

**(1 × 6 = 6 marks)****(b) Match Column A with Column B:**

Column 'A'		Column 'B'	
1.	Learning Curve	(A)	Negotiated Pricing
2.	Zero Base Budgeting	(B)	Human Phenomenon
3.	Transfer Price	(C)	Fixed Costs are charged to Cost of Production
4.	Absorption Costing	(D)	Discretionary Cost

**(1 × 4 = 4 marks)**

(c) State whether the following statements are True or False:

- (i) Standard Costs are arrived on the basis of costs incurred in the past.
- (ii) Experience Curve effects are reinforced when two or more products share a common resource.
- (iii) Preparation of a Master Budget precedes preparation of Functional Budgets.
- (iv) Other variables remaining constant, a hike in selling price per unit will lower the Break Even Point.

(1 × 4 = 4 marks)

**Answer:**

- (a) (i) (b) Management Accounting  
 (ii) (c) Fixed Cost Based Transfer Pricing  
 (iii) (d) All of the above  
 (iv) (a) Total Costing  
 (v) (d)  $MOS = PV \text{ Ratio} \times \text{Sales} - \text{Fixed Cost}$   
 (vi) (c) Research and Development Budget

(b)

Column 'A'		Column 'B'	
1.	Learning Curve	(B)	Human Phenomenon
2.	Zero Base Budgeting	(D)	Discretionary Cost
3.	Transfer Price	(A)	Negotiated Pricing
4.	Absorption Costing	(C)	Fixed Costs are charged to Cost of Production

- (c) (i) False  
 (ii) False  
 (iii) False  
 (vi) True

\_\_\_\_\_ Space to write important points for revision \_\_\_\_\_

**2017 - Dec [1]** (a) Choose the correct answer from the given four alternatives:

- (i) Which statement best describes the role of the management accountant?

- (a) Management accountants prepare the financial statements for an organization.
- (b) Management accountants facilitate the decision-making process within an organization.
- (c) Management accountants make the principal decisions within an organization.
- (d) Management accountants are basically information collectors.
- (ii) In a factory when production is increased within the relevant range then:
  - (a) variable costs will vary on a per unit basis.
  - (b) variable costs will vary in total.
  - (c) fixed costs will vary in total.
  - (d) fixed and variable cost stay the same in total.
- (iii) The main objective of budgetary control is:
  - (a) to define the goal of the firm
  - (b) to coordinate different departments
  - (c) to plan to achieve its goals
  - (d) All of the above
- (iv) Method of pricing, when two separate pricing methods are used to price transfer of products from one subunit to another, is called:
  - (a) dual pricing
  - (b) functional pricing
  - (c) congruent pricing
  - (d) optimal pricing
- (v) When are overhead variances recorded in a standard costing system?
  - (a) When the goods are transferred out of work-in-progress.
  - (b) When the factory overhead is applied to work-in-progress.
  - (c) When the cost of goods sold is recorded.
  - (d) When the direct labour is recorded.
- (vi) Which of the following factors does not affect Learning Curve?
  - (a) Method of Production
  - (b) Labour Strike



- (c) Shut Down
- (d) Efficiency Rate

(1 × 6 = 6 marks)

- (b) Match the statement in Column I with the most appropriate statement in Column II:

Column I		Column II	
(i)	Market Based Price	(A)	Break-Even Analysis
(ii)	Decision Unit	(B)	Differential Cost
(iii)	Margin of Safety	(C)	Transfer Pricing
(iv)	Difference between costs of two alternatives	(D)	Zero-Base Budgeting

(1 × 4 = 4 marks)

- (c) State whether the following statements are *True* or *False*:

- (i) The profit calculated under absorption costing and marginal costing is always equal.
- (ii) A flexible budget takes into account only fixed costs.
- (iii) At break-even point, margin of safety is nil.
- (iv) An increase in production means as increase in overall productivity.

(1 × 4 = 4 marks)

**Answer:**

- (a) (i) (b) Management accountants facilitate the decision-making process within an organisation.
- (ii) (b) variable costs will vary in total.
- (iii) (b) To coordinate different departments.
- (iv) (a) dual pricing.
- (v) (b) When the factory overhead is applied to work-in-progress.
- (vi) (c) Shut Down.
- (b) (i) (c) Transfer Pricing
- (ii) (d) Zero-Base Budgeting
- (iii) (a) Break-Even Analysis
- (iv) (B) Differential Cost.

- (c) (i) False  
(ii) False  
(iii) True  
(iv) False.

— Space to write important points for revision —

**2018 - June [1]** (a) Choose the correct answer from the given four alternatives (You may write only the Roman numeral and alphabet chosen for your answers):

- (i) Decision-marking concerns with:
  - (a) Past
  - (b) Future
  - (c) Past and Future both
  - (d) None of the above
- (ii) A large Margin of Safety indicates
  - (a) Over-Capitalization
  - (b) The Soundness of business
  - (c) Over Production
  - (d) None of the above
- (iii) Revision of budgets is
  - (a) Unnecessary
  - (b) Cannot determine
  - (c) Necessary
  - (d) Inadequate data
- (iv) Which of the following operating measures would a manager would like to see decreasing over time?
  - (a) Merchandise Inventory Turn-over
  - (b) Total quality Cost
  - (c) % of On-time Deliveries
  - (d) Finished Goods Inventory Turn-Over

- (v) Which of the following departments is most likely responsible for a Price Variance in Direct Materials?
- (a) Warehousing
  - (b) Receiving
  - (c) Purchasing
  - (d) Production
- (vi) Another name for the 'Learning Curves' is
- (a) Exponential Curve
  - (b) Growth Curve
  - (c) Production cure
  - (d) Experience Curve
- (1× 6 = 6 marks)**

- (b)** Match the Statement under Column I with the most appropriate Statement under Column II: (You may opt to write only the numeral and the matched the alphabet instead of copying contents into the answer books.):

Column I		Column II	
1	Distinctive feature of Learning Curve	(a)	On the principle of exception.
2	Standard Costing Works	(b)	Is designed to fix responsibilities on executives, through the preparation of budgets.
3	Budgetary Control System	(c)	Is that notional value at which goods and services are transferred between divisions in a decentralized organization.
4	Transfer Price	(d)	Persons engaged in repetitive task will improve his performance over time.

**(1×4 = 4 marks)**

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- (c) State whether the following Statements are **True or False**: (You may write only the Roman numeral and whether True or False without Coping the Statement into the answer books):
- (i) Management Accounting is largely based on estimates and as such total accuracy is not ensured under Management Accountancy.
  - (ii) The main objective of Budgetary Control is to Co-ordinate the different departments.
  - (iii) Standard Costing are applicable in Banking Industry.
  - (iv) Learning Curve is a Cost Reduction technique. **(1×4 = 4 marks)**

**Answer:**

- (a) (i) (b)  
(ii) (b)  
(iii) (c)  
(iv) (b)  
(v) (c)  
(vi) (d)
- (b) 1. (d)  
2. (a)  
3. (b)  
4. (c)
- (c) (i) True  
(ii) False  
(iii) False  
(iv) False

———— Space to write important points for revision —————

**2018 - Dec [1]** (a) Choose the correct answer from the given four alternatives (You may write only the Roman numeral and alphabet chosen for your answer):

- (i) The well-known basic function of management is
  - (a) Motivating
  - (b) Leadership

- (c) Decision-making
- (d) Communicating
- (ii) Contribution margin is equal to
  - (a) Sales – Fixed Cost – Profit
  - (b) Profit + Variable Cost
  - (c) Fixed Cost – Loss
  - (d) None of the above
- (iii) In a system whereby all activities are revaluated each time a budget is formulated and starts with the assumption that requirement of funds does not exist is called
  - (a) Performance Budgeting
  - (b) Programme Budgeting
  - (c) Flexible Budgeting
  - (d) Zero-based Budgeting
- (iv) The management's time is saved by reporting only the deviations from the predetermined standards is called
  - (a) Management by objectives
  - (b) Budgetary Control
  - (c) Standard Costing
  - (d) Management by Exception
- (v) Marginal Costing is also known as
  - (a) Direct Costing
  - (b) Absorption Costing
  - (c) Variable Cost
  - (d) Variable Costing
- (vi) Another name for 'Contribution' is
  - (a) Marginal Income
  - (b) Gross Profit
  - (c) Net Income
  - (d) None of the above

(1 × 6 = 6 marks)

**2018 - Dec [1]** (b) Match the statement under Column I with the most appropriate statement under Column II (You may opt to write only the numeral and the matched alphabet instead of copying the contents into the answer book):

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Column I		Column II	
1	Learning Curve	(A)	Theodore P. Wright
2	Transfer Price	(B)	Cumulative Average Time
3	Experience Curve	(C)	Notional Value
4	Factors affecting the cost of Airlines	(D)	Boston Consulting Group

**(1 × 4 = 4 marks)**

**2018 - Dec [1]** (c) State whether the following statements are **True** or **False** (You may write only the Roman numeral and whether True or False without Copying the Statement into the answer book):

- (i) Standard Costing may not be suitable for small concerns.
- (ii) Production Budget is prepared before Sales Budget.
- (iii) Budgets are always prepared for one year.
- (iv) At Break Even Point, the Margin of Safety is nil. **(1 × 4 = 4 marks)**

# **Section B**

# **Financial Management**



# 6

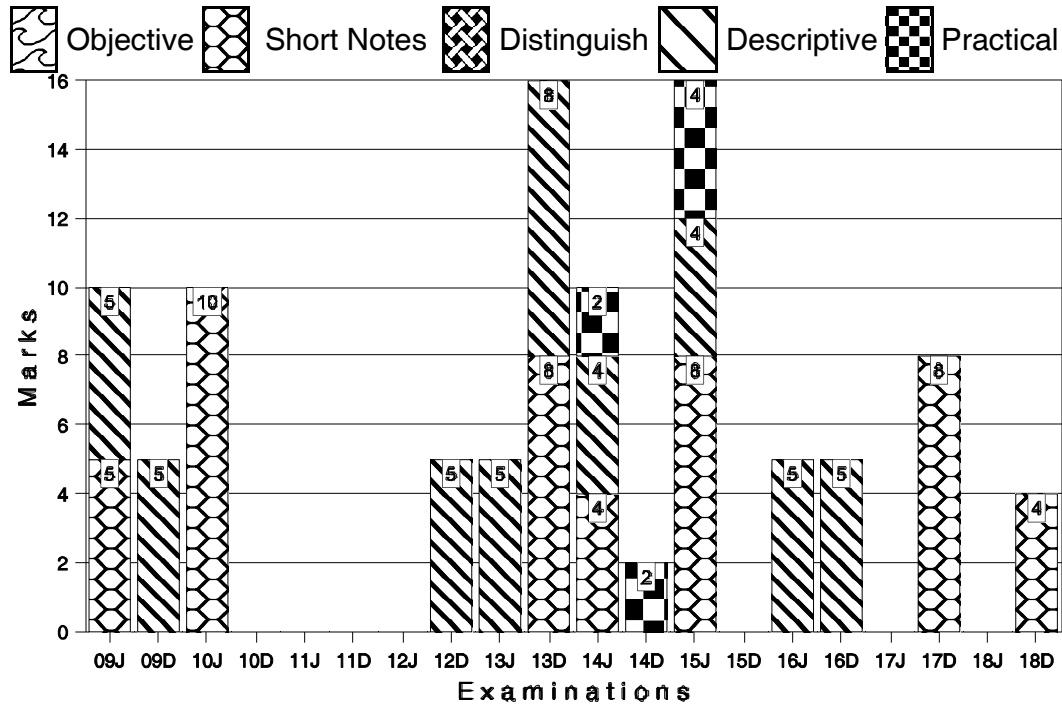
## INTRODUCTION TO FINANCIAL MANAGEMENT

### THIS CHAPTER INCLUDES

- Meaning
- Objectives
- Scope of Financial Management
- Sources of Finance
- Introduction to Financial Markets

Marks of objective, Short Notes, Distinguish Between, Descriptive & Practical Questions

### Legend



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for registration and password see first page of this book.

## CHAPTER AT A GLANCE

Topic	Important Highlights
<b>Financial Management Meaning</b>	Financial Management is managerial activity which is concerned with the planning and controlling of the firm's financial resources.
<b>Profit Maximization versus Wealth Maximization</b>	<p>Financial Management is basically concerned with procurement and use of funds. In the light of these, the main objectives of Financial Management are</p> <ol style="list-style-type: none"> <li>1. Profit Maximization</li> <li>2. Wealth Maximization</li> </ol> <p><b>1. Profit maximization:</b> Profit Maximization is the main objective of business because:</p> <ol style="list-style-type: none"> <li>(i) Profit acts as a measure of efficiency and</li> <li>(ii) It serves as a protection against risk.</li> </ol> <p><b>2. Wealth Maximization:</b> Wealth Maximization is considered as the appropriate objective of an enterprise. When the firms maximizes the stock holder's wealth, the individual stockholder can use this wealth to maximize his individual utility. Wealth Maximization is the single substitute for a stock holder's utility.</p>
<b>Financial Management plays two basic roles</b>	<ul style="list-style-type: none"> <li>• To participate in the process of putting funds to work within the business and to control their productivity; and</li> <li>• To identify the need for funds and select sources from which they may be obtained.</li> </ul>
<b>Key Decisions of Financial Management</b>	<ol style="list-style-type: none"> <li>(a) Investment decisions.</li> <li>(b) Financing decisions.</li> <li>(c) Dividend decisions.</li> </ol>

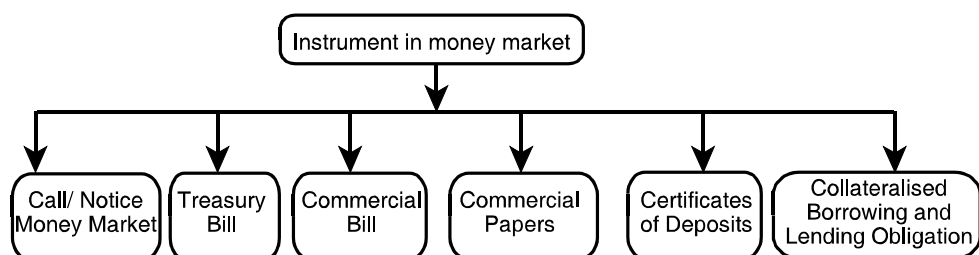
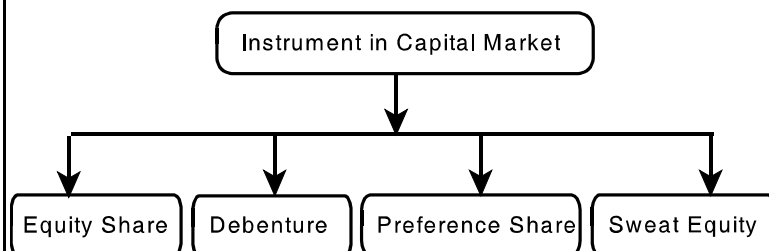
<b>Functions of Financial Management</b>		<div><div>Functional Areas of Financial Management</div><div><div>1. Determining Financial Needs</div><div>2. Determining Sources of Funds</div><div>3. Financial Analysis</div><div>4. Optimal Capital Structure</div><div>5. Cost Volume Profit Analysis</div><div>6. Profit Planning and Control</div><div>7. Fixed Assets Management</div><div>8. Capital Budgeting</div><div>9. Corporate Taxation</div><div>10. Working Capital Management</div><div>11. Dividend Policies</div><div>12. Acquisitions and Mergers</div></div></div>	
<b>Financial Sources of a Business can be classified as follows</b>		(i) Long term sources e.g. shares, debentures, long term loan, etc. (ii) Medium term sources, e.g. debentures, public deposits, bank loan/overdraft. (iii) Short term sources e.g., trade credit, advance from commercial banks, advances from customers etc.	
<b>Sl. No.</b>	<b>Type of Funds</b>	<b>Owners Funds</b>	<b>Borrowed Funds</b>
1	Long Term	(a) Equity Share Capital	(a) Debentures/Bonds.
		(b) Preference Share Capital	(b) Term Loans from institution - Rupee Loan - Foreign Currency Loan
		(c) Retained earnings (Plough back of profits)	(c) Term loan from Banks
		(d) Capital Subsidy/ Incentives	(d) Venture Capital Financing

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			(e) Interest free sales tax loan
			(f) Asset/Debt securitization
			(g) Euro Equity Issues
			(h) New debt Instruments
2	Medium Term	Preference Share Capital	(a) Debentures / Bonds
			(b) Public Deposits
			(c) Loans from Financial Institutions
			(d) Loan from Commercial Banks
			(e) Lease Financing
			(f) Hire Purchase/Instalment Financing Scheme.
			(g) Euro Debt Issue
			(h) New Debt Instruments
3	Short Term		(a) Credit from trade and expense creditors.
			- Trade Credits
			- Advances from customers
			- Short term provisions
			(b) Bank Advances
			(c) Factoring
			(d) Commercial Papers
			(e) Public deposits
			(f) Inter Corporate deposits

			(g) Short term Unsecured Debentures.
			(h) Bridge Finance
			(i) Certificate of Deposit
<b>Introduction to Financial Markets</b>	<p>A financial market is a market where financial instruments are exchanged or traded. Financial markets provide the following three major economic functions:</p> <ol style="list-style-type: none"> <li>1. Price discovery</li> <li>2. Liquidity</li> <li>3. Reduction of transaction costs</li> </ol>		
<b>Money Market</b>	<p>Money market is a very important segment of the Indian financial system. It is the market for dealing in monetary assets of short-term nature. Short-term funds up to one year and for financial assets that are close substitutes for money are dealt in the money market.</p>		
<b>Capital Market</b>	<p>Capital market is divided into two parts, namely primary and secondary/stock markets. A primary capital market is where the mobilization of finance is made – from investors to corporate capital structures – by the issue of new securities. New securities – in the form of Initial Public Offering (IPO) and Follow-up Offerings (FPO) – are sold by the issuer company to the public in the primary market.</p>		

**Instrument in Money Market****Instrument in Capital Market****Time Value of Money**

Money has time value. A rupee today is more valuable than a rupee a year hence.

**Methods of Time Value of Money**

**Compounding:** We find the Future Values (FV) of all the cash flows at the end of the time period at a given rate of interest.

**Discounting:** We determine the Time Value of money at time "O" by comparing the initial outflow with the sum of the Present Values (PV) of the future inflows at a given rate of interest.

<b>Procurement of funds</b>	It includes following interrelated aspects of acquiring and managing resources from outside. <ul style="list-style-type: none"> <li>• Financial institutions</li> <li>• Financial instruments</li> <li>• Legal and accounting relationship between firm and its resources.</li> </ul>
<b>Effective utilization of Funds</b>	Effective utilization of funds as an important aspect of financial management avoids the situations where funds are either kept idle or proper uses are not being made. Funds procured involve a certain cost and risk. If the funds are not used properly then running business will be too difficult. In case of dividend decisions we also consider this. So it is crucial to employ the funds properly and profitably.
<b>Major decisions taken as finance functions</b>	
<b>Investment decisions</b>	Relating to long term and short term decisions.
<b>Financing decisions</b>	Relating to capital structure decisions. Optimum capital structure is when market value of shareholders is maximum.
<b>Dividend decision</b>	Relating to how much profits be distributed and how much to retain in business for investments.
<b>Liquidity decisions</b>	Related to firm's ability to meet its current obligations.
<b>Scope of financial management</b>	Sound financial management is essential in all types of organizations whether it be profit or non-profit. Financial management is essential in a planned Economy as well as in a capitalist set-up as it involves efficient use of the resources.

<b>Functions of a financial manager</b>	<p><b>(i) Primary Functions</b></p> <ol style="list-style-type: none"><li><b>1. Estimating the Capital Requirements :</b> Once the physical activities of the organisation have been properly forecast, the financial manager has to decide how much funds are required for long-term, mid-term and short-term purposes.</li><li><b>2. Financing or Capital Structure Decision :</b> After estimating the requirements of funds, the financial manager has to decide about the sources from which funds are to be procured keeping in mind three factors viz., cost, risk and control. He should work out a proper mix of various sources in such a manner that the funds are procured at optimum cost with the least risk and the least dilution of control of the present owners.</li><li><b>3. Utilization of Funds or Investment Decision:</b> After procuring the funds, the financial manager has to decide about the assets in which the funds are to be invested. Long-term funds should be invested only after a careful assessment of the various projects through capital budgeting techniques and uncertainty analysis. A part of long-term funds has also to be kept for financing the hard core working capital requirements.</li><li><b>4. Disposal of Surplus or Dividend Decision:</b> The financial manager is also concerned with the decision as to how much earnings are to be retained and how much to be distributed. Economically, this decision should depend on whether the company or the shareholders can make a profitable use of the funds.</li></ol>
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	<p>5. <b>Management of Cash</b> : The financial managers must ensure the availability of adequate cash as and when needed. To purchase raw-material, to pay wages and salaries and to meet other day to day expenses.</p> <p>6. <b>Financial Control</b> : The financial manager exercises the financial control by providing planned utilisation with which actual utilisation may be compared.</p> <p><b>(ii) Subsidiary Functions:</b></p> <ul style="list-style-type: none"> <li>(a) Ensuring the optimum level of inventory and receivables.</li> <li>(b) Supplying funds to all the parts of the organisation.</li> <li>(c) Evaluating financial performance of various units of the organisation.</li> <li>(d) Carrying out financial negotiations with financial institutions, banks, underwriters, Inter Corporate Depositors (ICD).</li> <li>(e) Keeping track of stock exchange quotations and behaviour of share prices.</li> </ul>
<b>Option bond</b>	<ul style="list-style-type: none"> <li>• These are cumulative and non cumulative bonds where interest is payable at maturity or periodically.</li> <li>• Double option bonds have two parts one for principal and other for interest.</li> <li>• The investor can sell these certificates either individually or separately.</li> </ul>
<b>Inflation bond</b>	<ul style="list-style-type: none"> <li>• When interest rate is adjusted for inflation. e.g. interest rate is 10% and inflation rate is 2%. Investor will earn 12%.</li> <li>• Investor is protected against inflation.</li> </ul>

Other financial services	<p><b>1. Hire Purchase System:</b> A system, by which a buyer pays for a thing in regular installments while enjoying the use of it. During the repayment period, ownership (title) of the item does not pass to the buyer. Upon the full payment of the loan, the title passes to the buyer. Thus hire-purchase means a transaction where the goods are sold by vendor to the purchaser under the following conditions :</p> <p><b>Characteristics of Hire-Purchase System</b></p> <ol style="list-style-type: none"> <li>1. The price under hire-purchase system is paid in instalments.</li> <li>2. The goods are delivered in the possession of the purchaser at the time of commencement of the agreement.</li> <li>3. Hire vendor continues to be the owner of the goods till the payment of last instalment.</li> <li>4. The hire-purchaser has a right to use the goods as a bailer.</li> <li>5. The hire-purchaser has a right to terminate the agreement at any time in the capacity of a hirer.</li> <li>6. The hire-purchaser becomes the owner of the goods after the payment of all instalments as per the agreement.</li> <li>7. If there is a default in the payment of any instalment, the hire vendor will take away the goods from the possession of the purchaser without refunding him any amount.</li> </ol> <p><b>2. Pooling function</b></p> <ul style="list-style-type: none"> <li>• Similar loans of receivables are clubbed and</li> <li>• Transferred in favour of SPV and then placed in originator's portfolio.</li> </ul>
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**3. Securitization function**

- SPV issue securities carrying coupon rate.
- These are sold to investors and originator seeks the difference between yield and interest paid.

**Advantages**

- It converts illiquid asset to liquid asset.
- The originator's credit rating enhances.
- Assets are transferred off balance sheet facilitating satisfaction of capital adequacy norms.

**International Financing****A. External Commercial Borrowings (ECBs)**

ECB include bank loans, supplier credit, securities instruments, credit from export credit agencies and borrowings from multilateral financial institutions. These securitized instruments may be FRNs, FRBs etc. Indian corporate sector is permitted to raise finance through ECBs within the framework of the policies and procedures prescribed by the Central Government. Multilateral financial institutions like IFC, ADB, AFIC, CDC are providing such facilities while the ECB policy provides flexibility in borrowing consistent with maintenance of prudential limits for total external borrowings, its guiding principles are to keep borrowing maturities long, costs low and encourage infrastructure/core and export sector financing which are crucial for overall growth of the economy. The government of India, from time to time changes the guidelines and limits for which the ECB alternative as a source of finance is pursued by the corporate sector. During past decade the government has streamlined the ECB policy and procedure to enable the Indian companies to have their better access to the international

	financial markets. The government permits the ECB route for variety of purposes namely expansion of existing capacity as well as for fresh investment. But ECB can be raised through internationally recognized sources. There are caps and ceilings on ECBs so that macro economy goals are better achieved. Units in SEZ are permitted to use ECBs under a special window.
<b>B. Euro bonds</b>	They are long term loans denominated in a currency issued outside the country of that currency. Cost of borrowing is lower but issue cost is high.
<b>C. American depositary receipts</b>	It is a negotiable certificate which represents a Non US company's publically traded local currency equity shares but is issued outside the US, for trading in the US. They are also dollar denominated. They are issued in accordance with the provision stipulated by SEC of USA. An ADR is generally created by depositing the securities of an Indian Company with custodian bank. ADR holders enjoy right as owner of underlying Indian security. The provision are very strict. The cost of issuing ADR's is quite high. Now ADR can be privately placed with the class of institutional investors known as Qualified Institutional Buyer (QIB). Infosys, Wipro, MTNL, Rediff, VSNL, ICICI and many more Indian companies have issued ADR.
<b>D. Global depositary receipts</b>	It is a negotiable certificate which represents Non US company publically traded local currency equity shares. It is a dollar denominated instrument of a company traded in stock exchange outside the country of origin. It represents certain no. of equity denominated in rupees. Equity shares are registered in the name of an intermediary abroad called overseas depositary bank. The share certificates are delivered to another

intermediary called domestic custodian bank. The issuer does not assume any exchange collected by way of issue proceeds. GDR's are freely transferable outside India. There is arbitrage possibility in GDR issue. There is a two way fungibility i.e. GDR can be converted into shares and *vice versa*. The lock in period for GDR is 45 days after the allotment. The shares underlying the depositary receipt do not carry voting rights.

### ADR vs. GDR

ADR	GDR
The depositary receipts in US market is ADR.	The depositary receipt in world market is GDR.
It is issued outside USA but traded in USA.	It is not for trading in USA
Issued in accordance with the provision of SEC of USA.	Not comply with any of the condition of SEC of USA.
It has very strict provisions.	Disclosure requirement is less stringent.
Cost of issuing ADR is high.	Cost is not high.
It is not so popular only 10 companies have issued ADR.	It is much preferable than ADR.
ADR are listed in American stock exchange.	GDR are listed in other than ASE like Luxemburg, etc.

### Contemporary Developments

1. WTO	The <b>World Trade Organization (WTO)</b> deals with the global rules of trade between nations. Its main function is to ensure that trade flows as smoothly, predictably and freely as possible. The organization officially commenced on 1 January 1995 under the Marrakech Agreement, replacing the General
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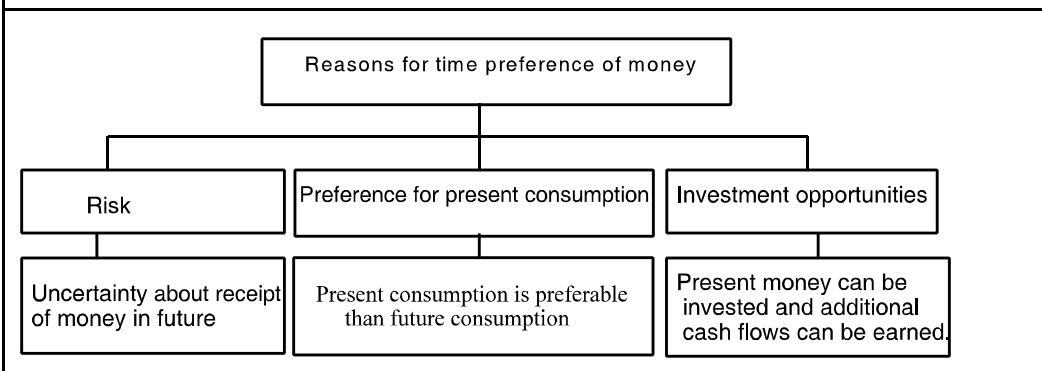
	<p>Agreement on Tariffs and Trade (GATT), which commenced in 1948. The organization deals with regulation of trade between participating countries; it provides a framework for negotiating and formalizing trade agreements and a dispute resolution process aimed at enforcing participants' adherence to WTO agreements, which are signed by representatives of member governments and ratified by their parliaments. Most of the issues that the WTO focuses on derive from previous trade negotiations, especially from the Uruguay Round (1986–1994).</p>
<b>Function of WTO</b>	<p>Main two most important functions are:</p> <ul style="list-style-type: none"> <li>(i) It oversees the implementation, administration and operation of the covered agreements.</li> <li>(ii) It provides a forum for negotiations and for settling dispute.</li> </ul>
<b>Some of the major features of WTO and GATT are</b>	<ul style="list-style-type: none"> <li>(i) World Trade Organization (WTO), was formed in 1995, head quartered at Geneva, Switzerland.</li> <li>(ii) It has 152 member states.</li> <li>(iii) It is an international organization designed to supervise and liberalize international trade.</li> <li>(iv) It succeeds the General Agreement on Tariffs and Trade.</li> <li>(v) It deals with the rules of trade between nations at a global level.</li> <li>(vi) It is responsible for negotiating and implementing new trade agreements and is in charge of policing member countries' adherence to all the WTO agreements, signed by the bulk of the world's trading nations and ratified in their parliaments.</li> </ul>

	<p>(vii) Most of the WTO's current work comes from the 1986-94 negotiations called the Uruguay Round and earlier negotiations under the GATT. The organization is currently the host to new negotiations, under the Doha Development Agenda (DDA) launched in 2001.</p> <p>(viii) Governed by a Ministerial Conference, which meets every two years; a General Council, which implements the conference's policy decisions and is responsible for day-to-day administration; and a director-general, who is appointed by the Ministerial Conference.</p>
<b>2. GATT</b>	<p>The <b>General Agreement on Tariffs and Trade (GATT)</b> was a multilateral agreement regulating international trade. Purpose of GATT was the "substantial reduction of tariffs and other trade barriers and the elimination of preferences, on a reciprocal and mutually advantageous basis." It was negotiated during the United Nations Conference on Trade and Employment and was the outcome of the failure of negotiating governments to create the International Trade Organization (ITO). GATT was signed in 1947 and lasted until 1994, when it was replaced by the World Trade Organization in 1995.</p>
<b>4. TRIMS</b>	<p>The <b>Agreement on Trade Related Investment Measures (TRIMs)</b> are rules that apply to the domestic regulations a country applies to foreign investors, often as part of an industrial policy. The agreement was agreed upon by all members of the World Trade Organization. TRIMs are rules that restrict preference of domestic firms and thereby enable international firms to operate more easily within foreign markets.</p>

<b>5. TRIPS</b>	The <b>Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS)</b> is an international agreement administered by the World Trade Organization (WTO) that sets down minimum standards for many forms of Intellectual Property (IP) regulation as applied to nationals of other WTO Members.
<b>6. SEBI</b>	The capital market in India is one of the emerging and promising capital markets of the World. During last two decades, particularly after 1990. There was a need to established a separate regulating agency for the securities market. It was officially established by the Government of India in the year 1988 and given statutory powers in 1992 with SEBI Act, 1992 being passed by the Indian Parliament, which came into force on 30th January, 1992.
<b>Objectives of SEBI: Main objectives are</b>	<ul style="list-style-type: none"> <li>(i) To provide a degree of protection to the investors and safeguard their rights.</li> <li>(ii) To promote fair dealing issuer of the securities.</li> <li>(iii) To regulate and develop code of conduct for the financial intermediaries.</li> <li>(iv) To provide for the matter connecting with or incidental to the above.</li> </ul>
<b>Powers of SEBI</b>	<ul style="list-style-type: none"> <li>1. to approve by-laws of stock exchanges.</li> <li>2. to require the stock exchange to amend their by-laws.</li> <li>3. inspect the books of accounts and call for periodical returns from recognized stock exchanges.</li> <li>4. inspect the books of accounts of a financial intermediaries.</li> </ul>



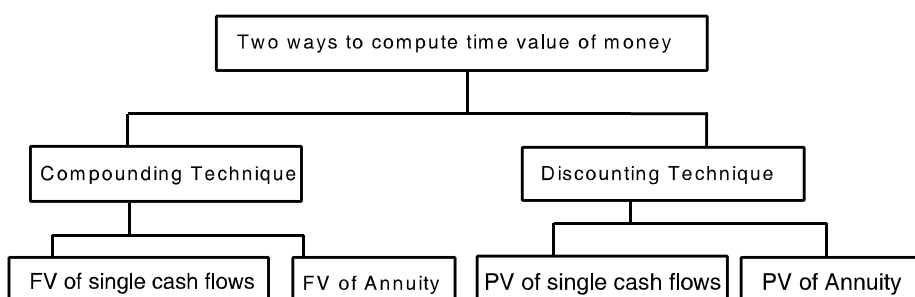
	<p>5. compel certain companies to list their shares in one or more stock exchanges.</p> <p>6. registration brokers.</p>
<b>In pursuance of its powers SEBI has formulated guidelines and regulations relating to</b>	<p>(i) Merchant bankers,</p> <p>(ii) Bankers to an issue,</p> <p>(iii) Registrars to issue,</p> <p>(iv) Share transfer agents,</p> <p>(v) Debentures trustees,</p> <p>(vi) Underwriters,</p> <p>(vii) FIIIs,</p> <p>(viii) Insider trading,</p> <p>(ix) Registration of brokers,</p> <p>(x) Guidelines of portfolio management services,</p> <p>(xi) Capital adequacy guidelines,</p> <p>(xii) Guidelines for mutual funds,</p> <p>(xiii) Guidelines for asset management companies,</p> <p>(xiv) Guidelines relating to disclosure and investor protection,</p> <p>(xv) Book building,</p> <p>(xvi) Substantial acquisition of shares and takeovers,</p> <p>(xvii) Depositories and participants etc.</p>
<b>TIME VALUE OF MONEY</b>	
<b>1 Time value of money</b>	<p>The Time value of money means the difference between worth of rupee received today and worth of rupee received in future.</p> <p>For a rational individual a Re. 1 received today is more valuable than Re. 1 received in future.</p>

**Reasons for time value of money**

<b>2 Simple interest</b>	It is defined as “Interest calculated as a simple percentage of the original principal amount.”
	<div>S.I. = <math>Prt</math></div> <div>Where, P = Principal, r = Rate of interest, t = Time period Amount = Principal + Interest</div>
<b>3 Compound interest</b>	Compounding means calculating future value of cash flows at a given interest rate at the end of a given period of time $A = P (1 + i)^n$ Where, A = Amount, P = Principal, i = Interest rate, n = time period
<b>4 Effective rate</b>	$E = \left(1 + \frac{i}{m}\right)^m - 1$ Where, E = Effective rate, i = Interest rate, m = Time period
<b>5 Present value</b>	Present value is defined as “the amount of money that represents the sum of principal and interest if principal P is required to be invested now at a certain rate compounded over number of time periods.” $A = \frac{P}{(1 + i)^n} \text{ or } P = \frac{A}{(1 + i)^n}$

<b>6 Annuity</b>	It is stream of regular periodic payment. It is a periodic fixed payment/receipt of an amount for a specific number of years. Period may be a month, quarter, a year or no. of years. Annuity Regular = $A \left[ \frac{(1+i)^n - 1}{i} \right]$
<b>7 Sinking Fund</b>	It is created out of the fixed payment by way of sequence of periodic payment over a time period at a specified interest rate.

## 8 Techniques to compute time value of money



<b>A. Compounding techniques</b>	<b>a. FV of single cash flows</b> $FV = PV (1 + i)^n$ <p>Where,          FV = Future value, PV = Present value, i = Interest rate, n = Time period</p>
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	<b>b. FV of Annuity</b> $FV = A \left[ \frac{(1+i)^n - 1}{i} \right]$ <p>Where,  FV = Future value, A = Present value, i = Interest rate, n = Time period</p>
<b>B. Discounting Technique</b>	<b>a. PV of single cash flows</b> $PV = FV (1+i)^{-n}$ <p>Where,  FV = Future value, PV = Present value, i = Interest rate, n = Time period</p> <b>b. PV of Annuity</b> $PV = A \left[ \frac{(1+i)^n - 1}{i(1+i)^n} \right]$ <p>Where,  FV = Future value, PV = Present value, i = Interest rate, n = Time period.</p>

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## SHORT NOTES

**2008 - Dec [8]** Write a short note on the following :

(a) Off Balance Sheet Financing

**(5 marks) [CMAIG - I]**

**Answer :**

A company when takes some assets on lease basis, it does not become owner of the asset though it is making full use of those assets and will ultimately own those assets if lease agreement has the terms and conditions to this effect. As the company is not owner of the assets taken on lease, it does not show those assets on its balance sheet. This is understatement of assets which may some time lead to some wrongful estimation of balance sheet figures. The non-appearance of leased assets on the balance sheet is sometimes referred to as off balance sheet financing.

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**2009 - June [8]** Write a short note on the following :

- (a) Financial Planning Environment; **(5 marks) [CMAIG - I]**

**Answer :**

The financial planning is not same as it used to be some years ago. This is because of drastic change in the environment in which the financial planning is to be made and implemented. All the dimensions and aspects of financial planning have undergone basic changes in these years whether laws, rules, regulations, investors attitude and awareness, company's responsibility, accountability and liability, international finance and exchange and many others.

The financial planning environment is changing on daily bases with regard to national and international laws, exchange rates, interest rates and exim policy etc. The financial planning should have adequate measures to respond to these factors in an efficient and effective way.

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**2010 - June [8]** Write short notes on the following:

- (c) Commercial paper as a source of Financing; **(5 marks)**  
(d) Limitation of Financial Planning. **(5 marks) [CMAIG - I]**

**Answer:**

- (c)** Commercial paper is a financial instrument in which a company promises to pay a certain sum after a certain period. Naturally the issue value is less than the maturity value. The CP is not covered by any security as its life is short between some days to some weeks.

Other plus points of commercial paper are as follows :

1. It is transferable and can be used as ordinary currency or money.
2. Maturity can be made flexible to suit the requirements of the company.
3. It can bring funds even if other instruments are not able to raise funds.
4. Maturity can be delayed by replacing the old CPs with fresh Cps.

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5. The company can raise funds at lower rate than from other sources of finances. Normally rate of interest paid by the company on CP is less than what it would have paid to the bank for raising the same amount of money.

**Answer:**

**(d) Limitations of Financial planning :** Any planning relates to future and future is uncertain. The facts relate to past and planning requires facts. Thus it is impossible to have full proof planning in any matter. That is true with financial planning as well. This is the first and most important limitation of financial planning.

The forecasts provide the basis of planning and the forecasts are always doubtful. More the time length of forecast and more doubtful it becomes.

Planning becomes facts due to certain circumstances. A capital expenditure is made and some amount is to be paid every year as installment. The planning of payment of such installments is based on facts.

(The reader may add his/her own points)

—— Space to write important points for revision ———

**2013 - Dec [8]** (b) Write a short note on Commercial Paper in India.

**(4 marks) [CMAIG - I]**

**Answer:**

**Issue of Commercial Papers in India:** Commercial Paper (CP) is an unsecured money market instrument issued in the form of a promissory note. It was introduced in India in 1990 with a view to enabling highly rated corporate borrowers to diversify their sources of short-term borrowings and to provide an additional instrument to investors. Subsequently, primary dealers and all-India financial institutions were also permitted to issue CP to enable them to meet their short-term funding requirements for their operations. Since the CP represents an unsecured borrowing in the money market, the regulation of CP comes under the purview of the Reserve Bank of India:

- (a) CP can be issued in multiples of ₹5 Lakhs.
- (b) CP can be issued for a minimum duration of 7 days and maximum period of 1 year.
- (c) For issuing CP the company's net worth should be more than ₹ 5 crores.
- (d) CP can neither be redeemed before maturity nor can be extended beyond the maturity period.
- (e) CP issue requires a credit rating of P2 from CRISIL or A2 from ICRA.

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**2013 - Dec [9]** (b) Answer the following:

- (ii) Write a short note on Foreign Currency Convertible Bonds (FCCBs)  
(4 marks) [CMAIG - I]

**Answer:**

**Foreign currency convertible bonds (FCCBs):**

Foreign currency convertible bonds (FCCBs) are a type of convertible bonds that are issued in currency other than the domestic currency of the issuing company. FCCB's are issued by corporates for raising funds in foreign currency. With all the inherent features of convertible bonds, FCCBs emerge as a good bet for both the issuers and investors. The FCCBs are unsecured; carry a fixed rate of interest and an option for conversion into a fixed number of equity, shares of the issuer company. Interest and redemption is payable in dollars price only if conversion option is not exercised. Interest rates are very low by Indian domestic standards. FCCBs are denominated in any freely convertible foreign currency.

FCCBs with a maturity term of 3-7 years provide an option to the bondholders to either redeem their investments or convert FCCBs into equities at or before maturity term at pre-determined price. Consequently, FCCBs entitle an investor for coupon rate payments with an additional option of conversion of bonds into equities.

**Salient features of FCCBs**

1. FCCBs carry comparably lower interest rates in comparison to regular bonds. Low interest is partly on account of the inherent option available to investors for conversion of FCCBs into equities.

2. Issuance of FCCBs does not require any collateral or security.
3. FCCBs are a low-cost source of borrowing for corporates.
4. Funds raised through issuance of FCCBs meet various expansion plans and capital expenditure requirement of corporates.

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**2014 - June [7]** (b) Write a short note on Global Depository Receipt.

**(4 marks) [CMAIG - I]**

**Answer:**

**Global Depository Receipts**

It is a negotiable certificate which represents Non US company publically traded local currency equity shares. It is a dollar denominated instrument of a company traded in Stock Exchange outside the country of origin. It represents certain no. of equity denominated in rupees. Equity shares are registered in the name of an intermediary abroad called Overseas Depository Bank. The share certificates are delivered to another intermediary called Domestic Custodian Bank. The issuer does not assume any exchange collected by way of issue proceeds. GDRs are freely transferable outside India. There is arbitrage possibility in GDR issue. There is a two way fungibility i.e. GDR can be converted into shares and *vice versa*. GDRs are also issued with warrant attached to them. Warrants give the investors an option to get it converted into share to equity at a later date.

**Voting rights**

Rule 6 provides the provisions for voting rights of depository receipts holder.

- (1) A holder of depository receipts may become a member of the company and shall be entitled to vote as such only on conversion of the depository receipts into underlying shares after following the procedure provided in the Scheme and the provisions of this Act.
- (2) Until the conversion of depository receipts, the overseas depository shall be entitled to vote on behalf of the holders of depository receipts in accordance with the provisions of the agreement entered into between the depository, holders of depository receipts and the company in this regard.

—— Space to write important points for revision ——



**2015 - June [III]** (b) (ii) Write short notes on:

- (a) Letter of credit
- (b) Issue of commercial papers in India **(4 + 4 = 8 marks) [CMAIG - I]**

**Answer:**

**(a) Letter of Credit:** A letter of credit is an arrangement whereby a bank helps its customer to obtain credit from its (customer's) suppliers. When a bank opens a letter of credit in favour of its customer for some specific purchases, the bank undertakes the responsibility to honour the obligation of its customer, should the customer fails to do so.

**Answer:**

**(b) Issue of Commercial Papers in India:** Commercial Paper (CP) is an unsecured money market instrument issued in the form of a promissory note. It was introduced in India in 1990 with a view to enabling highly rated corporate borrowers to diversify their sources of short-term borrowings and to provide an additional instrument to investors. Subsequently, primary dealers and all-India financial institutions were also permitted to issue CP to enable them to meet their short-term funding requirements for their operations. Since the CP represents an unsecured borrowing in the money market, the regulation of CP comes under the purview of the Reserve Bank of India:

- (a) CP can be issued in multiples of ₹5 Lakhs.
- (b) CP can be issued for a minimum duration of 7 days and maximum period of 1 year.
- (c) For issuing CP the company's net worth should be more than ₹ 5 crores.
- (d) CP can neither be redeemed before maturity nor can be extended beyond the maturity period.
- (e) CP issue requires a credit rating of P2 from CRISIL or A2 from ICRA.

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**2017 - Dec [10]** Write short notes on the following:

(b) Sweat Equity Shares

**(4 marks)**

(c) Venture Capital

**(4 marks)**

**Answer:**

**(b) Sweat Equity Shares:**

**As per Sec. 2(88) of the Companies Act, 2013** — Sweat equity shares means such equity shares as are issued by a company to its directors or employees at a discount or for consideration, other than cash, for providing their knowhow or making available rights in the nature of intellectual property rights or value additions, by whatever name called.

**A company may issue sweat equity shares of a class of shares already issued, if the following conditions are fulfilled:**

- (a) the issue is authorised by a special resolution passed by the company;
- (b) the resolution specifies the number of shares, the current market price, consideration, if any, and the class or classes of directors or employees to whom such equity shares are to be issued;
- (c) not less than one year has, at the date of such issue, elapsed since the date on which the company had commenced business; and
- (d) where the equity shares of the company are listed on a recognised stock exchange, the sweat equity share issued in accordance with the regulations made by the Securities and Exchange Board in this behalf and if they are not so listed, the sweat equity shares are issued in accordance with Rule 8 of Companies (Share Capital and Debenture) Rules, 2014.

**(c) Venture Capital:**

Venture Capital is a form of equity financing especially designed for funding high risk and high reward projects. There is a common perception that Venture Capital is a means of financing high technology projects. However, Venture Capital is investment of long term financial made in:

1. Ventures promoted by technically or professionally qualified but unproven entrepreneurs, or

2. Ventures seeking to harness commercially unproven technology, or
3. High risk ventures. The term 'Venture Capital' represents financial investment in a highly risky project with the objective of earning a high rate of return.

**Modes of Finance by Venture Capitalists**

1. **Equity** Most of the venture capital funds provide financial support to entrepreneurs in the form of equity by financing 49% of the total equity. This is to ensure that the ownership and overall control remains with the entrepreneur. Since there is a great uncertainty about the generation of cash inflows in the initial years, equity financing is the safest mode of financing. A debt instrument on the other hand requires periodical servicing of debt.
2. **Conditional Loan** From a venture capitalist point of view, equity is an unsecured instrument hence a less preferable option than a secured debt instrument. A conditional loan usually involves either no interest at all or a coupon payment at nominal rate. In addition, a royalty at agreed rates payable to the lender on the sales turnover. As the units pick up in sales interest rate are increased and royalty amounts are decreased.
3. **Convertible Loans** the convertible loan "is subordinate" to all other loans which may be converted into equity if interest payments are not made within agreed time limit.

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**2018 - Dec [10]** Write short notes on the following:

(ii) Venture Capital.

**(4 marks)**

**DESCRIPTIVE QUESTIONS**

**2009 - June [4]** (a) Comment on the emerging role of the Financial Manager in India.

**(5 marks) [CMAIG - I]**

**Answer:**

The Job of the Financial Manager in India has become more important, Complex and demanding. More so in the wake of global competition,

Technological developments, volatile financial prices, economic uncertainty, tax law changes, ethical concerns over financial dealings and shareholder activism.

The key challenges for a modern Finance Manager in India has changed from a mere Finance function of securing and managing funds to encompass the following, to name a few important areas :

1. Investment Planning
2. Financial Structure
3. Mergers, Acquisitions and Restructuring
4. Working Capital Management
5. Performance Management
6. Risk Management
7. Treasury Management
8. Portfolio Management
9. Investor relations
10. Corporate Governance etc.

Indian Finance Professionals are respected across the globe and today occupy top positions in several organizations including MNCs.

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**2009 - Dec [3]** (a) Explain briefly the functions performed by the Securities & Exchange Board of India (SEBI). **(5 marks) [CMAIG - I]**

**Answer :**

**Functions of SEBI:** The chief function of SEBI is to protect the interests of investors in the securities market. To achieve this main aim SEBI has been given various powers and with the use of those powers it can take various measures to fulfill its objectives.

1. It is the central authority to enact SEBI Act 1992.
2. It controls and monitors all activities related to stock exchanges.
3. It regulates the business in stock exchanges.

4. It registers, controls and regulates all the persons relating to securities market. Without its registration certificate one cannot function in securities market. It registers and regulates stock brokers, sub-brokers, share transfer agents, fund managers, underwriters, portfolio managers, bankers to an issue, registrars to the issue.
5. It registers and regulates various funds and schemes for the securities market like venture capital funds, mutual funds, collective investment scheme.
6. It checks insider trading, fraudulent and unfair trade practices in the securities market.
7. It can call for any information, records or explanation from any bank, board, authority, company or corporation in respect of transactions in securities market.
8. Its chief function is to reduce the grievances of investors, it can take all actions and performs all functions in this regard.

**Powers of SEBI:** SEBI can

1. suspend the trading of any securities in a recognised stock exchange.
2. prohibit any person to buy, sell or deal in securities;
3. restrict or check any person to enter the securities market ;
4. ask investigation of any transaction and to retain the securities or proceeds related to that transaction
5. direct any intermediary in any manner relating to any transactions which are under investigation.
6. prohibit any company from issuing any prospectus or offer document for the issue of securities;
7. specify terms and conditions under which any prospectus, offer document or any advertisement may be issued.

—— Space to write important points for revision ———

**2012 - Dec [6]** (c) What do you understand by 'External Commercial Borrowing' (ECB)? Mention two agencies engaged in ECB.

**(5 marks) [CMAIG - I]**

**Answer:**

**External Commercial Borrowings (ECBs) :** As the name indicates, ECBs are borrowing from external commercial institutions. The government sometimes borrows money from the international institutions to fulfill its requirements or to cover the deficits. The external commercial borrowings can be made from various institutions like IMF International Monetary Fund, US EXIM Bank, ADB Asian Development Bank etc. The ECBs can be in the form of raising loans from external commercial banks, or raising funds by issuing bonds in the international market or by export credit etc.

—— Space to write important points for revision ———

**2013 - June [4]** (b) What are the basic financial decisions? How do they involve risk-return trade off? **(5 marks) [CMAIG - I]**

**Answer:**

The basic financial decisions include long term investment decision, financial decision and dividend decisions

- (i) **Investment Decision:** Investment Decision relates to the selection of assets (fixed and current) in which funds will be invested by a firm. These decisions are of two types' Capital Budgeting Decision and Working Capital Decisions. Long-term investment decision is known as capital budgeting and short-term investment decision (current assets) is identified as working capital management – Proper trade – off between liquidity and profitability.
- (ii) **Financing Decision:** The Concern of financial is with financial mix or capital structure or leverage of firm – trade off between risk and return by maintaining a proper balance between debt and equity capital.
- (iii) **Dividend Decision:** Concerned with the distribution of profits of firm to the share holders. It will depend upon the preference of the shareholders, investment opportunities available within the firm and opportunities for future expansion of the firm.

—— Space to write important points for revision ———

**2013 - Dec [8]** (c) What is factoring? Explain the concept of full service factoring. **(4 marks) [CMAIG - I]**

**Answer:**

**Factoring:** Factoring means an arrangement between a factor and his client which includes at least two of the following services to be provided by the factor:

- Finance
- Maintenance of debt
- Collection of debts
- Protection against credit risk.

Under a typical factor arrangement a factor collects the accounts on due dates, effects payments to the firm on these dates and also assumes the credit risks associated with the collections.

In order to provide a gamut of financial services under one roof, Corporation has also started factoring services. Under the scheme Corporation shall be at the time being only providing advances or prepayments against receivable and other services provided by the factor such as debt collection and administration of sales ledger etc. shall be taken later on.

Under the scheme receivables only arising out of domestic trade shall be considered for factoring. Supplier/Borrower shall draw bills of exchange for goods supplied and the purchaser shall accept that. After acceptance of bills of exchange, Corporation shall make prepayment of 80% of invoice value after deducting its discount charges @ 17% to 18% p.a. for period of bill of exchange to supplier. Balance payment of 20% of the invoice value shall be made after collecting the payment from purchaser. If purchaser fails to pay the due amount on due dates, the supplier shall make the payment.

**Full Services Factoring- Under Full service factoring all kinds of services are** provided i.e. Thus, a factor provides finance, administers the sales ledger, collects the debts at his risk and renders consultancy service. This type of factoring is a standard one. If the debtors fail to repay the debts, the entire responsibility falls on the shoulders of the factors since he assumes the credit risk also. Under this responsibility cannot be transferred to client and, hence, this type of Factoring is also called 'Without recourse' factoring.

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**2013 - Dec [9]** (b) Answer the following:

(iii) Explain the procedure involved in the 'Forfeiting' Financial Service.

**(4 marks) [CMAIG - I]**

**Answer:**

**Forfeiting** is a financial transaction involving the purchase of receivables from exporters by a forfeiter. The forfeiter takes on all the risks associated with the receivables but earns a margin. The purchasing of an exporter's receivables (the amount importers owe the exporter) at a discount by paying cash. The forfeiter, the purchaser of the receivables, becomes the entity to whom the importer is obliged to pay its debt.

By purchasing these receivables - which are usually guaranteed by the importer's bank - the forfeiter frees the exporter from credit and from the risk of not receiving payment from the importer who purchased the goods on credit. While giving the exporter a cash payment, forfeiting allows the importer to buy goods for which it cannot immediately pay in full. The receivables, becoming a form of debt instrument that can be sold on the secondary market, are represented by bills of exchange or promissory notes, which are unconditional and easily transferred debt instruments.

**In summarized way 'Forfeiting' Financial Services:**

- (a) The exporter sells the goods to the importer on a deferred payment basis spread over 3-5 years.
- (b) The importer draws a series of promissory notes in favour of the exporter for the payments to be made inclusive of interest charges.
- (c) Such promissory notes are availed or guaranteed by a reputed international bank which can also be the importer's banker, (it is endorsed on the promissory note by the guaranteeing bank that it covers any default of payment of the buyer).
- (d) The exporter now sells the availed notes to a forfeiter (which may be the exporter's banker) at a discount without recourse.
- (e) The forfeiter may hold these notes till maturity or sell them to group of investors interested in taking up such high-yielding unsecured paper.

**Forfeiting of Promissory notes:**

- (a) Promissory notes sent for availing to the importer's banker
- (b) Availed notes returned to the importer



- (c) Aailed notes sent to exporter
- (d) Aailed notes sold at a discount to a forfeiter on a non - recourse basis
- (e) Exporter obtains finance
- (f) Forfeiter holds the notes till maturity or sells the short-term paper either to a group of investors or to investors in the secondary market.

— Space to write important points for revision —

**2014 - June [9]** (b) Answer the following

- (ii) What are the distinctive features of a financial lease and an operating lease?  
(4 marks) [CMAIG - I]

**Answer:**

**Distinctive features of Financial Lease and Operating Lease**

Financial Lease	Operating Lease
(i) It is usually non cancellable by the lessee prior to its expiration date.	(i) The lease is usually cancellable at short- notice by the lessee.
(ii) Financial Lease is for a longer period of time.	(ii) It is a short term lease. The lease period in such a contract is less than the useful life of asset.
(iii) A Financial Lease usually provides the lessee an option of renewing the lease for further period at a normal rent.	(iii) The lessee usually has the option of renewing the lease after the expiry of lease period.
(iv) The present value of the total lease rentals payable during the period of the lease exceeds or is equal substantially the whole of the fair value of the leased asset. It implies that within the lease period, the lessor recovers his investment in the asset along with an acceptable rate of return.	(iv) As the period of an operating lease less than the useful life of the asset, it does not necessarily amortize the original cost of the asset. The lessor has to make further leases or sell the asset to recover his cost of investment and expected rate of return.

— Space to write important points for revision —

**2015 - June [III]** (a) (ii) List the usual forms of bank credit available in India for a business. **(4 marks) [CMAIG - I]**

**Answer:**

**The usual form of bank credit is as follows:**

1. Overdraft
2. Cash Credit
3. Letter of Credit
4. Working Capital Term Loan
5. Funded Interest Term Loan
6. Bills Purchased and Bills Discounting.

—— Space to write important points for revision ———

**2016 - June [8]** (b) What is Global Depository Receipt (GDR)? List three of its characteristics. **(2 + 3 = 5 marks) [CMAIG - I]**

**Answer:**

**Global Depository Receipt (GDR):**

A GDR is a negotiable instrument, basically a bearer instrument which is traded freely in the international market either through the stock exchange or over the counter or among Qualified International Buyers (QIB).

It is denominated in US Dollars and represents shares issued in the local currency.

**Characteristics:**

1. The shares underlying the GDR do not carry voting rights.
2. The instruments are freely traded in the international market.
3. The investors can fixed income by way of dividend.
4. GDRs can be converted into the underlying shares, depository/custodian banks reducing the issue.

—— Space to write important points for revision ———

**2016 - Dec [7]** (b) What is a Financial Lease? What are its characteristic features? **(5 marks) [CMAIG - I]**

**Answer:****Financial Lease (FL) and its characteristics:**

A lease is classified as a financial lease if it ensures the amortisation of the entire cost of investment plus the expected return on capital outlay during the term of the lease.

It is usually for a longer period and covers the life of the asset.

Financial Lease is commonly used for land, building, machinery and fixed equipments.

The present value of the total lease rentals payable during the period of the lease exceeds or is equal substantially to the whole of the fair value of the leased asset, i.e. the lessor recovers the investment and an acceptable rate of return within the lease period.

The lease period is longer compared to an operating lease.

It is usually non cancellable prior to its expiration date.

In a financial lease the lessor is mostly responsible for the maintenance and service of the asset.

Financial Lease usually provides the lessee an option of renewing the lease for a further period at normal rent.

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**PRACTICAL QUESTIONS**

**2014 - June [6] {C}** Answer the following. (No credit will be given for answer without the reasoning)

(a) X deposits ₹ 1,00,000 at the beginning of each of years 1 and 3, and ₹ 1,00,000 at the end of each of the years 2, 4 and 5. Find the discounted value of the investments at the end of year 3 with a discount rate of 10%.

(P.V. factor of 10% at the year end 0, 1, 2, 3, 4, 5 and 6 are respectively: 1, 0.909, 0.826, 0.751, 0.683, 0.621, 0.564)

**(2 marks) [CMAIG - I]**

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**Answer:****Discounted value at the end of 3 years**

Year	Investment	PV factor at 10% at end of year 3	Discounted value
Beginning of year 1	100000	$(1.1)^3 = 1.331$	1,33,100
End of year 2	200000	$(1.1)^1 = 1.1$	2,20,000
End of year 4	100000	$1/(1.1) = 0.909$	90,900
End of year 5	100000	$1/(1.1)^2 = 0.826$	82,600
Discounted value of the investments at the end of year 3			526600

— Space to write important points for revision —

**2014 - Dec [1]** Answer the question:

- (h) Ascertain the discounted value at 10% p.a. at the end of year 1 of an investment of ₹ 2,00,000 to be made at the end of year 2 and ₹ 30,000 made immediately. **(2 marks) [CMAIG - I]**

**Answer:**

Discounted value at the end of year 1, Invested ₹ 30,000 now and 2,00,000 at the end of year 2.

$$3,00,000 (1 + 0.10) = 3,30,000$$

$$2,00,000 / (1 + 0.10) = 1,81,818$$

$$\text{Total} \quad \underline{\underline{5,11,818}}$$

— Space to write important points for revision —

**2015 - June [I]** (c) Ascertain the future value of annuity of ₹ 25,000 at the end of 6 years at 9% p.a. compounded annually. Assume that the amount is deposited at the beginning of every year. **(2 marks)**

- (h) Mr. X expects to receive ₹ 2,00,000 at the end of three years. What would be the present value if the rate of discount is 10%?

**(2 marks) [CMAIG - I]**

**(c) Calculation of Future Value of Annuity:**

**Answer:**

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[illegible]

# 7






## TOOLS FOR FINANCIAL ANALYSIS AND PLANNING

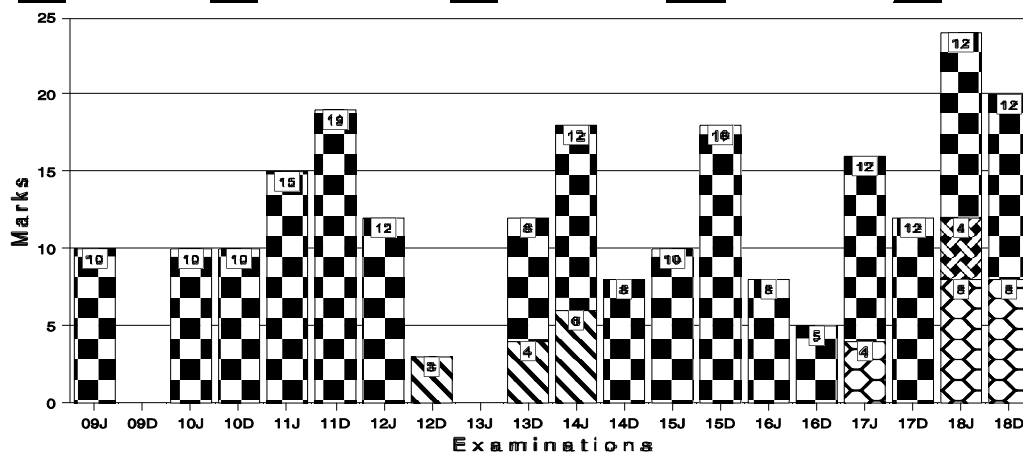
### THIS CHAPTER INCLUDES

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>• Financial Ratio Analysis</li> <li>• Advantages of Ratio Analysis</li> <li>• Limitations of Ratio Analysis</li> <li>• Window Dressing</li> <li>• Classification of Ratios</li> <li>• Fund Flow Analysis</li> <li>• Significance of funds flow statement</li> </ul> | <ul style="list-style-type: none"> <li>• Limitations of Funds Flow Statement</li> <li>• Cash Flow Analysis</li> <li>• Classification of Cash Flows</li> <li>• Need of Preparing Cash Flow Statement</li> <li>• Limitations of Cash Flow Statement</li> </ul> |
|--|--|

Marks of objective, Short Notes, Distinguish Between, Descriptive & Practical Questions

### Legend

 Objective
  Short Notes
  Distinguish
  Descriptive
  Practical



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for registration and password see first page of this book.

## CHAPTER AT A GLANCE

Topic	Important Highlights
<b>Fund Flow Statement</b>	Balance sheet and Profit and Loss account, which are the final output of financial accounts, reflect the financial position of a business and operational result for the period, but they do not show the movement of funds. The usefulness of the balance sheet and P&L account is limited for control purpose. It enables the user to predict the collapse of the organisation, before it occurs.
<b>Statement of Changes in Working Capital</b>	Funds generally refers to cash and equivalent or to working capital. The statement of change may involve: <ul style="list-style-type: none"> <li>(i) Changes only in firm's position</li> <li>(ii) Changes in the firm's working capital position and</li> <li>(iii) Changes in the firm's total financial resources position.</li> </ul>
<b>Fund flow statement</b>	Fund flow statement analyses from where the funds have been received and how these funds have been utilized. This statement explains the reason for changes in working capital.
<b>Significance/ Advantages of fund flow statement</b>	<ul style="list-style-type: none"> <li>(i) It indicates how working capital position can be improved.</li> <li>(ii) It provides a good basis for a sound dividend policy.</li> <li>(iii) It indicates the ways to acquire fixed assets or investments</li> <li>(iv) It highlights relationship between funds from operations to:</li> </ul>

	<ul style="list-style-type: none"> <li>(a) Requirement of working</li> <li>(b) Organization's investment plans</li> <li>(c) Financial of the organization</li> <li>(d) Debt requirement or procurement of the organization</li> <li>(v) Fund flow statement thus, has forecasting value, testing value and decision-making value.</li> </ul>
<b>Sources and application of the funds</b>	<p><b>(a) Sources of the funds</b></p> <ul style="list-style-type: none"> <li>(i) Funds from business operations</li> <li>(ii) Issue of share capital</li> <li>(iii) Issue of debentures of long term loans.</li> <li>(iv) Sale of fixed assets or long term investments(non-current assets)</li> <li>(v) Non-trading income.</li> <li>(vi) Decrease in working capital etc.</li> </ul> <p><b>(b) Application of Funds</b></p> <ul style="list-style-type: none"> <li>(i) Purchase of fixed assets Non-current assets.</li> <li>(ii) Payment of dividends and tax.</li> <li>(iii) Any other non-trading payment.</li> <li>(iv) Funds lost through business operations.</li> <li>(v) Increase in working capital.</li> <li>(vi) Redemption of preference share capital.</li> <li>(vii) Redemption of debentures.</li> <li>(viii) Repayment of long-term loans.</li> <li>(ix) Any other decrease in liability and increase in asset</li> </ul>
<b>Cash Flow Statement</b>	The statement of changes in financial position based on cash basis or cash flow statement, which shows inflow and outflow of the cash or sources and application of cash during a particular period.



<b>(a) Advantages of Cash Flow Statement</b>	<ul style="list-style-type: none"><li>• It helps in short term planning.</li><li>• It helps in short term obligations.</li><li>• It is an important financial tool.</li><li>• It helps in efficient cash management.</li><li>• It discloses the movement of cash.</li><li>• It helps in internal financial management.</li><li>• It discloses the volume as well as speed at which the cash flows in different segment of the business.</li></ul>		
<b>(b) Limitations Cash Flow Statement</b>	<ul style="list-style-type: none"><li>• It cannot be equated with the income statement.</li><li>• CFS does not disclose the real liquid position of the business.</li></ul>		
<b>Objectives Cash Flow Statement</b>	<ul style="list-style-type: none"><li>• To assess the ability to generate cash and cash equivalents.</li><li>• To compare operational efficiency of different enterprises.</li><li>• It helps to assess the need of enterprise to utilize that cash flow.</li><li>• To study the insolvency and liquidity position of an enterprise.</li></ul>		
<b>Direct method</b>			
<b>Operating activities</b>	<b>Investing activities</b>	<b>Financing activities</b>	<b>Indirect method</b>
<b>Operating activities</b>	<b>Investing activities</b>	<b>Financing activities</b>	<b>Operating activities</b>
They are principal revenue producing activities of the enterprise and other activities that are not investment or financing activities.	These includes the transactions of purchase and sale of long term assets and other investments which are not included in cash equivalents.	These includes activities that results in change in the size and composition of owner's capital and borrowings of enterprise (including preference share capital).	Net profit or loss is adjusted for the effect of transaction of a non cash nature, any deferrals or accruals of past or future operating cash receipts and payments and item of income or

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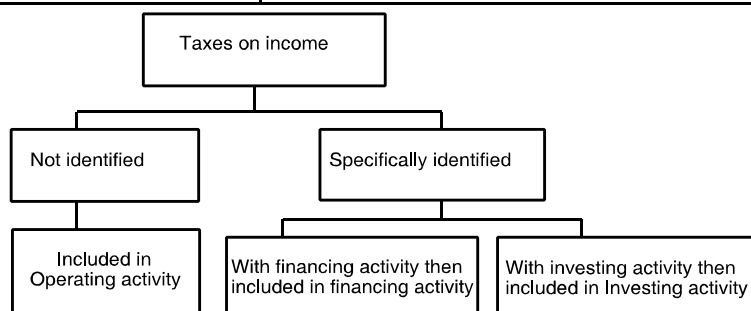
			expenses associated with investing or financing cash flows.
These includes transaction which are necessary in day to day activities.	Long term assets include those which are not held for the purpose of resale.		Adjustment for changes in working capital items is also made ignoring cash and cash equivalents.

**Note:**

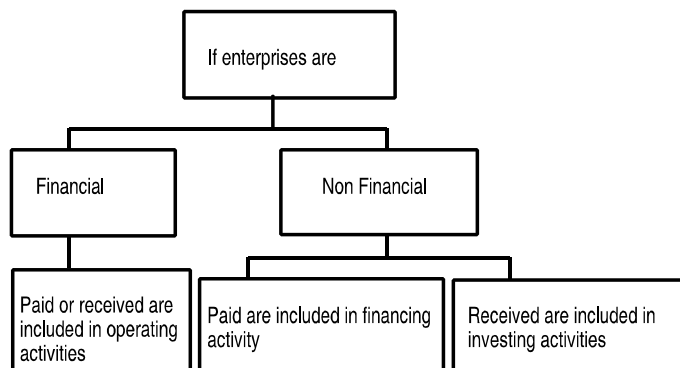
	<ol style="list-style-type: none"> <li>Investing and financing activities under both direct and In-direct methods are same. The only difference is in Operating Activities.</li> <li>Direct method is preferred over and above the indirect method as: <ul style="list-style-type: none"> <li>It gives clear picture of various sources of cash inflows and outflows.</li> <li>It helps to estimate clear picture of future cash flows and outflows.</li> </ul> </li> </ol>
<b>Reporting cash flows on Net basis:</b>	- On behalf of customers
<b>Cash receipts and payments</b>	- When the cash flows reflect the activities of the customer rather than those of enterprise.
<b>Cash receipts and payments for</b>	<ul style="list-style-type: none"> <li>Items in which the turnover is quick,</li> <li>The amount is large, and</li> <li>The maturities are short.</li> </ul>

<b>Foreign currency cash flows</b>	<ul style="list-style-type: none"> <li>• It is recorded by applying to the foreign currency amount the exchange rate between the reporting currency and foreign currency at the date of the cash flows.</li> <li>• The effect of change in exchange rates on cash and cash equivalents held in foreign currency should be reported as a separate part of the reconciliation of the changes in cash and cash equivalents during the period.</li> <li>• Unrealised gains and losses arising from changes in foreign exchange rates are not cash flows.</li> </ul>
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### Taxes on Income



### Interest and dividends



<b>Investments in subsidiaries, associates and joint ventures</b>	<ol style="list-style-type: none"> <li>1. Only cash flows between the enterprise itself and the investee/joint ventures should be reported.</li> <li>2. Any such investment reported is classified as investing activity.</li> <li>3. Any dividend received is classified as investing activity.</li> </ol>
<b>Acquisition and disposal of subsidiaries and other Business units</b>	<ul style="list-style-type: none"> <li>• It should be disclosed separately.</li> <li>• It is classified as investing activity.</li> <li>• It should also disclose <ul style="list-style-type: none"> <li>- The total of purchase or disposal consideration</li> <li>- The portion of purchase or disposal consideration discharged by means of cash and cash equivalents.</li> </ul> </li> </ul>
<b>Non cash transaction</b>	<p>Financing and investing transactions that do not require the use of cash or cash equivalents should be excluded from a cash flow statement.</p> <ol style="list-style-type: none"> <li>(a) Acquisition of asset by assuming directly related liabilities,</li> <li>(b) the acquisition of an enterprise by means of issue of shares and</li> <li>(c) the conversion of debt to equity.</li> </ol>

<b>Procedure for preparation of CFS</b>	<ul style="list-style-type: none"> <li>(a) Calculate net increase or decrease in cash and cash equivalents accounts.</li> <li>(b) Calculate net cash used or provided by Operating Activities.</li> <li>(c) Calculate net cash used or provided by Investing Activities.</li> <li>(d) Calculate net cash used or provided by Financing Activities.</li> <li>(e) Prepare CFS.</li> </ul>
<b>FFS Vs CFS</b>	
<b>Fund flow statement</b>	<b>Cash flow statement</b>
It is based on accrual accounting system.	It is based on cash.
It analyses source and application of long term funds.	It analyses increase and decrease in current assets and current Liabilities.
It helps in long range financial planning.	It helps in identifying and correcting current liquidity problem.
It analyzes various sources and application of funds.	It starts with opening cash balance and ends with closing cash balance.
	<p>The ratio analysis is one of the most powerful tool of the financial analysis. "A ratio is a simple arithmetical expression of the relationship of one number to another."</p> <p>According to <b>Kohler</b></p> <p>"A ratio is the relation of the amount a, to another b expressed as the ratio of a to b or a : b (a is to b), or as a simple fraction, integer, decimal or percentage."</p>

<b>(A) Interpretation of ratios depends upon</b>	<ul style="list-style-type: none"><li>• Skills</li><li>• Intelligence</li><li>• Foresightedness</li><li>• Change in price level</li><li>• Change in accounting policies</li><li>• Window dressing, etc.</li></ul>		
<b>Types of Ratios</b>	Managers have to protect the interest of all parties and see that the firms grow profitably.		
<div style="text-align: center;"><div style="border: 1px solid black; padding: 5px; margin: 0 auto; width: 200px;">Classification of Ratio</div><div style="display: flex; justify-content: space-around; margin-top: 20px;"><div style="border: 1px solid black; padding: 5px; width: 20%;">Liquidity Ratio</div><div style="border: 1px solid black; padding: 5px; width: 20%;">Leverage Ratio</div><div style="border: 1px solid black; padding: 5px; width: 20%;">Activity Ratio</div><div style="border: 1px solid black; padding: 5px; width: 20%;">Profitability Ratio</div></div></div>			
<b>Liquidity ratio</b>	<b>Leverage ratio</b>	<b>Activity ratio</b>	<b>Profitability ratio</b>
It measures the firm's ability to meet its current obligations.	It shows the proportion of debt and equity in financing the firm's assets.	It reflects the firm's efficiency in utilizing its assets.	It measures overall performance and effectiveness of the firm.
<b>A. Liquidity Ratio</b>	<b>(a) Current Ratio</b> <ul style="list-style-type: none"><li>• Formula = <math>\frac{\text{Current Assets}}{\text{Current Liabilities}}</math><ul style="list-style-type: none"><li>o Interpretation – Current ratio represents a margin of safety for creditors. The higher the ratio, the higher the safety.</li><li>o Standard ratio – 2 : 1</li></ul></li></ul>		

	<p><b>(b) Quick ratio</b></p> <ul style="list-style-type: none"> <li>• Formula           <math display="block">= \frac{\text{Current Assets} - \text{Inventory}}{\text{Current Liabilities} - \text{Bank overdraft} - \text{Cash Credit}}</math> </li> <li>o Interpretation – Quick ratio is a more penetrating test of liquidity than current ratio.</li> <li>o Standard ratio – 1 : 1</li> </ul>
	<p><b>(c) Cash ratio</b></p> <ul style="list-style-type: none"> <li>• Formula = <math>\frac{\text{Cash} + \text{Marketable Securities}}{\text{Current Liabilities}}</math></li> <li>o Interpretation – It measures absolute liquidity of firm.</li> </ul> <p><b>(d) Basic Defensive Interval</b></p> <ul style="list-style-type: none"> <li>o Formula = <math>\frac{\text{Current Assets} - \text{Inventory}}{\text{Average daily operating expenses}}</math></li> <li>o Interpretation: It measures the firm's ability to meet its cash expenses.</li> </ul> <p><b>(e) Net working capital ratio</b></p> <ul style="list-style-type: none"> <li>o Formula = <math>\text{Current Assets} - \text{Current liabilities (excluding term bank borrow)}</math></li> <li>o Interpretation – The result must be positive. It determines the company's ability to weather financial crises.</li> </ul>
<b>B. Leverage Ratio</b>	<p><b>(i) Capital structure ratios</b></p> <p><b>(a) Equity ratio</b></p> <ul style="list-style-type: none"> <li>o Formula = <math>\frac{\text{Shareholder's equity}}{\text{Total capital employed}}</math></li> <li>o Interpretation – Higher the proportion of owner's fund lower is the degree of risk.</li> </ul>

	<p><b>(b) Debt ratio</b></p> <ul style="list-style-type: none"> <li>Formula = <math>\frac{\text{Total Debt}}{\text{Capital Employed}}</math></li> <li>Total debt = Short Term borrowing + Long Term borrowing + Debentures/bonds + public deposits. Capital employed = Total Debt + Net worth.</li> <li>Interpretation: It analyses long term solvency.</li> </ul> <p><b>(c) Debt Equity ratio</b></p> <ul style="list-style-type: none"> <li>Formula = <math>\frac{\text{Total Liabilities}}{\text{Shareholder's Equity}}</math></li> <li>Interpretation – High ratio means less protection for creditors. There is no norm for maximum debt equity ratio.</li> </ul> <p><b>(ii) Coverage ratios:</b></p> <p><b>(a) Interest coverage ratio</b></p> <ul style="list-style-type: none"> <li>Formula = <math>\frac{\text{EBIT}}{\text{Interest}}</math></li> <li>Interpretation – Higher the ratio more is the firm's ability to meet its interest obligations.</li> </ul>
	<p><b>(b) Debt Service coverage ratio</b></p> <ul style="list-style-type: none"> <li>Formula = <math>\frac{\text{Earnings available for Debt services}}{\text{Interest + Installments}}</math></li> <li>Earnings available for debt services = Net profit + Non cash operating exp. Like depreciation, etc. + Non operating adjustments like loss on sale of fixed assets + interest on debt funds.</li> </ul>

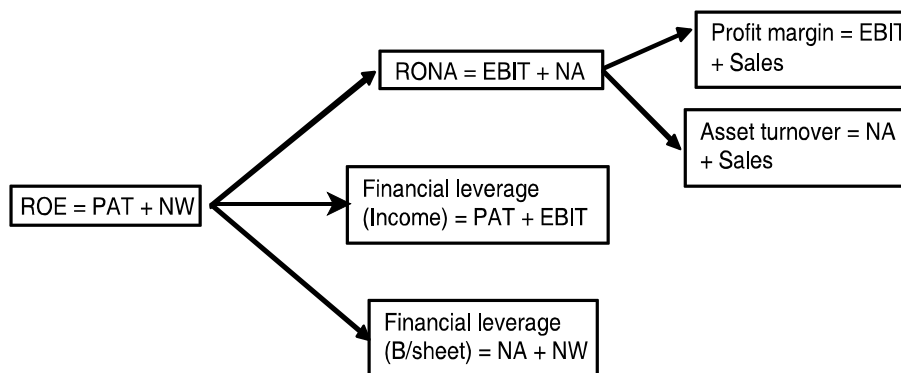


	<ul style="list-style-type: none"> <li>o Interpretation: It analyses the firm's ability to pay off current interest and installments.</li> </ul> <p><b>(c) Preference dividend coverage ratio:</b></p> <ul style="list-style-type: none"> <li>o Formula = <math>\frac{\text{EAT}}{\text{Preference dividend liability}}</math></li> <li>o It indicated MOS for preference shareholders.</li> <li>o Interpretation: High ratio is preferable by preference shareholders.</li> </ul> <p><b>(d) Capital gearing ratio</b></p> <ul style="list-style-type: none"> <li>o Formula</li> </ul> $= \frac{\text{Preference Share Capital} + \text{Debentures} + \text{Long term loan}}{\text{Equity Share Capital} + \text{Reserves \& Surplus} - \text{Losses}}$ <ul style="list-style-type: none"> <li>o Interpretation : It helps in judging long term solvency of firm.</li> </ul>
<b>C. Activity Ratio</b>	<p><b>(a) Capital turnover ratio:</b></p> <ul style="list-style-type: none"> <li>o Formula = <math>\frac{\text{Sales}}{\text{Capital Employed}}</math></li> <li>o This indicates the firm's ability of generating sales per rupee of long term investments.</li> <li>o Interpretation – Higher the ratio, more efficient utilisation of funds.</li> </ul> <p><b>(b) Fixed assets turnover ratio:</b></p> <ul style="list-style-type: none"> <li>o Formula = <math>\frac{\text{Sales}}{\text{Capital Assets}}</math></li> <li>o Interpretation – Higher the ratio, more efficient utilisation of Fixed assets.</li> </ul> <p><b>(c) Working capital turnover ratio:</b></p> $\text{Formula} = \frac{\text{Sales}}{\text{Working Capital}}$

	<p><b>(i) Inventory Turnover Ratio</b></p> <p>o Formula = <math>\frac{\text{Sales}}{\text{Average Inventory}}</math> or <math>\frac{\text{COGS}}{\text{Average Inventory}}</math></p> <p>o Average Inventory = <math>\frac{\text{Opening Stock} + \text{closing Stock}}{\text{Capital Employed}}</math></p> <p>o Or <math>\frac{\text{Raw Material Consumed}}{\text{Average Raw Material}}</math></p>
	<p><b>(ii) Debtor's turnover ratio</b></p> <p>o Formula = <math>\frac{\text{Credit Sales}}{\text{Average account receivables}}</math></p> <p>o Interpretation – It analyse the collection and credit policies of firm.</p> <p>o Average Collection period = <math>\frac{\text{Average Accounts Receivables}}{\text{Credit Sales}} \times 365</math></p> <p><b>(iii) Creditor's turnover ratio</b></p> <p>o Formula = <math>\frac{\text{Credit purchases}}{\text{Average Accounts payable}}</math></p> <p>o Interpretation – A low ratio reflects liberal credit terms.</p> <p>o Average Payment Period = <math>\frac{\text{Average Accounts payable}}{\text{Credit purchases}} \times 365</math></p>
<b>D. Profitability Ratio</b>	<p><b>A. Owners' point of view</b></p> <p><b>(a) ROE (Return of Equity)</b></p> <ul style="list-style-type: none"> <li>Formula = <math>\frac{\text{Profit After tax}}{\text{Net Worth}}</math></li> <li>Interpretation – It indicates firm's profitability and potential growth.</li> </ul>

- ROE as per Du-Pont Model = (Net profit margin) × (Asset Turnover) × (Equity Multiplier)

#### Du-Pont Model



#### (b) EPS

Formula =  $\frac{\text{Net profit for equity shareholders}}{\text{Number of equity share outstanding}}$

#### (c) DPS

- Formula =  $\frac{\text{Net profit distributed to equity shareholders}}{\text{Number of equity share outstanding}}$
- Interpretation – It indicates the amount of profits distributed and retained by a firm.

#### (d) P/E ratio

- Formula =  $\frac{\text{Market Price Per Share}}{\text{Earning Per Share}}$
- Interpretation – It indicates the expectation of equity shareholders about the earnings.

#### B. Based on Assets/Investments

##### (a) Return on capital employed

- Formula =  $\frac{\text{Return}}{\text{Capital Employed}} \times 100$

- Interpretation – It is the % of funds invested in the business by its owners.
- Return includes Net Profit, interest on long term debts, provision for tax, non trading adjustments, etc.
- Capital employed = Equity Sh. Capital + Pref. Sh. Capital + reserves and surplus + Debentures and long term debt – misc. expenditure – Non trade investments.

**(b) Return on investments**

- Formula =  $\frac{\text{Return}}{\text{Capital Employed}} \times 100$

Or

$$\frac{\text{Return}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Capital employed}} \times 100$$

Or Profitability ratio × Capital turnover ratio

**(c) Return on assets**

- Formula =  $\frac{\text{Net Profit after tax}}{\text{Average total sales}}$

Or

$$\frac{\text{Net Profit after tax}}{\text{Average tangible assets}}$$

Or

$$\frac{\text{Net Profit after tax}}{\text{Average Fixed assets}}$$

- Interpretation – It measures profitability of firm in terms of assets employed in the firm.

**C. Sales of firm****(a) G/P ratio**

- Formula =  $\frac{\text{Gross Profit}}{\text{Sales}} \times 100$
- P/V ratio =  $\frac{\text{Contribution}}{\text{Sales}} \times 100$

**(b) Operating profit ratio**

- Formula =  $\frac{\text{Operating Profit}}{\text{Sales}} \times 100$
- Interpretation – It evaluates operating performance of company.

**(c) Net profit ratio**

- Formula =  $\frac{\text{Net Profit}}{\text{Sales}} \times 100$
- Interpretation – It measures overall profitability of firm.

**D. Based on Capital Market Information****(a) P/E ratio**

- Formula =  $\frac{\text{Market Price Per Share}}{\text{Earning Per Share}}$
- Interpretation – It indicates the expectation of equity shareholders about the earnings.

**(b) Yield**

- Formula =  $\frac{\text{Dividend}}{\text{Average share Price}} \times 100$
- Interpretation – It indicates return on paid up value of share.

**(c) MV/BV per share**

- Formula =  $\frac{\text{MV}}{\text{BV}} = \frac{\text{Average share Price}}{\text{Net worth/No. of equity share}}$   
Or

**10.302****■ Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)**

$$\frac{MV}{BV} = \frac{\text{Closing share Price}}{\text{Net worth/No. of equity share}}$$

- Interpretation – It indicates market response of shareholders investments.
- Higher the ratio better is shareholders position.

### **SHORT NOTES**

**2017 - June [10]** Write short note on the following:

(d) Window Dressing

**(4 marks)**

**Answer:**

**Window Dressing:**

The term window dressing means manipulation of accounts in a way so as to conceal vital facts and present the financial statements in a way to show a better position than what it actually is. On account of such a situation, presence of a particular ratio may not be a definite indicator of good or bad management. For example, a high stock turnover ratio is generally considered to be an indication of operational efficiency of the business. But this might have been achieved by unwarranted price reductions or failure to maintain proper stock of goods.

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**2018 - June [10]** Write short notes on the following:

(a) Debtors Turnover Ratio

(c) Advantages of Ration Analysis (any four)

**(4×2 = 8 marks)**

**Answer:**

- (a)** The receivables turnover ratio is an accounting measure used to quantify a firm's effectiveness in extending credit and in collecting debts on that credit. The receivables turnover ratio is an activity ratio measuring how efficiently a firm uses its assets.

Receivables turnover ratio can be calculated by dividing the net value of credit sales during a given period by the average accounts receivable during the same period. Average accounts receivable can be calculated by adding the value of accounts receivable at the beginning of the desired period to their value at the end of the period and dividing the sum by two.

The method for calculating receivables turnover ratio can be represented with the following formula:

$$\text{Accounts Receivable Turnover} = \frac{\text{Net Credit Sales}}{\text{Average Accounts Receivable}}$$

The receivables turnover ratio is most often calculated on an annual basis, though it can also be calculated on a quarterly or monthly basis.

- (c) When employed correctly, ratio analysis throws light on many problems of the firm and also highlights some positives. Ratios are essentially whistleblowers, they draw the managements attention towards issues needing attention. Let us take a look at some advantages of ratio analysis.
- Ratio analysis will help validate or disprove the financing, investment and operating decisions of the firm. They summarize the financial statement into comparative figures, thus helping the management to compare and evaluate the financial position of the firm and the results of their decisions.
  - It simplifies complex accounting statements and financial data into simple ratios of operating efficiency, financial efficiency, solvency, long-term positions etc.
  - Ratio analysis help identify problem areas and bring the attention of the management to such areas. Some of the information is lost in the complex accounting statements, and ratios will help pinpoint such problems.
  - Allows the company to conduct comparisons with other firms, industry standards, intra-firm comparisons etc. This will help the organization better understand its fiscal position in the economy.

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**10.304****■ Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)****2018 - Dec [10]** Write short notes on the following:

- (i) Defensive-Interval Ratio (DIR).
- (iii) Advantages of Ratio Analysis.

**(4 marks each)****DISTINGUISH BETWEEN****2018 - June [10]** (d) Differences between Funds Flow Statement and Cash Flow Statement .**(4 marks)****Answer:**

S. No	Basis For Comparison	Cash Flow	Fund Flow
1.	Meaning	A cash flow statement is a statement showing the inflows and outflows of cash and cash equivalents over a period.	A fund flow statement is a statement showing the changes in the financial position of the entity in different accounting years.
2.	Purpose of Preparation	To show the reasons for movements in the cash at the beginning and at the end of the accounting period.	To show the reasons for the changes in the financial position, with respect to previous year and current accounting year.
3.	Basis	Cash Basis of Accounting.	Accrual Basis of Accounting.
4.	Analysis	Short Term Analysis of cash planning.	Long Term Analysis of financial planning

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**DESCRIPTIVE QUESTIONS**

**2008 - Dec [2]** (b) Profit Margin and Turnover Ratio vary from one industry to another. What differences would you expect to find between a grocery chain such as Big Bazaar and a steel company such as Tata Steel?

**(5 marks) [CMAIG - I]**

**Answer :**

Differences in the amounts of assets necessary to generate a rupee of sales cause Asset Turnover Ratios to vary among industries. For example, a steel company needs a greater number of rupees in assets to produce a rupee in sales than does a grocery store chain. Also, profit margins and Turnover Ratios may vary due to differences in the amount of expenses incurred to produce sales. For example, one would expect a grocery store chain to spend more per rupee of sales than does a steel company. Often, a large turnover will be associated with a low profit margin and *vice versa*.

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**2012 - Dec [5]** (b) Indicate the important accounting ratios that would be used by each of the following:

- (i) A long-term creditor interested in determining whether his claim is adequately secured.
- (ii) A bank who has been approached by a company for short-term loan/overdraft.
- (iii) A Shareholder who is examining his portfolio and who is to decide whether he should hold or sell his shares in a company.

**(1 x 3 = 3 marks) [CMAIG - I]**

**Answer:**

- (i) Debt- Service Coverage Ratio and Interest Coverage Ratio.
- (ii) Current Ratio and Quick Ratio.
- (iii) Return on Equity, Earning per share, Dividend per share.

—— Space to write important points for revision ——

**2013 - Dec [9]** (b) Answer the following:

- (i) Classify the following independent items of cash flows under AS-3
1. Cash receipts from future contracts held for trading purpose.
  2. Cash receipts from repayment of advances to third parties other than a financial enterprise.
  3. Cash interest received from by a financial enterprise.
  4. Cash received from disposal of fixed assets.
  5. Cash receipts from interests in joint venture.
  6. Dividends paid by a non-financial enterprise.
  7. Cash payments on account of acquisition of a subsidiary.
  8. Cash flows arising from taxes on income, not specifically identifiable.
- (4 marks) [CMAIG - I]**

**Answer:**

**Classification of the following independent items of cash flows under AS-3:**

1. Cash receipts from future contracts held for trading purpose should be classified Cash flows from operating Activity.
2. Cash receipts from repayment of advances to third parties other than a financial enterprise should be classified Cash flows from Investing Activity.
3. Cash interest received from by a financial enterprise should be classified Cash flows from operating Activity.
4. Cash received from disposal of fixed assets should be classified Cash flows from Investing Activity.
5. Cash receipts from interests in joint venture should be classified Cash flows from Investing Activity.
6. Dividends paid by a non-financial enterprise should be classified Cash flows from Financial Activity.
7. Cash payments on account of acquisition of a subsidiary should be classified Cash flows from Investing Activity
8. Cash flows arising from taxes on income, not specifically identifiable should be classified Cash flows from operating Activity.

—— Space to write important points for revision ——

**2014 - June [6] {C}** Answer the following. (No credit will be given for answer without the reasoning)

(d) Will the following items feature in the cash flow statements as per AS-3?

If so, state the category under which the item will be shown.

- (i) Cash paid to develop self constructed fixed asset.
- (ii) Acquisition of another entity by issue of shares.
- (iii) Conversion of debt to equity.

**(2 marks) [CMAIG - I]**

**Answer:**

- (i) Cash flow from investing activity.
- (ii) Non-cash transactions.
- (iii) Non-cash transactions.

— Space to write important points for revision —

**2014 - June [9]** Answer the following:

(b) (iii) What is debt-service coverage ratio? Explain its significance.

**(4 marks) [CMAIG - I]**

**Answer:**

**Debt Service Coverage Ratio:** This ratio indicates whether the business is earning sufficient profits to pay not only the interest charged, but also whether due of the principal amount. The ratio is calculated as follows:

$$\text{Debt Service Coverage Ratio} = \frac{\text{Profit after Taxes} + \text{Depreciation} + \text{Interest on Loan}}{\text{Interest on Loan} + \text{Loan repayment in a year}}$$

**Significance of Debt Service Coverage Ratio:**

- The ratio is the key indicator to the lender to assess the extent of ability of the borrower to service the loan in regard to timely payment of interest and repayment of loan installment.
- A ratio of 2 is considered satisfactory by the financial institutions the greater debt service coverage ratio indicates the better debt servicing capacity of the organization.

— Space to write important points for revision —

## PRACTICAL QUESTIONS

**2008 - Dec [2]** (a) Complete the balance sheet and sales information in the table below for Godrej industries using the following financial data :

Debt Ratio : 50%

Quick Ratio : 0.80X

Total Assets Turnover : 1.5X

Days Sales Outstanding : 36.5 days

Gross Profit Margin on Sales. 25%

Inventory Turnover Ratio : 5 X

(All calculations are based on 365 days.)

### Balance Sheet

Liabilities	₹	Assets	₹
Accounts Payable		Cash	
Long-term Debt	60,000	Accounts Receivable	
Common Stock		Inventories	
Retained Earnings	97,500	Fixed Assets	
Total Liabilities & Equity		Total Assets	3,00,000
Sales		Cost of Goods sold	

**(10 marks) [CMAIG - I]**

### Answer :

1. Debt = (0.50) (Total Assets) = (0.50) (3,00,000) = ₹ 1,50,000
2. Accounts payable = Debt – Long-term Debt = 1,50,000 – 60,000  
= ₹ 90,000
3. Common Stock = (Total liabilities– Debt = Retained Earnings and Equity)  
= 3,00,000 – 1,50,000 – 97,500 = ₹ 52,500
4. Sales = (1.5) (Total Assets) = (1.5) (3,00,000) = ₹ 4,50,000
5. Inventory = Sales/5 = 4,50,000/5 = ₹ 90,000

6. Account Receivables = (Sales/365) (DSO)  

$$= (4,50,000/365) \times (36.5) = ₹ 45,000.$$
7. Cash + Accounts Receivables =  $0.80 \times$  Accounts Payables.  
 Or, Cash =  $0.80 \times 90,000 - 45,000 = ₹ 27,000$
8. Fixed Assets = Total Assets – (Cash + Accounts Receivables + Inventories)  

$$= 3,00,000 - (27,000 + 45,000 + 90,000)$$

$$= ₹ 1,38,000$$
9. Cost of Goods Sold = Sales  $\times$  (1-0.25)  

$$= 4,50,000 \times 0.75 = ₹ 3,37,500.$$

Liabilities	₹	Assets	₹
Accounts Payable	90,000	Cash	27,000
Long-term Debt	60,000	Accounts receivables	45,000
Common Stock	52,500	Inventories	90,000
Retained earnings	<u>97,500</u>	Fixed assets	<u>1,38,000</u>
Total Liabilities and Equity	<u>3,00,000</u>	Total Assets	<u>3,00,000</u>
Sales	4,50,000	Cost of goods sold	3,37,500

— Space to write important points for revision —

**2008 - Dec [3]** (a) The Hyundai Instrument Corporation is trying to determine the effect of its Inventory Turnover Ratio and Days Sales Outstanding (DSO) on its cash-flow cycle. The Hyundai Corporation's sales last year (all on credit) were ₹ 1,50,000 and it earned a net profit of 6%. Its Inventory Turnover Ratio was 5 and DSO was 36.5 days. The firm had fixed assets totalling ₹ 35,000. Hyundai had fixed assets totalling ₹ 35,000 and its payable deferral period is 40 days. Calculate Hyundai Instrument Corporation's

- (i) Cash Conversion Cycle.
- (ii) Total Asset Turnover and ROA, if it holds negligible amounts of cash and marketable securities.
- (iii) Cash conversion Cycle, Total Asset Turnover and Return on Assets, if its Inventory Turnover can be raised to 7.3.

**(2 + 4 + 4 = 10 marks) [CMAIG - I]**

**Answer :**

Cash Conversion Cycle = Inventory Conversion period + Receivable collection period less Payable Deferral period.

Cash Conversion Cycle =  $365/5 + 36.5 - 40 = 69.5$  days.

Total Assets Turnover = Sales / Total Assets. Sales has been given as ₹ 1,50,000 but you have to compute the Total Assets. Think how can you calculate the Total Assets.

Total Assets will consist of Inventory, Receivables and Fixed assets. Inventory turnover is 5 which means sales are 5 times the inventory. The sales are ₹ 1,50,000 meaning that the inventory must be  $1,50,000 / 5 = ₹ 30,000$ . Inventory can also be calculated on the basis of Cost of goods sold but the question is silent about it, hence it can be safely assumed that inventory turnover ratio is related to Sales and not to Cost of goods sold. You can write a note in this respect in your answer.

Receivable are collected in every 36.5 days. The year is of 365 days and yearly sales are ₹ 1,50,000. The DSO is 36.5 days which means that at any point, sales of 36.5 days are outstanding which constitute the receivables. Thus receivables must be  $1,50,000 / 365 \times 36.5 = ₹ 15,000$ .

The Fixed assets are given as ₹ 35,000. Thus total assets are ₹ 30,000 + ₹ 15,000 + ₹ 35,000 = ₹ 80,000. The sales are known. You can know the Total Assets Turnover.

Total Assets = Inventory + Receivables + Fixed assets

Total Assets =  $₹ 1,50,000 / 5 + (1,50,000 / 365) \times 36.5 + ₹ 35,000 = ₹ 80,000$

Total Assets =  $1,50,000 / 80,000 = 1.875$

ROA stands for Return on Asset. The return is net profit i.e. 6% of sales. The return works out to ₹ 9,000 and total assets as computed are ₹ 80,000. Return on assets must be  $9,000 / 80,000 = 11.25\%$ .

The third part is just repetition of second part. Inventory turnover is 7.3 which means sales are 7.3 times the inventory. The inventory must be  $₹ 1,50,000 / 7.3 = ₹ 20,548$ . Other assets viz. receivables and fixed assets are same. Total assets are ₹ 20,548 + ₹ 15,000 + ₹ 35,000 = ₹ 70,548. The ROA =  $9,000 / 70,548 = 12.7\%$ .

Cash conversion cycle =  $365/7.3 + 36.5 - 40 = 46.5$  days.

Total assets turnover =  $1,50,000 / 70,548 = 2.12$  and ROA =  $9,000 / 70,548 = 12.7\%$ .

— Space to write important points for revision —

**2009 - June [4]** (b) MINTEX LTD. gives you the following information for the year ended 31st March, 2009 :

- (i) Sales for the year totalled ₹ 96,00,000. The company sells goods for cash only.
- (ii) Cost of goods sold was 60% of Sales. Closing inventory was higher than opening inventory by ₹ 20,000.
- (iii) Tax paid amounted to ₹ 7,00,000. Other expenses totalled ₹ 21,45,000. Outstanding expenses on 31st March, 2008 and 31st March, 2009 totalled ₹ 82,000 and ₹ 91,000 respectively.
- (iv) New machinery and furniture costing ₹ 10,50,000 in all were purchased. One equipment was sold for ₹ 20,000.
- (v) A rights issue was made of 50,000 shares of ₹ 10 each at a premium of ₹ 3 per share. The entire money was received with applications.
- (vi) Dividends totalling ₹ 4,00,000 were distributed among the shareholders.
- (vii) Cash in hand and at Bank as at 31st March, 2008 and 31st March, 2009 totalled ₹ 2,10,000 and ₹ 4,14,000 respectively.

You are required to prepare cash flow statement for the year ended 31st March, 2009 using the direct method. **(7 + 3 = 10 marks) [CMAIG - I]**

**Answer :**

**Format for Cash Flow Analysis:**

The format for cash flow analysis is given below:

Activities	Cash inflow	Cash outflow
Operating activities		
Investment activities		
Financing activities		

Cash flow from operating activities

1. Cash generated from operations

Cash receipts from customers

*Less:* Cash paid to suppliers and other operating expenses

*Less:* Interest paid

*Less:* Income tax paid

2. Cash flow from extraordinary items

*Less:* Extraordinary items

3. Net Cash from/used in operating activities

Cash flow from investing activities

1. Loans and advances

2. Interest and Dividend received

3. Proceeds on sale of investments

4. Proceeds on sale of fixed assets

5. *Less:*

Purchase of fixed assets

Investment in subsidiaries

Investments in trade investments

Loans and advances repaid

Investments on current assets

Cash flow from Financing Activities

1. Proceeds from issue of share capital

2. Proceeds from Long-term borrowings

3. *Less:*

Repayment of loans

Dividend paid

1. The cash flow statement can be prepared either by direct method or by indirect method. You should know both the methods. Sometimes it is simply mentioned in the question that CFS is to be prepared as per AS-3. According to AS - 3, cash flow can be derived either from direct method or indirect method.
2. In direct method, gross receipts and gross payments of cash are disclosed. In indirect method, profit and loss a/c is adjusted for the effects of transactions of non-cash nature.



**Cash Flow Statement for the year ended 31st March, 2009**

(Under Direct Method)	₹ In lacs.	₹ Lacs
<b>Cash flow from Operating Activities :</b>		
Cash receipts from customers	96.00	
Cash paid to suppliers and employees	(79.16)	
Cash inflow from operation	16.84	
Tax paid	(7.00)	
Net Cash from Operating Activities		9.84
<b>Cash flow from Investing Activities:</b>		
Purchase of Fixed assets	(10.50)	
Proceeds from sale equipment	0.2	
Net cash from investing activities		(10.30)
<b>Cash Flow from Financing Activities :</b>		
Proceeds from issue of share capital		
(50,000 × ₹ 13)	6.50	
Dividend paid	(4.00)	2.50
Net cash from financing activities		2.04
Cash and cash equivalents as at 31.3.2008		2.10
Cash and cash equivalents as at 31.3.2009		4.14

**Working Notes :**

1. Calculation of cash paid to suppliers and employees :	₹ Lacs
Cost of sales @ 60% of ₹ 96.0 lakhs.	57.60
Add : Expenses incurred	21.45
Outstanding expenses on 31.3.2008	0.82
Excess of closing inventory over opening inventory	0.20
	<u>80.07</u>
Less : Outstanding expenses on 31.3.2009	0.91
	79.16

— Space to write important points for revision —

**2010 - June [2]** (b) The following particulars pertain to PREETI LTD.:

**Income Statement for the year ended 31<sup>st</sup> March, 2010**

(Amount in ₹ thousand)

Sales Revenue	3,200
Less : Cost of Goods sold	<u>2,000</u>
	1,200
Add : Government Compensation for loss in riots	<u>50</u>
	1,250
Less : Operating Expenses	790
Interest on Debentures	15
Depreciation on Fixed Assets	210
Cost of issue of Debentures written off	<u>1</u>
	<u>1,016</u>
Profit before Tax	234
Less: Tax Provision	<u>92</u>
Profit after Tax	<u>142</u>

	As on	As on
	31 <sup>st</sup> March, 2009	31 <sup>st</sup> March, 2010

(Amount in ₹ thousand)

Inventories	180	220
Debtors	40	38
Bills receivable	30	55
Cash in hand and at Bank	102	248
Creditors	78	95
Bills payable	20	15
Outstanding expenses	31	44

You are also informed that the following important transactions have taken place during the year ended 31<sup>st</sup> March, 2010 :

- Fully paid equity shares of the face value of ₹ 2,00,000 were allotted at a premium of 20%.
- 10% Debentures for ₹ 3,00,000 were redeemed at a premium of 2%.
- Land was purchased for ₹ 1,50,000 and the consideration was discharged by the allotment to the vendor of zero per cent convertible Debentures for the amount.

- (iv) Tax paid during the year totalled ₹ 95,000.
- (v) Dividend for the year ended 31<sup>st</sup> March, 2009 amounting to ₹ 1,00,000 was paid.

**Required:**

Prepare CASH FLOW statement for the year ended 31<sup>st</sup> March, 2010 using Indirect Method.

**(10 marks) [CMAIG - I]**

**Answer:**

**PREETI LTD.**

**CASH FLOW STATEMENT FOR THE YEAR ENDED MARCH 31.2010  
(INDIRECT METHOD)**

(Amount in ₹ Thousand)

**(A) CASH FLOWS from Operating Activities:**

Net profit before tax and extra ordinary item:	184
(234-50)	

Adjustments for:

Interest on Debentures:	15
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Depreciating on fixed Assets :	210
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Cost of issue of Debentures amortized:	<u>1</u>
--	----------

Operating Profit before working Capital changes:	410
--	-----

Adjustments for:

Increase in Inventories:	(40)
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Decrease in Debtors:	2
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Increase in Bills Receivables	(25)
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Increase in Creditors:	17
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Decrease in bills payable:	(5)
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Increase in Outstanding expenses:	<u>13</u>
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CASH GENERATED FROM Operation:	370
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Income Tax Paid:	<u>(95)</u>
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277

Cash flow from extraordinary item:

Government Compensation for loss in riot:	<u>50</u>
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NET CASH from Operating Activities:	327
-------------------------------------	-----

**(B) CASH FLOWS from Investing Activities:** NIL

**(C) CASH FLOWS from Financing Activities**

Issue of Equity Share Capital at a premium:	240
Redemption of 10% debentures at a premium	(306)
Debenture - Interest paid:	(15)
Dividend Paid:	<u>(100)</u>

NET CASH Used in Financing Activities: (181)

Net increase in Cash and Cash Equivalents: 146

CASH and CASH Equivalents in the beginning: 102

CASH AND CASH Equivalents at the end (31.03.2010): 248

**SIGNIFICANT NON-CASH TRANSACTION:**

Land was purchased by issuing at par, ZERO percent Convertible Debentures of ₹ 1,50,000.

— Space to write important points for revision —

**2010 - Dec [4]** (a) Wonder Limited's balance sheets as at March 31, year 1, year 2, year 3 are given below (₹ in lakh):

	<u>As at March 31</u>		
	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>
<i>Liabilities</i>			
Paid-up equity capital	194	194	194
Long-term borrowings:			
From banks	68	97	124
From others	281	343	379
Current liabilities	<u>52</u>	<u>54</u>	<u>99</u>
	<u>595</u>	<u>688</u>	<u>796</u>
<i>Assets</i>			
Gross block	355	356	361
Less : Depreciation	<u>69</u>	<u>95</u>	<u>122</u>
Net block	286	261	239
Current assets	143	199	234
Profit and Loss Account	<u>166</u>	<u>228</u>	<u>323</u>
	<u>595</u>	<u>688</u>	<u>796</u>

**Required :**

- (i) Prepare a statement of net sources and uses of funds for the year ended March 31, Year 2 and the Year ended March 31, Year 3.

(7 marks)

- (ii) Give your comment on the finding in (i). (3 marks) [CMAIG - I]

**Answer:**

**Wonder Limited**  
**Statement of Sources and Uses of funds for years 2 and 3**  
 (₹ Lacs)

	Year 2	Year 3
<b>Sources of funds:</b>		
Issue of long-term liabilities		
Borrowing from banks	29	27
Borrowing from others	62	36
<b>Total Sources</b>	<b>91</b>	<b>63</b>
<b>Uses of funds:</b>		
Funds lost in operations	36	68
Purchase of non-current assets	<u>1</u>	
Fixed assets	<u>37</u>	<u>5</u>
<b>Total uses</b>	<b><u>54</u></b>	<b><u>73</u></b>
Increase (decrease) in working capital		(10)
<b>W-1</b>		
Increase in losses	(62)	(95)
Add depreciation charged	<u>26</u>	<u>27</u>
Funds lost in business operations	<u>(36)</u>	<u>(68)</u>

**Comment :** The firm is suffering from heavy cash losses (Apart from sizeable loss as per profit & loss A/c) in both years. In fact, its net worth is negative.

The firm has resorted to borrowings to finance its operations. Borrowings have not been used to finance expansion. Given these facts, the firm is likely to go into liquidation in near future as the firms does not seem to have the capacity to service/repay its long-term borrowings.

— Space to write important points for revision —

**10.318****Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)**

**2011 - June [3]** You are provided with the following information for Excellent Ltd.:

**Balance Sheet**

Liabilities	As at 31.3.2011 ₹	As at 31.3.2010 ₹	Assets	As at 31.3.2011 ₹	As at 31.3.2010 ₹
Share Capital	5,00,000	5,00,000	Fixed Assets	10,50,000	8,50,000
Profit & Loss A/c	5,00,000	4,25,000	Stock	3,00,000	3,40,000
Long-term Loan	5,50,000	5,00,000	Debtors	3,45,000	3,80,000
Creditors	<u>1,80,000</u>	<u>1,75,000</u>	Cash	<u>35,000</u>	<u>30,000</u>
	<u>17,30,000</u>	<u>16,00,000</u>		<u>17,30,000</u>	<u>16,00,000</u>

**Income Statement for the year ended 31.3.2011**

	₹
Sales	21,50,000
(Less) Cost of sales	<u>(14,70,000)</u>
	6,80,000
(Less) Operating Expenses :	
Administrative Expenses	(2,40,000)
Depreciation	<u>(1,00,000)</u>
	3,40,000
Add : Dividend Received	<u>25,000</u>
	3,65,000
(Less) Interest Paid	<u>(70,000)</u>
	2,95,000
(Less) Income Tax	<u>(1,30,000)</u>
Profit after Tax	<u>1,65,000</u>

Excellent Ltd. paid Dividend of ₹ 90,000 during the year ended 31.3.2011. Prepare a Cash Flow Statement of Excellent Ltd. for the year ended 31.3.2011 using Indirect Method and disclosing cash flows from Operating, Investing and Financing activities and the opening and closing cash balances.

**(15 marks) [CMAIG - I]**

— Space to write important points for revision —

**Answer :**

**Cash Flow Statement of Excellent Ltd. for the year ended  
31.3.2011 (Indirect Method)**

	₹
A. Cash Flow from operating activities	2,95,000
Add : Depreciation	1,00,000
Interest paid	70,000
Less : Dividend received (non-operation)	<u>(25,000)</u>
Operating Profit	4,40,000
Add : Decrease in stock	40,000
Decrease in debtors	35,000
Increase in creditors	<u>5,000</u>
	5,20,000
Less : Tax paid	<u>(1,30,000)</u>
Total cash provided by operation activity	3,90,000
B. Cash Flow from Investing activities	
Purchase of Fixed assets (₹ 10,50,000 + 1,00,000 - 8,50,000)	= ₹ (3,00,000)
(Less) Dividend received on Investments	<u>(25,000)</u>
Cash used in Investing activities	(2,75,000)
C. Cash Flow form Financing activities	₹
Long-term Loan taken	50,000
Interest paid	(70,000)
Dividend paid	<u>(90,000)</u>
Net Cash outflow financing activities	(1,10,000)
Operating cash	₹
Add: Net Increase in cash during year (A + B + C)	30,000
Closing cash	<u>5,000</u>
	<u>35,000</u>

— Space to write important points for revision —

**2011 - Dec [2]** (a) Saran Ltd. has achieved sales of ₹ 40 million and a net profit of ₹ 5 million in the year ended 31-03-2011.

The following figures are extracted from the accompanying Balance Sheet (31-03-2011) of the company:

₹ (million)

Paid up Equity Share Capital 5

Reserve and Surplus 3

Long-term Loans 8

Current Liabilities and Provisions 4

The company wants to increase the Return on Equity by 7.5 percent in the year ending 31-03-2012.

**Required:**

Assess the change needed in the Net Profit margin of the company to meet the desired increase in its ROE.

Assume that the other ratios will not change.

(9 marks) [CMAIG - I]

**Answer :**

By using DU PONT technique :

$$\begin{aligned}\text{Present Return on Equity} &= \frac{\text{NP}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Total Assets}} \times \frac{\text{Total Assets}}{\text{Equity}} \\ &= \left( \frac{5}{40} \times \frac{40}{20(W1)} \times \frac{20}{8(W2)} \right) \times 100\% \\ &= 62.5\%\end{aligned}$$

**W1**

$$\begin{aligned}\text{Total Assets} &= \text{Total Liabilities as on 31-03-2011} \\ &= \text{Capital} + \text{Reserves} + \text{Loans} + \text{Current Liabilities.} \\ &= ₹ (5 + 3 + 8 + 4) \text{ m} \\ &= ₹ 20 \text{ million.}\end{aligned}$$

**W2**

$$\begin{aligned}\text{Equity} &= \text{Net work} = \text{Capital} + \text{Reserves} \\ &= ₹ (5 + 3) \text{ m} = ₹ 8 \text{ million.}\end{aligned}$$

Now, required Return on Equity = 62.5% + 7.5% = 70%

$$\begin{aligned}\text{Required Net Profit margin} &= \left( \frac{\text{Return on Equity}}{\frac{\text{Sales}}{\text{Total Assets}} \times \frac{\text{Total Assets}}{\text{Equity}}} \right) \times 100\% \\ &= \left( \frac{70}{2.00 \times 2.50} \right) \times 100\% \\ &= 14\%\end{aligned}$$



$$\text{Existing Net Profit Margin} = \frac{5}{40} \times 100 = 12.5\%$$

$$\therefore \text{Change in Net Profit margin} = 14\% - 12.5\%$$

$$\text{So, increase} = 1.5\%$$

— Space to write important points for revision —

**2011 - Dec [7]** (a) Cookme Ltd. a well-established food manufacturing and distribution company, currently has an annual turnover in excess of ₹ 15 crore. At present, the company has three production and distribution divisions, each responsible for specific product groups, and a cost of capital of 15%.

The summary information of the Ready-to-cook division relating to divisional assets and profitability is as follows.

*Ready-to-cook division*

The division produces a wide range of products which it sells to both the supermarket sector and the restaurant trade.

Last year the divisional figures were as follows :

	₹ (crore)
Investment in non-current assets	1.5
Investment in working capital	1.0
Operation profit	0.5

Divisional budgets are set at the beginning of each year and these are then monitored on a month by month basis. Managers are given as much freedom as possible to manage their divisions which operate as autonomous profit-marking units. Divisional managers are rewarded in terms of divisional return on investment.

The company is currently considering expansion into a new but allied product range. This range consists of sauces and canned foods. Projected figures for the expansion into sauces and canned foods are:

	₹ (crore)
Additional non-current assets required	0.75
Additional investment in working capital	0.35
Budgeted additional profit	0.198

**10.322****Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)**

The manager of the Ready-to-cook division has produced successful results over the past few years for her division. She and her staff have enjoyed handsome bonuses on the basis of return on investment. The company has traditionally calculated return on investment as operating profit as a percentage of return on all net divisional assets, and bonuses are paid as a percentage on this basis. The board proposes that the Ready-to-cook division will be responsible for the expansion into sauces and canned foods.

*Required :*

- (i) Calculate the return on investment for the division both before and after the proposed divisional expansion. **(4 marks)**
- (ii) Calculate the residual income for the division both before and after the proposed divisional expansion. **(4 marks)**
- (iii) Determine how the manager of Ready-to-cook division of Cookme Ltd. would like to accept the proposed expansion. **(2 marks) [CMAIG - I]**

**Answer :**

(i) **Cookme Ltd.**

Return on Investment	Before expansion ₹ Cr	Additions ₹ Cr	After proposed expansion ₹ Cr
Investment in non-current assets	1.5	+ 0.75	2.25
Investment in working capital	1.0	+ 0.35	1.35
Net divisional assets	2.5		3.60
Operating profit	0.5	+ 0.198	0.698
Return on investment	20.0%		19.4%

(ii) **Residual Income (RI)**

		Before expansion ₹ Cr		After proposed expansion ₹ Cr
Operating profit		0.500		0.698
Imputed interest on Net divisional assets	(₹ 2.5 cr × 15%)	0.375	(₹ 3.6 cr × 15%)	0.540
Residual income		0.125		0.158

- (iii) Using Return on Investment (ROI) as a performance measure, the divisional manager would not be happy to accept the proposed expansion. The ROI would reduce if the expansion went ahead,

indicating a deterioration in the division's performance, and because bonuses are paid as a percentage on this basis, the manager would receive a lower bonus.

If Residual Income (RI) was used as a performance measure the manager would be happy to accept the proposed expansion. This indicates an improvement in the division's performance and so the manager would receive a higher bonus.

— Space to write important points for revision —

**2012 - June [5]** (a) The Balance Sheet of Southern Real Estates Limited as on 31<sup>st</sup> March, 2011 and 31<sup>st</sup> March, 2012 are given below :

Liabilities	31.3.2011	31.3.2012	Assets	31.3.2011	31.3.2012
Share Capital (ordinary, of ₹ 100 each)	1,97,000	2,30,000	Fixed Assets less depreciation	3,60,000	6,00,000
Reserves and surplus	1,48,000	3,12,000	Investments	11,250	10,000
Secured loan from Bank	87,000	—	Stock-in-trade	1,42,500	1,96,000
Sundry Creditors	2,51,450	2,98,000	Sundry Debtors	90,700	1,40,000
Provision for Taxation	65,000	1,72,000	Cash at Bank	1,30,000	45,000
			Prepaid Expenses	14,000	21,000
	7,48,450	10,12,000		7,48,450	10,12,000

From the records, the following further information is available :

(i) Reserves and surplus position :

	₹
Balance as on 1 <sup>st</sup> April, 2011	1,48,000
+ Net profit for the year	<u>1,98,500</u>
	3,46,500
- Dividend	<u>34,500</u>
	<u>3,12,000</u>

(ii) The accumulated depreciation on fixed assets as on 31.3.2012 was ₹ 1,80,000 and as on 31.3.2011 was ₹ 1,60,000. Machinery costing ₹ 20,000, which was depreciated to the extent of 50% was discarded and written off in 2012. Depreciation for the year ending 31.3.2012 amounted to ₹ 30,000.

(iii) Investment costing ₹ 5,000 was sold during the year ending 31.3.2012 for ₹ 4,800 and Government Securities of the face value of ₹ 4,000 were purchased during the year for ₹ 3,750.

**10.324****Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)**

You are required to prepare the following :

- (i) Statement showing changes in working capital.
- (ii) Statement of sources and application of funds.

(10 marks) [CMAIG - I]

**Answer :**

**Statement of Changes in Working Capital :**

	2011	2012	Increase in WC	Decrease in WC
<b>Current Assets :</b>				
Cash at Bank	1,30,000	45,000	-	85,000
Sundry debtors	90,700	1,40,000	49,300	-
Stock in trade	1,42,500	1,96,000	53,500	-
Prepaid Expenses	14,000	21,000	7,000	-
	3,77,200	4,02,000		
<b>Current Liabilities:</b>				
Sundry Creditors	2,51,450	2,98,000	-	46,550
Provision for taxation	65,000	1,72,000	-	1,07,000
	3,16,450	4,70,000		
Working Capital (CA-CL)	60,750	(-)68,000		
Net Decrease in WC		1,28,750	1,28,750	
	60,750	60,750	2,38,550	2,38,550

**Statement of Sources and Application of Funds :**

Sources	₹	Applications	₹
Issue of share capital	33,000	Repayment of secured loan	87,000
Sale of Investments	4,800	Purchase of Fixed Assets	2,80,000
Funds from operations	2,38,700	Purchase of Investments	3,750
Net decrease in WC	1,28,750	Dividend paid	34,500
	4,05,250		4,05,250

**Fixed Assets A/c (At cost)**

<i>Dr.</i>		<i>Cr.</i>	
Particulars	Amount ₹	Particulars	Amount ₹
To Balance b/d (3,60,000+1,60,000)	5,20,000	By Depreciation (on asset discarded)	10,000
To Cash Purchase (balancing figure)	2,80,000	By Adjusted P/L A/c (Loss)	10,000
		By Balance c/d (6,00,000+1,80,000)	7,80,000
	8,00,000		8,00,000

**Provision for Depreciation A/c**

<i>Dr.</i>		<i>Cr.</i>	
Particulars	Amount ₹	Particulars	Amount ₹
To Fixed Assets A/c (on Fixed Asset discarded)	10,000	By Balance b/d	1,60,000
To Balance c/d	1,80,000	By Adjusted P/L A/c	30,000
	1,90,000		1,90,000

**Investment A/c**

<i>Dr.</i>		<i>Cr.</i>	
Particulars	Amount ₹	Particulars	Amount ₹
To Balance b/d	11,250	By Cash (Sales)	4,800
To Cash (Purchase)	3,750	By Adjusted P/L A/c (Loss)	200
		By Balance c/d	10,000
	15,000		15,000

10.326

■ Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)

**Adjusted Profit and Loss A/c**

<i>Dr.</i>		<i>Cr.</i>	
Particulars	Amount ₹	Particulars	Amount ₹
To Loss on discarded FA	10,000	By Balance b/d	1,48,000
To Provision for Depreciation	30,000	By Funds from	2,38,700
To Loss on Sale of Investment	200	Operations (Balancing	
To Dividend paid	34,500	figure)	
To Balance c/d	3,12,000		
	3,86,700		3,86,700

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**2012 - June [6]** (c) The total asset turnover ratio and total asset to net-worth ratio of ABC Limited are 1.75 and 2 respectively. If the net-profit margin of the company is 8%, what will be its Return On Equity (ROE)?

**(2 marks) [CMAIG - I]**

**Answer :**

The ROE = (PAT/Sales)x(Sales / TA x TA / Net-worth)  
= 0.08 x 1.75 x 2.00 = 28% (i.e. 0.28).

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**2013 - Dec [7]** (a) The Balance-Sheet of XYZ Ltd. for the year ended 31.03.2013 is given below:

**Balance Sheet as at 31.03.2013**

Liabilities	₹	Assets	₹
Equity Share Capital	5,00,000	Land & Building	1,00,000
Preference Share Capital	2,00,000	Machinery	4,00,000
General Reserve	1,00,000	Furniture	50,000
Secured Loans	3,00,000	Inventory	3,00,000
Sundry Creditors	1,00,000	Sundry Debtors	3,00,000
		Cash/Bank Balances	50,000
Total	12,00,000		12,00,000

Calculate the following ratios from the given Balance Sheet

- (i) Current Ratio
- (ii) Proprietary Ratio
- (iii) Debt-Equity Ratio
- (iv) Capital Gearing Ratio

(8 marks) [CMAIG - I]

**Answer:**

$$\begin{aligned}
 \text{(i) Current Ratio} &= \frac{\text{Current Assets}}{\text{Current Liabilities}} \\
 \text{Current Assets} &= ₹ 3,00,000 + ₹ 3,00,000 + ₹ 50,000 = ₹ 6,50,000 \\
 \text{Current Liabilities} &= ₹ 1,00,000 \\
 &= \frac{6,50,000}{1,00,000} = 6.5 : 1 \\
 \text{(ii) Proprietary Ratio} &= \frac{\text{Shareholders Fund}}{\text{Total Tangible Assets}} \\
 &= \frac{5,00,000 + 2,00,000 + 1,00,000}{12,00,000} \\
 &= \frac{8,00,000}{12,00,000} \\
 &= 2 : 3 \\
 \text{(iii) Debt Equity Ratio} &= \frac{\text{Total long term debt}}{\text{Shareholder's funds}} \\
 &= \frac{3,00,000}{8,00,000} \\
 &= 3 : 8 \\
 \text{(iv) Capital Gearing Ratio} &= \frac{\text{Long Term Debt including preferential Capital over Equity shareholder's fund}}{\text{Equity shareholder's fund}} \\
 &= \frac{5,00,000}{6,00,000} \\
 &= 5 : 6
 \end{aligned}$$

— Space to write important points for revision —

**2014 - June [7]** (c) A chemical company has a net sales of ₹ 50 crores, cash expenses (including taxes) of ₹ 35 crores, and depreciation of ₹ 5 crores. If debtors decrease over the period by ₹ 6 crores, what will be the cash from operations? (2 marks)

(d) The balances of the Plant and M/c of A Ltd., on 31.03.2014 and 31.03.2013 were respectively ₹ 1,00,000 and ₹ 40,000. A machine with opening w.d.v. ₹ 6,000 was sold for ₹ 5,000 during the year 2013-14. Depreciation of ₹ 5,000 was charged during the year. Find the amount that will feature as 'application of funds' in the Fund Flow Statement. **(2 marks)**

**Answer:**

(c)	Cash from operations	
	Net Sales	50 Cr.
	Less: Cash expenses	35 Cr.
	Add: Decrease in Debtors	<u>6 Cr.</u>
	Cash from operation	<u>21 Cr.</u>

**Answer:**

(d) **Plant & Machinery Account**

Particulars	Amount	Particulars	Amount
To Balance c/d	40,000	By Depreciation	5,000
To Bank	71,000	By Bank	5,000
		By P& L A/c	1,000
		By Balance c/d	1,00,000
	<u>1,11,000</u>		<u>1,11,000</u>

Application of funds ₹ 71,000.

— Space to write important points for revision —

**2014 - June [8]** (a) The following information relates to N Ltd. for the year ending 31.03.2014:

Fixed Assets to sales ratio	2:1
Current ratio	2.5:1
Liquidity ratio	1.4:1
Debtors' turnover	12 times
Debt (long-term)-equity ratio	1:2
Current assets to fixed assets ratio	1:3
Working capital	₹ 15,00,000



Assume all sales are on credit.

Calculate the following:

- (i) Current Assets
- (ii) Total Assets
- (iii) Sales
- (iv) Debtors
- (v) Inventory
- (vi) Networth
- (vii) Long-term debt
- (viii) Cash and Bank balance

(8 marks) [CMAIG - I]

**Answer:**

Current Ratio = Current Assets/ Current Liabilities

2.5 = Current Assets/ Current Liabilities

Current Assets = 2.5 x Current Liabilities

Working Capital = Current Assets - Current Liabilities = 15,00,000

Or 2.5 x Current Liabilities - Current Liabilities = 15,00,000

∴ Current Liabilities = 10,00,000

(i) Current Assets = 2.5 x 10,00,000 = 25,00,000

(ii) Given, Current Assets to Fixed Assets Ratio = 1:3

Or  $\frac{25,00,000}{\text{Fixed Assets}} = \frac{1}{3}$

Fixed Assets = 25,00,000 x 3 = ₹ 75,00,000

Total Assets = Fixed Assets + Current Assets

= 75,00,000 + 25,00,000

Total Assets = ₹ 1,00,00,000

(iii) Sales = Fixed assets x 2 = 75,00,000 x 2 = ₹ 1,50,00,000

(iv) Debtors =  $\frac{\text{Credit Sales}}{\text{Debtors turnover}}$

=  $\frac{1,50,00,000}{12}$

= ₹ 12,50,000

**10.330****Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)**

(v) Liquidity Ratio = 1.4:1

$$\frac{\text{Current Assets} - \text{Inventory}}{\text{Current Liabilities}} = \frac{1.4}{1}$$

$$\frac{25,00,000 - \text{Inventory}}{10,00,000} = \frac{1.4}{1}$$

Inventory = 11,00,000

(vi) **Net worth:**

Debt + Net worth = Fixed Assets + Current Assets - Current Liabilities  
 = 1,00,00,000 - 10,00,000 = ₹ 90,00,000

Debt equity ratio = 1:2

Net worth (Equity) = (Debt + Net worth) × 2/3

= 90,00,000 × 2/3 = ₹ 60,00,000

(vii) Long term Debt = Net worth / 2 = 60,00,000 / 2 = ₹ 30,00,000

(viii) Cash and Bank Balance = Liquid Assets - Debtors = 14,00,000 - 12,50,000 = ₹ 1,50,000.

\_\_\_\_\_ Space to write important points for revision \_\_\_\_\_

**2014 - Dec [3]** Answer the question:

(c) (i) The following information is given to you:

Gross Profit	₹ 1,08,000
Shareholders' funds	₹ 6,00,000
Gross Profit Margin	25%
Ratio- Credit Sales to total sales	80%
Ratio - Total Turnover to Total Assets	0.3 times
Ratio-Closing Inventory to Total Sales	1/5 times
Average debtors	20 days
Current ratio	1.5
Ratio-Long Term Debt to equity	80%
(Use 360 days per year for calculations)	

Find the following:

- (a) Fixed Assets turnover ratio
- (b) Cash/Bank Balances
- (c) Current Liabilities
- (d) Closing Inventory
- (e) Debtors
- (f) Cash Sales

(8 marks) [CMAIG - I]

**Answer:**

$$\begin{aligned} \text{(a) Fixed assets turnover ratio} &= \frac{\text{Net Sales}}{\text{Net fixed Assets}} \\ &= \frac{4,32,000}{5,40,000} = 0.8 \end{aligned}$$

$$\text{(b) Cash \& bank balance} = ₹ 7,94,400$$

$$\text{(c) Current liabilities} = ₹ 6,00,000$$

$$\text{(d) Closing inventory} = ₹ 86,400$$

$$\text{(e) Debtors} = ₹ 19,200$$

$$\text{(f) Cash sales} = ₹ 86,400$$

**Workings:**

Gross profit ₹ 1,08,000

Gross profit margin 25%

$$\text{(i) Sales} = \frac{1,08,000}{25\%} = ₹ 4,32,000$$

$$\text{(ii) Credit Sales} = 80\% \times 4,32,000 = ₹ 3,45,600$$

$$\text{(iii) Total Assets} = \frac{\text{Sales}}{\text{Total Assets}} = 0.3$$

$$\frac{4,32,000}{\text{Total Assets}} = 0.3$$

$$\text{Total Assets} = ₹ 14,40,000$$

$$\text{(iv) } \frac{\text{Closing inventory}}{\text{Total Assets}} = 1/5$$

$$\frac{\text{Closing inventory}}{4,32,000} = 1/5$$

$$\text{Closing inventory} = ₹ 86,400$$

**10.332****Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)**

$$\begin{aligned}
 \text{(v) Debtors} &= \text{Credit sales} \times 20/360 \\
 &= 3,45,600 \times 20/360 \\
 &= ₹ 19,200
 \end{aligned}$$

**(vi) Creditors:**

$$\text{Long term debt} = \frac{\text{long term debt}}{\text{Equity}} = 40\%$$

$$\begin{aligned}
 \text{Long term debt} &= 40\% \times 6,00,000 \\
 &= ₹ 2,40,000
 \end{aligned}$$

$$\text{Creditors} = 14,40,000 - 6,00,000 - 2,40,000 = ₹ 6,00,000$$

$$\text{(vii) Current ratio} = \frac{\text{Current Assets}}{\text{Current liabilities}} = 1.5$$

$$\frac{\text{debtors} + \text{inventory} + \text{cash}}{\text{creditors}} = 1.5$$

$$\frac{19,200 + 86,400 + \text{cash}}{6,00,000} = 1.5$$

$$\text{Cash} = ₹ 7,94,400$$

$$\begin{aligned}
 \text{(vii) Fixed assets} &= \text{total assets} - \text{current assets} \\
 &= 14,40,000 - 9,00,000 = ₹ 5,40,000
 \end{aligned}$$

\_\_\_\_\_ Space to write important points for revision \_\_\_\_\_

**2015 - June [I]** (f) Determine which company is more profitable

	<b>A. Ltd.</b>	<b>B. Ltd.</b>
Net profit ratio	5%	8%
Turnover ratio	6 times	3 times

**(2 marks) [CMAIG - I]****Answer:**

$$\text{Turnover Ratio} = \frac{\text{Net Income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Capital Employed}}$$

Let the sales be x :

A Ltd.	B Ltd.
$\frac{6}{100} = \frac{6}{x} \times \frac{x}{100}$	$\frac{3}{100} = \frac{3}{x} \times \frac{x}{100}$

$\frac{\text{Net Income}}{\text{Sales}} = 5$	$\frac{\text{Net Income}}{\text{Sales}} = 8$
$\frac{6}{x} = \frac{5}{100}$	$\frac{3}{x} = \frac{8}{100}$
$x = 120$	$x = 37.5$

Sales of A Ltd. are 120 while sales of B Ltd. are 37.5, profit margin is higher for B Ltd. hence, B Ltd. is performing better but return on capital employed is better for A Ltd. than B Ltd., because it uses capital more efficiently. A Ltd. has better operating performance than B Ltd.

Hence, A Ltd. is more profitable.

— Space to write important points for revision —

**2015 - June [III]** (a) (i) The following information is available as on 31.3.2015:

Current Ratio	2.7 : 1
Current Liabilities to Net worth	20%
Total Debts to Net worth	39%
Fixed Assets to Net worth	85%
Sales to Net worth	2.4 times
Inventory to Current Assets	1 : 3
Average Collection Period	1 month
Working Capital	₹ 5,10,000

Calculate the following as on 31.3.2015:

- (A) Fixed Assets
- (B) Inventory
- (C) Debtors
- (D) Cash and Bank Balance (combined figure)
- (E) Net worth
- (F) Long Term Debts
- (G) Current Liabilities
- (H) Total Assets

**(8 marks) [CMAIG - I]**

**10.334****Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)****Answer:**

- $\frac{\text{Current Assets}}{\text{Current Liabilities}} = 2.7$

$$\text{Working Capital} = \text{Current Assets} - \text{Current Liabilities} = 5,10,000$$

$$2.7 \times \text{Current Liabilities} - \text{Current Liabilities} = 5,10,000$$

$$1.7 \times \text{Current Liabilities} = 5,10,000$$

$$\text{Current Liabilities} = \frac{5,10,000}{1.7} = ₹ 3,00,000$$

$$\begin{aligned}\text{Current Assets} &= 2.7 \times \text{Current Liability} \\ &= 2.7 \times 3,00,000\end{aligned}$$

$$\text{Current Assets} = ₹ 8,10,000$$

- $\text{Current Liabilities to Net Worth} = 20\%$

$$\frac{\text{Current Liabilities}}{\text{Net worth}} = 20\%$$

$$\frac{3,00,000}{\text{Net worth}} = 20\%$$

$$\text{Net Worth} = ₹ 15,00,000$$

- $\frac{\text{Fixed assets}}{\text{Net worth}} = 85\%$

$$\text{Fixed Assets} = 15,00,000 \times 85\% = ₹ 12,75,000$$

- $\text{Inventory To Current Assets} = 1:3$

$$\frac{\text{Inventory}}{\text{Current assets}} = 1:3$$

$$\text{Inventory} = 8,10,000/3 = ₹ 2,70,000$$

- $\text{Total Debts To Net Worth} = 39\%$

$$\frac{\text{Total Debt}}{15,00,000} = 2.7$$

$$\text{Total Debts} = 15,00,000 \times 39\% = ₹ 5,85,000$$

- $\text{Sales To Net Worth} = 2.4 \text{ Times}$

$$\frac{\text{Sales}}{15,00,000} = 2.4$$

$$\text{Sales} = 15,00,000 \times 2.4 = ₹ 36,00,000$$

$$\text{Average Collection Period} = 1 \text{ Month}$$

$$\text{Average Collection Period} = \frac{\text{Debtors} \times 12}{\text{Sales}}$$

$$1 = \frac{\text{Debtors} \times 12}{36,00,000}$$

$$\text{Debtors} = ₹ 3,00,000$$

$$\begin{aligned} \text{Cash and Bank Balance} &= \text{Current Assets} - \text{Debtors} - \text{Inventory} \\ &= 8,10,000 - 3,00,000 - 2,70,000 \\ &= ₹ 2,40,000 \end{aligned}$$

$$\begin{aligned} \text{Long Term Debt} &= \text{Total Debt} - \text{Current Liability} \\ &= 5,85,000 - 3,00,000 \end{aligned}$$

$$\text{Long Term Debt} = ₹ 2,85,000$$

$$\begin{aligned} \text{Total Assets} &= \text{Fixed Assets} + \text{Current Assets} \\ &= 12,75,000 + 8,10,000 \\ &= ₹ 20,85,000 \end{aligned}$$

$$(A) \text{ Fixed Assets} = ₹ 12,75,000$$

$$(B) \text{ Inventory} = ₹ 2,70,000$$

$$(C) \text{ Debtors} = ₹ 3,00,000$$

$$(D) \text{ Cash and bank balance} = ₹ 2,40,000$$

$$(E) \text{ Net Worth} = ₹ 15,00,000$$

$$(F) \text{ Long term debts} = ₹ 2,85,000$$

$$(G) \text{ Current Liabilities} = ₹ 3,00,000$$

$$(H) \text{ Total Assets} = ₹ 20,85,000$$

— Space to write important points for revision —

**2015 - Dec [I]** (b) If current ratio is 2.4 : 1 and working capital is ₹ 25,20,000, find the amount of current assets and current liabilities.

**(2 marks) [CMAIG - I]**

**Answer:**

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}} = \frac{2.4}{1}$$

$$\begin{aligned} \text{Working Capital} &= \text{Current Assets} - \text{Current Liabilities} \\ &= ₹ 25,20,000 \end{aligned}$$

$$\text{CA} = 2.4 \text{ CL}$$

**10.336****■ Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)**

$$\begin{aligned} \text{CA} - \text{CL} &= ₹ 25,20,000 \\ \text{Or } 2.4 \text{ CL} - \text{CL} &= ₹ 25,20,000 \\ 1.4 \text{ CL} &= ₹ 25,20,000 \\ \text{CL} &= ₹ 18,00,000 \\ \therefore \text{CA} &= ₹ 18,00,000 \times 2.4 \\ &= ₹ 43,20,000 \end{aligned}$$

— Space to write important points for revision —

**2015 - Dec [III]** (a) (1) The following accounting information and financial ratios of Bhalu Ltd. relate to the year ended 31<sup>st</sup> March, 2015:

Inventory Turnover Ratio (considering cost of goods sold)	6 times
Creditors Turnover Ratio	10 times
Debtors Turnover Ratio	12 times
Current Ratio	2.4
Gross Profit Ratio	25%

Total sales ₹ 60 lakhs; cash sales 25% of credit sales; cash purchases ₹ 4,60,000; working capital ₹ 7,14,000; closing inventory is ₹ 1,60,000 more than opening inventory.

You are required to calculate:

- (i) Average Inventory
- (ii) Purchases
- (iii) Average Debtors
- (iv) Average Creditors
- (v) Average Payment Period
- (vi) Average Collection Period
- (vii) Current Assets
- (viii) Current Liabilities

**(8 marks) [CMAIG - I]**



(b) (1) The following balances are provided by M Ltd. for the years ended 31<sup>st</sup> March, 2014 and 2015:

Particulars	31.03.2014 ₹	31.03.2015 ₹
General Reserve	2,40,000	2,90,000
Profit & Loss A/c	4,20,000	6,00,000
11% Debentures	10,00,000	6,00,000
Goodwill	2,00,000	1,60,000
Land & Building	14,00,000	13,00,000
Plant & Machinery	12,00,000	13,20,000
Investment (Non trading)	4,80,000	4,40,000
Creditors	3,70,000	4,30,000
Provision for tax	1,60,000	2,10,000
Proposed Dividend	2,72,000	2,88,000
Stock	8,00,000	7,70,000
Debtors	5,76,000	8,30,000
Cash at Bank	1,76,000	1,86,000
Prepaid Expenses	30,000	22,000

Additional Information:

- Investment were sold during the year for ₹ 70,000.
- During the year an old machine costing ₹ 1,60,000 was sold for ₹ 72,000. Its written down value was ₹ 90,000.
- Depreciation was charged on plant and machinery @ 20% on the opening balance.
- There was no purchase or sale of land and building during the year.
- Provision for tax made during the year was ₹ 1,92,000.
- During the year premium on redemption of debentures written-off was ₹ 40,000.

You are required to prepare a statement showing the net cash flow from operating activities.

(8 marks) [CMAIG - I]

**Answer:****(a)1.(i) Computation of Average Inventory:**

Gross Profit = 25% of ₹ 60,00,000 = ₹ 15,00,000

Cost of Goods Sold (COGS) = ₹ 60,00,000 - ₹ 15,00,000  
= ₹ 45,00,000

Inventory Turnover Ratio = COGS/Average Inventory

₹ 45,00,000/Average Inventory = 6

Average Inventory = ₹ 7,50,000

**(ii) Computation of Purchases:**

Purchases = COGS + Increase in Inventory = ₹ 45,00,000 +  
₹ 1,60,000 = ₹ 46,60,000

**(iii) Computation of Average Debtors:**

Let credit sales be ₹ 100 then cash sales = 25% of 100 = ₹ 25, and  
total sales = ₹ 125

When total sales is ₹ 60 lakhs then credit sales =  
₹ 60,00,000 × 100/125 = ₹ 48,00,000 and cash sales = ₹ 12,00,000

Debtors Turnover = Net Credit Sales/Average Debtors = 12

Average Debtors = ₹ 48,00,000 /12 = ₹ 4,00,000

**(iv) Computation of Average Creditors:**

Credit Purchase = Purchases ₹ 46,60,000 – Cash purchase  
₹ 4,60,000 = ₹ 42,00,000

Creditors Turnover = Credit Purchases/Average Creditors

Average Creditors = ₹ 42,00,000/10 = ₹ 4,20,000

**(v) Computation of Average Payment Period:**

Average Payment Period = Average Creditors × 365/Credit  
Purchase

= ₹ 4,20,000 × 365/ ₹ 42,00,000 = 36.5 days

Or 365/Creditors Turnover = 365/10 = 36.5 days

**(vi) Computation of Average Collection Period:**

Average Collection Period = Average Debtors × 365/Net Credit  
Sales

= ₹ 4,00,000 × 365/ ₹ 48,00,000 = 30.417 days

Or 365/Debtors Turnover = 365/12 = 30.417 days

(vii + viii) **Computation of Current Assets and Current Liabilities:**

Current Ratio = Current Assets / Current Liabilities = 2.4

Let Current Liabilities be 'a' then Current Assets will be '2.4a' and

Working Capital = 2.4a - a = 1.4a

If working capital is ₹ 7,14,000

Then Current Liabilities = ₹ 7,14,000 / 1.4 = ₹ 5,10,000

Current Assets = ₹ 5,10,000 × 2.4 = ₹ 12,24,000

**(b) (1) Statement Showing Net cash flow from Operating Activities for the year ended 31st March, 2015 of M Ltd.**

Particulars	₹	₹
Profit & Loss A/c as on 31.03.2015		6,00,000
Less: Profit & Loss A/c as on 31.03.2014		4,20,000
		1,80,000
Add: Transfer to General Reserve ( ₹ 2,90,000 – 2,40,000)	50,000	
Provision for tax	1,92,000	
Proposed Dividend	2,88,000	5,30,000
Profit before tax		7,10,000
Adjustment for Depreciation:		
Land & Building	1,00,000	
Plant & Machinery	2,40,000	3,40,000
Profit on sale of Investment ( ₹ 70,000 - ₹ 40,000) <b>WN-2</b>		(30,000)
Loss on sale of Plant & Machinery		18,000
Goodwill written-off ( ₹ 2,00,000 – 1,60,000)		40,000
Premium on redemption of debentures written-off		40,000
Operating Profit before Working Capital Changes		11,18,000

**10.340****■ Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)**

W. C. Changes: Decrease in Prepaid Expenses		8,000
Decrease in Stock		30,000
Increase in Debtors		(2,54,000)
Increase in Creditors		60,000
Cash generated from Operations		9,62,000
Income Tax paid <b>WN-1</b>		(1,42,000)
Net Cash Inflow from Operating Activities		8,20,000

**Working Notes:**

**Dr. Provision for Tax Account Cr.**

Particulars	₹	Particulars	₹
To Bank A/c (Balancing figure)	1,42,000	By Balance b/d	1,60,000
To Balance c/d	2,10,000	By Profit & Loss A/c	1,92,000
	<b>3,52,000</b>		<b>3,52,000</b>

**Dr. Investment Account Cr.**

Particulars	₹	Particulars	₹
To Balance b/d	4,80,000	By Bank A/c (sale)	70,000
To Profit & Loss A/c (profit)	30,000	By Balance c/d	4,40,000
	<b>5,10,000</b>		<b>5,10,000</b>

— Space to write important points for revision —

**2016 - June [6]** (a) The following information is given to you as on 31-03-2016 for a company:

Current Ratio	2.5
Liquid Ratio	1.5

Fixed Assets (net)	1,80,000
Working Capital	60,000
Reserves and Surplus	40,000
Bank Overdraft (Short term)	10,000
Assume that there is no long term loan or fictitious assets	

Make a statement of proprietary fund and match it with fixed assets and as many details of current assets net of current liabilities.

(8 marks) [CMAIG - I]

**Answer:**

Current Assets/Current Liabilities = 2.5; Current Assets - Current Liabilities = ₹ 60,000

∴ 1.5 Current Liabilities = ₹ 60,000

∴ Current Liabilities = ₹ 60,000/1.5 = ₹ 40,000

Current Assets = ₹ 60,000 + Current Liabilities or, ₹ (60,000 + 40,000) = ₹ 1,00,000

Bank Overdraft is not excluded from Current Liabilities as it is stated to be "short term"

Liquid Ratio (Quick Ratio) = (Current Assets - Stock)/Current Liabilities = 1.5  
or, ₹ 1,00,000 - Stock = ₹ 1.5 × 40,000 (= ₹ 60,000)

∴ Stock = ₹ 40,000

Current Assets ₹ 1,00,000 - Stock ₹ 40,000 = Debtors and Cash ₹ 60,000

Share Capital = ₹ 2,00,000

Liabilities	Amount (₹)	Assets	Amount (₹)
Share Capital	2,00,000	Fixed Assets	1,80,000
Reserves	40,000	<b>Current Assets:</b>	
Current Liabilities	40,000	Stock	40,000
		Cash and Debtors	60,000
<b>Total</b>	<b>2,80,000</b>	<b>Total</b>	<b>2,80,000</b>

— Space to write important points for revision —

10.342

■ Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)

**2016 - Dec [6]** (b) The following parameters are furnished relating to a firm as on a certain date:

Stock Turnover Ratio	6 times
Debtors	2 months (Sales value)
Gross Profit to Sales ratio	20%
Capital	1,00,000
Reserves and Surplus	20,000
Creditors Turnover ratio	5 times
Fixed Assets Turnover ratio	5 times
Closing Stock is ₹ 5,000 more in value than the opening stock and closing creditors were equal to the opening value. The Gross Profit during the period was ₹ 60,000 and there were no cash sales or purchases.	

Prepare the Balance Sheet as at that date giving the break-up of as many items as possible.

**(5 marks) [CMAIG - I]**

**Answer:**

**Statement of Proprietary fund**

Particulars	Amount (₹)	Amount (₹)
Capital	1,00,000	
Add: Reserves and surplus	20,000	1,20,000
<b>Alternative Method:</b>		
Fixed Assets		60,000
<b>Current Assets:</b>		
Cash	16,500	
Stock	42,500	
Debtors	50,000	
	1,09,000	

Less: Current Liabilities		
Creditors	49,000	60,000
Proprietor's Fund		1,20,000

**Note:** Balance Sheet may also be prepared where by total of Share Capital and Reserves and Surplus may be shown as Proprietary Fund.

**Working Notes:**

Rate of Gross Profit = 20%

Amount of Gross Profit ₹ 60,000

Sales =  $\frac{60,000}{20} \times 100 = ₹ 3,00,000$

Cost of goods sold  $3,00,000 - 60,000 = ₹ 2,40,000$

Stock velocity =  $\frac{\text{Cost of Goods Sold}}{\text{Average Stock}}$

$6 = \frac{2,40,000}{\text{Average Stock}}$ ; Average stock =  $\frac{2,40,000}{6}$

Average stock = ₹ 40,000

Opening Stock + Closing Stock =  $40,000 \times 2 = ₹ 80,000$

Closing Stock =  $\frac{80,000 + 5,000}{2} = ₹ 42,500$

Opening stock =  $80,000 - 42,500 = ₹ 37,500$

Fixed assets turnover ratio (5) =  $\frac{3,00,000}{\text{Fixed Assets}}$

Fixed assets =  $\frac{3,00,000}{5}$ ; Fixed assets = ₹ 60,000

Debtor's turnover ratio =  $\frac{12}{2} = 6$  times

Average Debtors =  $\frac{3,00,000}{6} = ₹ 50,000$

Here average Debtors is assumed to be debtors.

Therefore, debtors = ₹ 50,000

Creditor's turnover ratio =  $\frac{\text{Credit Purchase}}{\text{Average Creditors}}$

**10.344****Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)**

$$5 = \frac{2,45,000}{\text{Average Creditors}}; \text{Creditors} = ₹ 49,000$$

$$\begin{aligned} \text{Purchases} &= \text{Cost of goods sold} + \text{Closing Stock} - \text{Opening stock} \\ &= 2,40,000 + 42,500 - 37,500 = ₹ 2,45,000 \end{aligned}$$

$$\begin{aligned} \text{Cash in hand} &= \text{Total Liabilities} - \text{Assets} \\ &= (1,00,000 + 20,000 + 49,000) - (60,000 + 50,000 + 42,500) \\ &= ₹ 16,500. \end{aligned}$$

\_\_\_\_\_ Space to write important points for revision \_\_\_\_\_

**2017 - June [7]** (a) From the following information, prepare a summarized Statement of Assets and Liabilities as on 31<sup>st</sup> March, 2017:

- (i) Working Capital ₹ 1,20,000
- (ii) Reserves & Surplus ₹ 80,000
- (iii) Bank Overdraft ₹ 20,000
- (iv) Proprietary Ratio 0.75
- (v) Current Ratio 2.50
- (vi) Liquid Ratio 1.50

Your workings should form a part of your answer.

**(8 marks)**

**Answer:**

$$(i) \text{ WC} = \text{CA} - \text{CL} = 1,20,000$$

$$\frac{\text{CA}}{\text{CL}} = 2.5 \Rightarrow \text{CA} = 2.5 \text{ CL}$$

$$2.5\text{CL} - \text{CL} = 1,20,000$$

$$1.5\text{CL} = 1,20,000$$

$$\text{CL} = 80,000$$

$$\text{CA} = 2,00,000$$

$$(ii) \text{ Liquid Ratio} = \frac{\text{LA}}{\text{LL}} = \frac{\text{CA} - \text{Inventory}}{\text{CL} - \text{Bank Overdraft}} = 1.50$$

$$\frac{2,00,000 - \text{Inventory}}{80,000 - 20,000} = 1.50$$

$$2,00,000 - \text{Inventory} = 90,000$$

$$\text{Inventory} = 1,10,000$$



- (iii) Proprietary Ratio = (Fixed Assets/ Proprietary Funds) = 0.75  
i.e., Working capital/ Proprietary Funds = 0.25  
Proprietary Funds =  $(1/0.25) \times 1,20,000$  = ₹ 4,80,000  
Less: Reserves & Surplus = ₹ 80,000  
Share Capital = ₹ 4,00,000
- (iv) Fixed Assets =  $4,80,000 \times 0.75$  = ₹ 3,60,000.

**2017 - June [7]** (b) From the following Summarised Statement of Assets and Liabilities of XYZ Ltd., prepare a Statement of Changes in the Working Capital.

	31 <sup>st</sup> March			31 <sup>st</sup> March	
LIABILITIES	2015 (₹)	2016 (₹)	ASSETS	2015 (₹)	2016 (₹)
Equity Share Capital	3,00,000	4,00,000	Goodwill	1,15,000	90,000
8% Preference Share Capital	1,50,000	1,00,000	Land & Buildings	2,00,000	1,70,000
Profit & Loss Account	30,000	48,000	Plant & Machinery	80,000	2,00,000
General Reserve	40,000	70,000	Debtors	1,60,000	2,00,000
Proposed Dividend	42,000	50,000	Stock	77,000	1,09,000
Creditors	55,000	83,000	Bills Receivable	20,000	30,000
Bills Payable	20,000	16,000	Cash in hand	15,000	10,000
Provision for Taxation	40,000	50,000	Cash at Bank	10,000	8,000
	6,77,000	8,17,000		6,77,000	8,17,000

**10.346****Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)**

Following additional information are available:

- (i) Depreciation of ₹ 10,000 and ₹ 20,000 have been charged on Plant & Machinery and Land & Buildings respectively in 2016.
- (ii) Interim dividend of ₹ 20,000 has been paid in 2016.
- (iii) Income tax of ₹ 35,000 has been paid in 2016.

**(4 marks)****Answer:****Calculation of changes in Working Capital:**

<b>Current Asset</b>	<b>2015</b>	<b>2016</b>
Debtors	1,60,000	2,00,000
Stock	77,000	1,09,000
B/R	20,000	30,000
Cash in hand	15,000	10,000
Cash at Bank	10,000	8,000
<b>A: Total Current Assets</b>	<b>2,82,000</b>	<b>3,57,000</b>
<b>Current Liabilities</b>	<b>2015</b>	<b>2016</b>
Creditors	55,000	83,000
B/P	20,000	16,000
<b>B: Total Current Liabilities</b>	<b>75,000</b>	<b>99,000</b>
<b>Working Capital (A-B)</b>	<b>2,07,000</b>	<b>2,58,000</b>

Increase in working capital = ₹ 2,58,000 – ₹ 2,07,000 = ₹ 51,000.

— Space to write important points for revision —

**2017 - Dec [7]** (a) From the following information prepare a statement of Proprietors' Funds:

- (i) Current Ratio = 2.5 : 1
- (ii) Fixed Assets/Proprietors Funds = 0.75
- (iii) Liquid Ratio = 1.5 : 1
- (iv) Bank Overdraft = ₹ 10,000
- (v) Reserves and Surplus = ₹ 80,000
- (vi) Working Capital = ₹ 1,20,000

**(4 marks)**

**Answer:**

If Working Capital = CA – CL = 1,20,000 and CA = 2.5 CL, then 2.5 CL – CL = 1,20,000

Therefore CL = 80,000 and CA = 2,00,000

Liquid Ratio = Quick Assets/CL = 1.5

Therefore Quick Assets = CL × 1.5 = 1,20,000

Since Quick Assets = CA – Stock, then Stock = CA – QA = 80,000

If Proprietors Funds are P then Fixed Assets = 0.75P

Proprietors Funds + CL = FA + CA

Or P + 80,000 = 0.75P + 2,00,000

Or 0.25 P = 1,20,000 or P = 4,80,000,

FA = 4,80,000 + 80,000 – 2,00,000 = 3,60,000

Since Proprietary Funds are = Sh. Capital – Reserves, therefore Sh. Capital = 4,00,000

**Statement of Proprietors Fund**

Proprietors Fund	₹	₹
Share Capital	4,00,000	
Reserves and Surplus	80,000	4,80,000
Investment of Funds		
Fixed Assets	3,60,000	
Stock	80,000	
Other Current Assets	1,20,000	
Less: Current Liabilities	80,000	4,80,000

**2017 - Dec [7]** (b) Prepare a schedule of Changes in Working Capital and a Fund Flow Statement from the following information relating to XYZ Co. Ltd.  
(Amount in ₹)

Liabilities	31.03.2016	31.03.2017	Assets	31.03.2016	31.03.2017
Equity Share Capital	2,00,000	3,00,000	Land	2,00,000	2,00,000

**10.348****■ Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)**

Share Premium	—	10,000	Plant at cost	2,08,000	2,00,000
General Reserve	1,00,000	1,20,000	Furniture at cost	14,000	18,000
Profit and Loss Account	20,000	34,000	Investments	1,20,000	1,60,000
6% Debentures	1,40,000	1,00,000	Debtors	60,000	1,40,000
Provision for Depreciation on Furniture	10,000	12,000	Stock	1,20,000	1,30,000
Provision for Depreciation on Plant	1,00,000	1,12,000	Cash	60,000	90,000
Provision for Taxation	40,000	60,000			
Sundry Creditors	1,72,000	1,90,000			
	7,82,000	9,38,000		7,82,000	9,38,000

A plant purchased for ₹ 8,000 (Depreciation 4,000) was sold on cash for ₹ 1,600 in October 2016. In July 2016, a piece of furniture was purchased for ₹ 4,000 and a dividend of 22.5% was paid to Equity Shareholders.

(8 marks)

**Answer:**

Increase in working Capital ₹ 82,000

Fund Flow Statement Total ₹ 2,11,000

Funds from Operations ₹ 99,400

**Schedule of Changes in Working Capital :**

<b>Current Asset</b>	<b>31.03.2016 (₹)</b>	<b>31.03.2017 (₹)</b>
Debtors	60,000	1,40,000
Stock	1,20,000	1,30,000
Cash	60,000	90,000
Total CA	2,40,000	3,60,000

Current liabilities		
Provision for Tax	40,000	60,000
S. Creditor	1,72,000	1,90,000

Total CL 2,12,000 2,50,000

Working Capital (CA – CL) 28,000 1,10,000

Increase in Working Capital ₹ 82,000

#### Fund Flow Statement

Sources	₹	Application	₹
Fund from operations	99,400	Investment purchased	40,000
Sale proceed of plant	1,600	Increase in Working capital	82,000
Issue of Equity Share capital with premium	1,10,000	Dividend paid	45,000
		Furniture purchase	4,000
		Redemption of Debentures	40,000
	2,11,000		2,11,000

#### Working Notes:

Calculation of depreciation during the year

#### Provision for depreciation on Plant

	₹
Opening Balance	1,00,000
Less: Dep. On plant sold	4,000
	96,000
Dep. During the year	16,000
Dep. Year end	1,12,000

**10.350 ■ Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)**

**Total depreciation during the year**

On plant	16,000
On furniture (12,000 – 10,000)	2,000
Total	18,000

**Investment A/c**

Particulars	₹	Particulars	₹
To bal. b/d	1,20,000	By bal. c/f	1,60,000
To bank - purchases (bal. Fig)	40,000		
	1,60,000		1,60,000

**P & L A/c**

Particulars	₹	Particulars	₹
To Dep.	18,000	By balance	20,000
To transfer to G/R	20,000	By Fund from operations	99,400
To loss on sale of plant	2,400		
To dividend	45,000		
To balance	34,000		
	1,19,400		1,19,400

It is assumed that dividend is paid on original shares only.

—— Space to write important points for revision ———

**2018 - June [7]** (a) The following is the summary of Financial Ratios and form of a TEXTILE COMPANY having a sale of ₹ 32 lakh.

Sales to net worth (times)	2.3
Current debt to net worth (%)	42
Total debt to net worth (%)	75

Current ratio (times)	2.9
Net sales to inventory (times)	4.7
Fixed assets to net worth (%)	53.2

**Proforma Balance Sheet**

Net worth	.....	Fixed assets	.....
Long-term debt	.....	Cash	.....
Current debt	.....	Stoke	.....
		Sundry debtors	568889
	.....		.....

You are **required to complete** the Proforma Balance sheet. **(6 mark)**

**Answer:**

Proforma Balance Sheet of the Textile Company as on .....

Liabilities	Amount ₹	Assets	Amount ₹
Net Worth	13,91,304	Fixed Assets	7,40,173
Long-Term debt	4,59,130	Cash	4,44,869
Current debt	5,84,348	Stock	6,80,851
		Sundry Debtors	5,68,889
	24,34,782		24,34,782

**Working Notes:**

1. Net worth = ₹ 32,00,000 ÷ 2.3 = ₹ 13,91,304
2. Current debt = (₹ 13,91,304/100) × 42 = ₹ 5,84,348
3. Total debt = (₹ 13,91,304/100) × 75 = ₹ 10,43,478
4. Long-term debt = ₹ 10,43,478 – ₹ 5,84,348 = ₹ 4,59,130
5. Fixed assets = (₹ 13,91,304/1,000) × 532 = ₹ 7,40,173
6. Current assets = ₹ 5,84,348 × 2.9 = ₹ 16,94,609
7. Inventory = ₹ 32,00,000 ÷ 4.7 = ₹ 6,80,851
8. Cash = ₹ 16,94,609 – (₹ 6,80,851 + ₹ 5,68,889) = ₹ 4,44,869

**2018 - June [7]** (b) INDOGROWTH Ltd. provides the followings data:

**Comparative trial balance.**

	March 31, 2018	March 31, 2017	Increase (decrease)
<b>Debit Balance</b>			
Working capital	₹ 2,00,000	₹1,00,000	₹ 1,00,000
Investments	1,00,000	1,50,000	(50,000)
Building and Equipment	5,00,000	4,00,000	1,00,000
Land	40,000	50,000	(10,000)
	<u>8,40,000</u>	<u>7,00,000</u>	<u>1,40,000</u>
<b>Credit Balance</b>			
Accumulated Depreciation	2,00,000	1,60,000	40,000
Bonds	1,00,000	50,000	50,000
Reserves	3,40,000	3,40,000	-
Equity Shares	2,00,000	1,50,000	50,000
	<u>8,40,000</u>	<u>7,00,000</u>	<u>1,40,000</u>
<b>Income statement for the period ending March 31, 2018</b>			
Sales			₹ 10,00,000
Cost of goods sold			<u>5,00,000</u>
			5,00,00
Selling expenses	₹ 50,000		
Administrative expenses	50,000		<u>1,00,000</u>
Operating income			4,00,000
<b>Other charges and credit:</b>			
Gain on sale of building and equipment	₹ 5,000		
Loss on sale of investments	(10,000)		
Interest	(6,000)		
Taxes	(1,89,000)		<u>(2,00,000)</u>
			2,00,000



Net income after taxes

**Notes:** (i) The depreciation charged for the year ended March's, 2018 was ₹ 60,000.

(ii) The book value of the building and equipment disposed off was ₹ 10,000

(iii) Land was sold at no profit no loss basis.

**Required:**

Prepare a Funds Flow Statement for the period ending March 31, 2018.

(4 marks)

**Answer:**

**Fund Flow Statement of INDO Growth Ltd. for the period ending March 31, 2018:**

<b>Funds from business operations:</b>	₹	₹
Net Income after taxes	2,00,000	
Add: Deprecation	60,000	
Interest	6,000	
Loss on sale of investments	10,000	
Less: Gain on sale of building and equipment	(5,000)	2,71,000
Issuance of long-term liabilities:		
Equity Shares	50,000	
Bonds	50,000	1,00,000
Sale of Non-current assets:		
Investments (₹ 50,000 - ₹ 10,000)	40,000	
Land (₹ 50,000- ₹ 40,000)	10,000	
Building and equipment (₹ 10,000 + ₹ 5,000)	15,000	65,000
		4,36,000

**Application of Funds:**

Purchase of non-current assets:	₹	₹
Building and equipment		1,30,000
Recurring payment to investors:		
Interest on bond	6,000	
Dividend to equity shareholders	2,00,000	2,06,000
Net increase in working capital (sources - uses)		1,00,000
Total		4,36,000

**Working Notes:****1. Accumulated Depreciation Account:**

Particulars	Amount (₹)	Particulars	Amount (₹)
To Building and equipment Depreciation on sales of building and equipment )	20,000	By Balance c/d	1,60,000
To Balance c/d	2,00,000	By P&L A/c (depreciation of the year 2018	60,000
	2,20,000		2,20,000

**2. Building and equipment Account :**

Particulars	Amount (₹)	Particulars	Amount (₹)
To Balance b/d	4,00,000	By Cash	15,000

To P&L A/c	5,000	By Accumulated depreciation	20,000
To Cash (Purchase)	1,30,000	By Balance c/d	5,00,000
	5,35,000		5,35,000

### 3. Reserves Account:

Particulars	Amount (₹)	Particulars	Amount (₹)
To Dividends Paid (Bal. Fig.)	2,00,000	By Balance c/d	3,40,000
To Balance c/d	3,40,000	By Profit of the year 2018	2,00,000
	5,40,000		5,40,000

— Space to write important points for revision —

**2018 - Dec [7]** (a) Complete the Balance Sheet in the table below for TANISH Ltd. using the following financial data:

- (i) Total Debt to Net Wroth = 1 : 2
- (ii) Total Assets Turnover = 2
- (iii) Gross Profit on Sales = 30%
- (iv) Average Collection Period (Assume 360 days in a year) = 40 days
- (v) Inventory Turnover Ratio on Cost of Goods Sold and year-end inventory = 3
- (vi) Acid Test Ratio = 0.75

Balance Sheet as on 31 <sup>st</sup> March, 2018			
Liabilities	₹	Assets	₹
Equity Share Capital	4,00,000	Plant & Machinery & Other Fixed Assets	—
Reserves and Surplus	6,00,000		
Total Debt:		Current Assets:	
Current Liabilities	—	Inventory	—

Assume that there is no Bank OD in this Balance Sheet Format. **(6 marks)**

- (i) Sales for the year totalled ₹ 96,00,000. The company sells goods for cash only.
- (ii) Cost of goods sold was 60% of sales. Closing inventory was higher than opening inventory by ₹ 20,000.
- (iii) Tax paid amounted to ₹ 7,00,000. Other expenses totalled ₹ 21,45,000. Outstanding expenses on 31<sup>st</sup> March, 2017 and 31<sup>st</sup> March, 2018 totalled ₹ 82,000 and ₹ 91,000 respectively.
- (iv) New machinery and furniture costing ₹ 10,50,000 in all were purchased. One equipment was sold for ₹ 20,000.
- (v) A right issue was made of 50,000 shares of ₹ 10 each at a premium of ₹ 3 per share. The entire money was received with application.
- (vi) Dividends totalling ₹ 4,00,000 were distributed among the shareholders.
- (vii) Cash in hand and at Bank as at 31<sup>st</sup> March, 2017 and 31<sup>st</sup> March, 2018 totalled ₹ 2,10,000 and ₹ 4,14,000 respectively.

You are required to prepare cash flow statement as per CAS-3 for the year ended 31<sup>st</sup> March, 2018 using the Direct method. **(6 marks)**

[illegible]

# 8

## WORKING CAPITAL MANAGEMENT

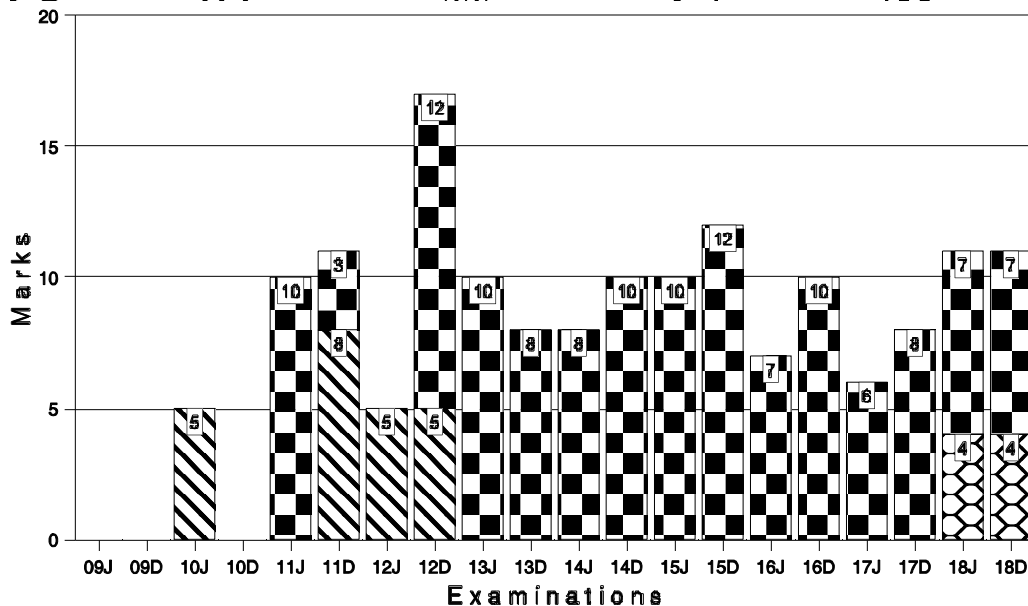
### THIS CHAPTER INCLUDES

- Working Capital: Meaning
- Definition
- Kinds
- Adequacies & Inadequacies
- Cycle
- Financing
- Inventory Management
- Receivable Management
- Credit Policy
- Cash Management

Marks of objective, Short Notes, Distinguish Between, Descriptive & Practical Questions

### Legend

Objective Short Notes Distinguish Descriptive Practical

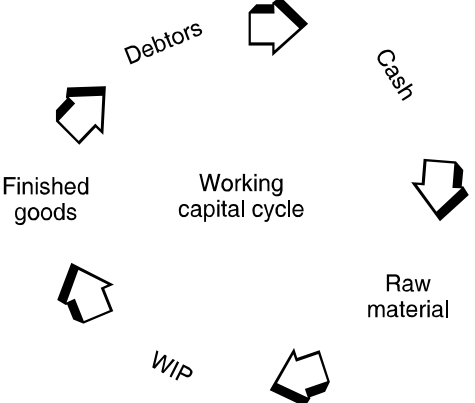


For detailed analysis Login at [www.scannerclasses.com](http://www.scannerclasses.com)  
for registration and password see first page of this book.

## CHAPTER AT A GLANCE

**Working capital** is also known as operating capital.

<b>(a) Concept</b>	<b>Note:</b> 1. Positive WC – able to meet short term liabilities. 2. Negative WC – unable to meet short term liabilities.
<b>(b) Classification of WC</b>	<div style="text-align: center;"> <pre> graph TD     A[Classification of WC] --&gt; B[On the basis of TIME]     B --&gt; C[Permanent WC]     B --&gt; D[Temporary WC]           </pre> </div>
<b>Management of working capital</b>	
<b>(a) There are various steps in the management of working capital</b>	<div style="text-align: center;"> <pre> graph TD     A[Cash Management] --&gt; B[Inventory Management]     B --&gt; C[Debtors Management]     C --&gt; D[Short Term Financing]           </pre> </div>
<b>(b) Constraint in management of working capital</b>	(a) Non realisation of importance of working capital. (b) Continuous inflation in the economy. (c) High profitability. (d) Monopoly conditions in the market.

<b>(c) Determinants of working capital</b>	<ul style="list-style-type: none"> <li>(a) Nature of business.</li> <li>(b) Market and demand conditions</li> <li>(c) Technology and manufacturing policies.</li> <li>(d) Credit policy of the firm.</li> <li>(e) Availability of credit from suppliers.</li> <li>(f) Operating efficiency.</li> <li>(g) Price level changes.</li> </ul>
<b>Operating or working capital cycle</b>	 <p>Operating cycle = R.M. storage period + WIP holding period + FG storage period + Debtors collection Period + Creditors Period availed</p>
<b>Notes:</b>	<ol style="list-style-type: none"> <li>1. Raw material storage period  <math display="block">= \frac{\text{Average stock of raw material}}{\text{Average stock of raw material consumption per day}}</math> </li> <li>2. WIP holding period = <math display="block">\frac{\text{Average WIP}}{\text{Average cost production per day}}</math> </li> <li>3. FG storage period = <math display="block">\frac{\text{Average stock of finished goods}}{\text{Average cost good sold per day}}</math> </li> <li>4. Debtors Collection Period = <math display="block">\frac{\text{Average book debt}}{\text{Average credit sales per day}}</math> </li> <li>5. Credit period availed = <math display="block">\frac{\text{Average trade creditors}}{\text{Average credit purchases per day}}</math> </li> </ol>

10.360

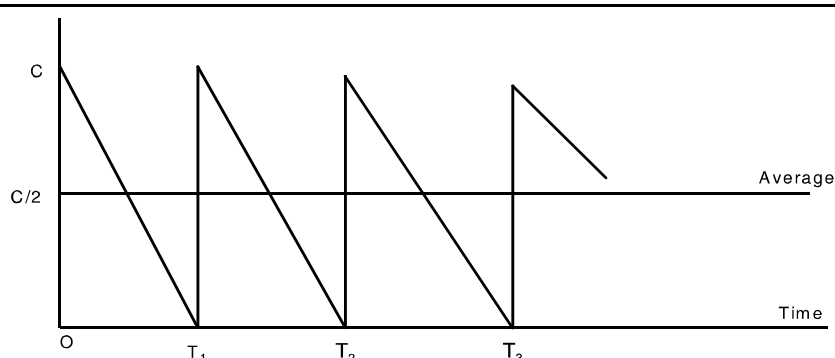
■ Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)

(a) <b>Amount of WC based on operating cycle</b>	The net operating cycle represents the net time gap between investments of cash and its recovery of sales revenue. The length of operating cycle is the indicator of performance of management.
(b) <b>Amount of WC based on CA and CL (assuming 360 days in a year)</b> <b>Current assets</b>	
<p><b>Raw material Inventory:</b>  Estimated Production (units) × Estimated cost of raw material per unit over 12 months/360 days × Average raw material holding per period</p> <p><b>WIP -</b> <math display="block">\frac{\text{Estimated Production (units)} \times \text{Estimated cost of WIP per unit}}{12 \text{ months}/360 \text{ days}}</math></p> <p>× Average WIP holding period</p> <p><b>Finished goods -</b>  <math display="block">\frac{\text{Estimated Production (units)} \times \text{cost of production per unit excluding depreciation}}{12 \text{ months}/360 \text{ days}}</math></p> <p>× Average Finished goods holding per period</p> <p><b>Debtors -</b>  <math display="block">\frac{\text{Estimated credit sales (units)} \times \text{Cost of sales per unit excluding depreciation}}{12 \text{ months}/360 \text{ days}}</math></p> <p>× Average debtors collection period</p>	
<p><b>Minimum cash balance is added to current assets.</b></p> <p><b>Current Liabilities</b></p> <p><b>Trade creditors –</b>  <math display="block">\frac{\text{Estimated Production (units)} \times \text{Raw material requirement per unit}}{12 \text{ months}/360 \text{ days}}</math></p> <p>× Credit period guaranteed by suppliers</p> <p><b>Direct wages -</b>  <math display="block">\frac{\text{Estimated Production(units)} \times \text{Direct Labour cost per unit}}{12 \text{ months}/360 \text{ days}}</math></p> <p>× Average time lag in payment of wages</p>	



<p><b>Overheads -</b>  <u>Estimated credit sales (units) × overhead cost per unit</u>  12 months/360 days  × Average time lag in payment of overheads  In case of selling overheads instead of production units sales volume is taken.</p>	
<b>(c) Amount of WC based on cash cost</b>	This approach is based on the fact that in case of current assets the exact amount of funds blocked is less than the amount of such current assets. Under this working capital is calculated by working out the cash cost of finished goods and sundry debtors, i.e. they are calculated as a percentage of cash costs.
<b>(d) Amount of WC based on double shift working</b>	Under double shift working fixed overheads remain fixed and variable overheads will increase in proportion to increase in production and semi variable will increase as per increase in variable element.
<b>Baumol's EOQ Model</b>	<p>Most firms try to minimize the sum of the cost of holding cash and the cost of converting marketable securities to cash.</p> <p>Baumol's cash management model helps in determining a firm's optimum cash balance under certainty. As per the model, cash and inventory management problems are one and the same.</p> <p>Let us assume that the firm sells securities and starts with a cash balance of C rupees. When the firm spends cash, its cash balance starts decreasing and reaches zero. The firm again gets back its money by selling marketable securities. As the cash balance decreases gradually, the average cash balance will be: <math>C/2</math>.</p>

***This can be shown in following figure:***



**Optimum level of cash balance**

The firm incurs a cost known as holding cost for maintaining the cash balance. It is known as opportunity cost, the return inevitable on the marketable securities. If the opportunity cost is  $k$ , then the firm's holding cost for maintaining an average cash balance is as follows:

Holding cost =  $k (C/2)$

Whenever the firm converts its marketable securities to cash, it incurs a cost known as transaction cost. Total number of transactions in a particular year will be total funds required ( $T$ ), divided by the cash balance ( $C$ ) i.e.  $T/C$ . The assumption here is that the cost per transaction is constant. If the cost per transaction is  $c$ , then the total transaction cost will be:

Transaction cost =  $c (T/C)$

The total annual cost of the demand for cash will be:

Total cost =  $k (C/2) + c (T/C)$

As the demand for cash, ' $C$ ' increases, the holding cost will also increase and the transaction cost will reduce because of a decline in the number of transactions. Hence, it can be said that there is a relationship between the holding cost and the transaction cost.

The optimum cash balance,  $C^*$  is obtained when the total cost is minimum.

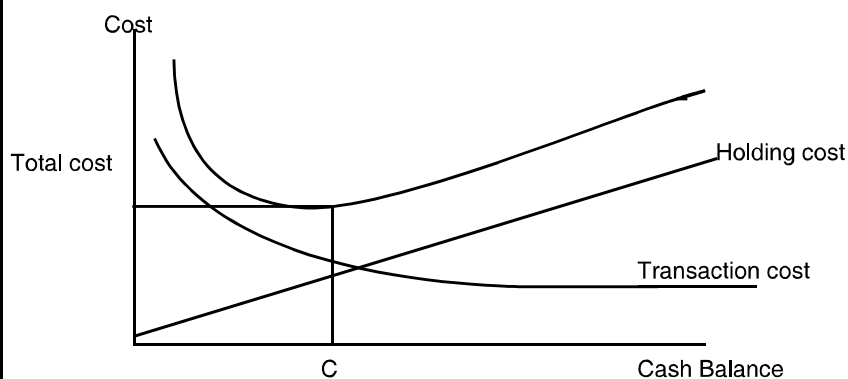
$$\text{Optimum cash balance } (C^*) = \sqrt{2cT/k}$$

Where,  $C^*$  is the optimum cash balance.

T is the total cash needed during the year.

k is the opportunity cost of holding cash balances.

With the increase in the cost per transaction and total funds required, the optimum cash balance will increase. However, with an increase in the opportunity cost, it will decrease.



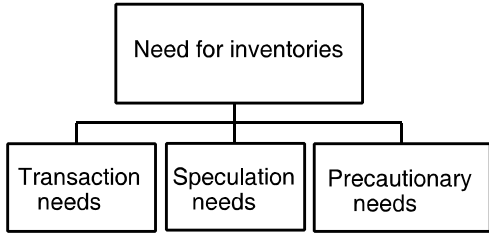
#### Limitations of the Baumol's Model

1. It does not allow cash flows to fluctuate.
2. Overdraft is not considered.
3. There are uncertainties in the pattern of future cash flows.

#### Miller – Orr Cash management

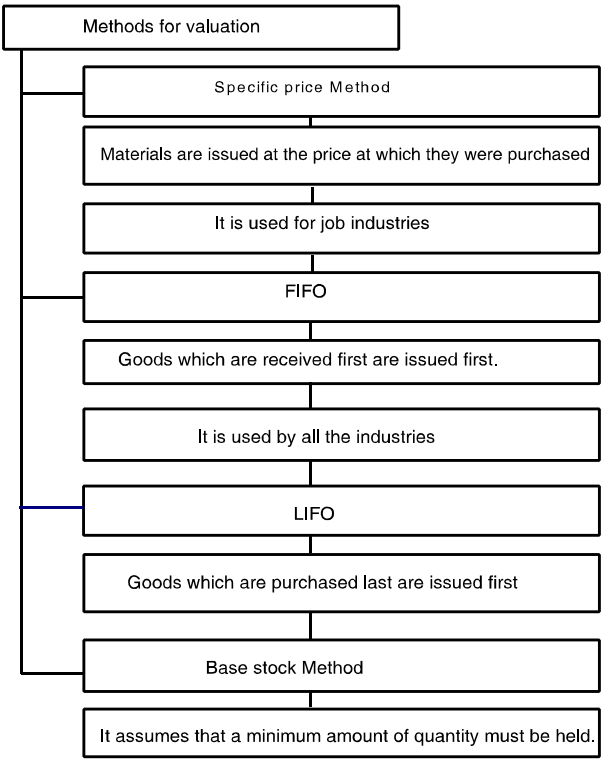
- Under the model, the firm allows the cash balance to fluctuate between the upper control limit and the lower control limit, making a purchase and sale of marketable securities only when one of these limits is reached.
- The assumption made here is that the net cash flows are normally distributed with a zero value of mean and a standard deviation.

	<ul style="list-style-type: none"> <li>This model provides two control limits – the upper control limit and the lower control limit as well as a return point. When the firm's cash limit fluctuates at random and touches the upper limit, the firm buys sufficient marketable securities to come back to a normal level of cash balance i.e. the return point.</li> </ul>
	<ul style="list-style-type: none"> <li>Similarly, when the firm's cash flows wander and touch the lower limit, it sells sufficient marketable securities to bring the cash balance back to the normal level i.e. the return point.</li> </ul>
	<ul style="list-style-type: none"> <li>The lower limit is set by the firm based on its desired minimum “safety stock” of cash in hand. The firm should also determine the following factors: <ul style="list-style-type: none"> <li>i. An interest rate for marketable securities, (i)</li> <li>ii. A fixed transaction cost for buying and selling marketable securities, (c)</li> <li>iii. The standard deviation of its daily cash flows, (s)</li> </ul> </li> </ul>

	<p>The upper control limits and return path are than calculated by the Miller-Orr Model as follows: Distance between the upper limits and lower limits is 3Z.</p>	
Raw material	Work in process	Finished goods
In the form of material and supplies to be consumed in the production process or in the rendering of services.	In the process of production for such sale. Those goods which are not yet ready for sale but are in production process.	Held for sale in ordinary course of business. It includes goods purchased for resale, goods ready for sale.
<b>Need for inventories</b>	 <pre> graph TD     A[Need for inventories] --&gt; B[Transaction needs]     A --&gt; C[Speculation needs]     A --&gt; D[Precautionary needs]         </pre>	
<b>Setting of stock levels</b>	<ol style="list-style-type: none"> <li><b>Reorder level</b>  <math display="block">\text{Re-order Level} = \text{Maximum Usage} \times \text{Maximum Lead Time}</math> <math display="block">= \text{Minimum level} + (\text{Normal Consumption} \times \text{Normal Re-order period})</math> </li> <li><b>Maximum Stock level</b>  <math display="block">\text{Maximum Level} = \text{Re-order level} + \text{Re-order quantity} - (\text{Minimum usage} \times \text{Minimum Lead time})</math> </li> <li><b>Minimum level</b>  <math display="block">\text{Minimum level} = \text{Reorder level} - (\text{Average rate of consumption} \times \text{Average time of stock delivery})</math> </li> </ol>	

	<p><b>4. Average level</b> Average level = <math>\frac{\text{Min level} + \text{Max level}}{2}</math> Or Average level = Max level + ½ Reorder level</p> <p><b>5. Safety stock</b> Safety stock = Maximum lead time – average lead time Or Minimum lead time × demand rate (i.e. per day requirement)</p> <p><b>6. Danger level</b> Danger level = Average consumption × lead time for emergency purchase.</p>	
<b>ABC analysis</b>	<p>➤ As per ABC analysis items of inventory are classified according to value of usage</p> <p>➤ The higher value items have lower safety stocks because the cost of production is very high in respect of higher value items.</p>	
<b>A class items</b> High consumption value	<b>B class items</b> Moderate consumption value	<b>C class items</b> Low consumption value
1. Very strict control	1. Moderate control	1. Loose control
2. No safety stocks	2. Low safety stocks	2. High safety stocks
3. Maximum follow-up and expending	3. Periodic follow-up	3. Follow-up and expending in exceptional cases
4. Rigorous value analysis	4. Moderate value analysis	4. Minimum value analysis
5. Must be handled by senior officers	5. Can be handled by middle management	5. Can be fully delegated

<p><b>Economic Order Quantity</b></p>	<p>Re-order quantity or Economic order quantity:</p> <ul style="list-style-type: none"> <li>➤ Quantity for which order is placed when stock reaches re-order level.</li> <li>➤ The optimum level will be that quantity which minimizes the total costs associated with inventory.</li> <li>➤ The optimum size of the order for an item is known as Economic Order Quantity (EOQ) and is calculated so that total inventory costs are at a minimum for that particular stock item.</li> <li>➤ Ordering cost includes Preparation of purchase order, cost of receiving goods, transport cost, etc.</li> <li>➤ Carrying cost includes storage cost, insurance and security cost, handling cost, etc.</li> </ul> $EOQ = \sqrt{\frac{2AB}{CS}}$ <p>Where, EOQ = Economic Order Quantity  A = Annual Consumption  B = Buying cost per order  C = Cost per unit  S = Storage and other inventory Carrying Cost in percentage</p>
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<b>Methods for valuation of stock</b>	 <pre> graph TD     A[Methods for valuation] --&gt; B[Specific price Method]     B --&gt; C[Materials are issued at the price at which they were purchased]     C --&gt; D[It is used for job industries]     A --&gt; E[FIFO]     E --&gt; F[Goods which are received first are issued first.]     F --&gt; G[It is used by all the industries]     A --&gt; H[LIFO]     H --&gt; I[Goods which are purchased last are issued first]     A --&gt; J[Base stock Method]     J --&gt; K[It assumes that a minimum amount of quantity must be held.]           </pre> <p>The flowchart illustrates the methods for valuation of stock. It starts with 'Methods for valuation' at the top, which branches into four categories: Specific price Method, FIFO, LIFO, and Base stock Method. Each category has a brief description of its operation and its typical application.</p>
<b>Spoilage</b>	<p>It is the production that fails to meet quality or dimensional requirements and these are so damaged in manufacturing operations that these are not capable of rectification economically and hence are taken out of the process and disposed off without further processing.</p>
<b>Accounting treatment</b>	<p>➤ If the cost of spoilage is normal and inherent in the process, then the cost of spoilage is absorbed by charging either to the specific production order or to product overheads.</p>



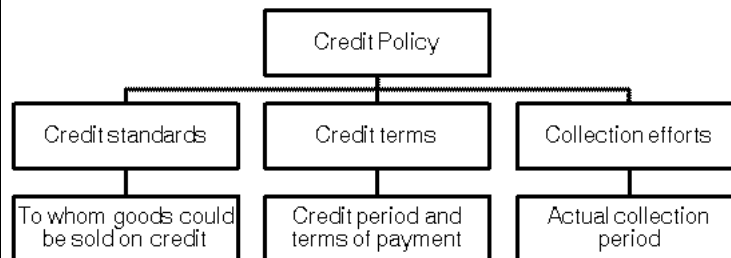
	➤ If cost of abnormal spoilage arise in the process is charged to costing Profit and Loss A/c.
	<pre> graph TD     Spoilage --&gt; NormalLoss[Normal loss]     Spoilage --&gt; AbnormalLoss[Abnormal Loss]     NormalLoss --&gt; NormalText[Cost of loss is borne by good unit]     AbnormalLoss --&gt; AbnormalText[Charged to P &amp; L A/c]         </pre>
<b>Defectives</b>	It represent the part of production that does not meet dimensional or quality specifications of a product but which can be reworked by additional application of material labour and/or processing and made it into saleable condition.
<b>Accounting of defectives</b>	<p>❖ <b>Normal defectives:</b> If the defectives are of normal and within the standard limit, any of the following accounting methods are adopted:</p> <ul style="list-style-type: none"> <li>(i) The cost of rectification of normal defective is charged to good units.</li> <li>(ii) Where a particular department is identified and responsible for defective work, the rework costs are charged to that department.</li> <li>(iii) Where it cannot be identified from which department the defectives caused, then the rework or process costs are to be charged to the general overheads.</li> </ul>
	❖ If normal defectives are easily identifiable with specific jobs, the rework costs are debited to that particular job or process.

- ❖ If the defectives are of abnormal nature, the rework cost should be charged to the costing profit and loss A/c.

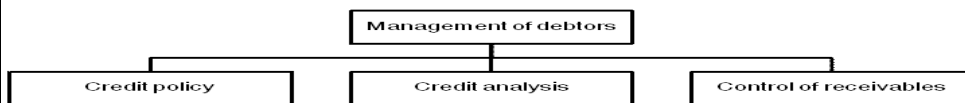
### MANAGEMENT OF RECEIVABLES

#### Credit policy

Determines the quality and quantity of account receivables.



#### Management of debtors



#### Costs of receivables

- Cost in form of interest – if loan funds.
- Opportunity cost – if own funds.
- Administrative cost
- Collection cost
- Defaulting cost

<b>Factors determining credit policy</b>	<ul style="list-style-type: none"> <li>• Credit terms</li> <li>• Cash discounts</li> <li>• The effect of credit on volume of sales</li> <li>• Paying practice</li> <li>• The firm's practice of collection</li> <li>• The degree of operating efficiency.</li> </ul>
<b>Monitoring of receivables</b>	<ul style="list-style-type: none"> <li>• Computation of average age of receivables</li> <li>• Ageing schedule</li> </ul> <div style="text-align: center;"> <pre> graph TD     A[Financing receivables] --&gt; B[Pleading]     A --&gt; C[Factoring]     B --&gt; D[Uses to secure Short term loan]     C --&gt; E[Outright sale of Receivables to a Financial agency]                     </pre> </div> <p><b>Note:</b> A factor is a firm that acquires the receivables of other firm. Tools, Techniques, practice and Measures.</p>

## SHORT NOTES

**2018 - June [10]** Write short notes on the following:

(b) Determinants of Working Capital

**(4 marks)**

**Answer:**

**Some of the most determinants of working capital are:**

1. Nature of business
2. Length of period of manufacture
3. Volume of business
4. The Proportion of the cost of raw materials to total cost

10.372

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5. Use of Manual Labour or Mechanisation
6. Need to keep large stocks of raw materials of finished goods
6. Turnover of working capital
8. Terms of Credit
9. Seasonal Variations
10. Requirements of Cash and
11. Other Factors.

—— Space to write important points for revision ———

**2018 - Dec [10]** Write short notes on the following:

- (iv) Danger of inadequate amount of working capital **(4 marks)**

### DESCRIPTIVE QUESTIONS

**2010 - June [4]** (a) A company is currently facing working capital crunch. You are required to discuss the various areas that you would like to take into and suggest the ways by which the company can overcome the problem.

**(5 marks) [CMAIG - I]**

**Answer :**

The following aspects are to be considered to overcome the problem (facing working Capital Crunch).

- (i) Proper estimate of working capital requirement.
- (ii) Preparation of cash flow statement and Cash Budgets on a monthly basis.
- (iii) Introduction of a proper and scientific inventory and stock management system.
- (iv) Introduction and monitoring of a proper credit management policy.
- (v) Analysis of fund flow, analysis of WIP.
- (vi) All the above steps should be taken on a collective manner.

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**2011 - Dec [3]** (b) (i) Briefly discuss the Baumol Model of Cash Management. **(3 marks) [CMAIG - I]**

**Answer :**

**Baumol Model of Cash management :**

This is same as EOQ model of inventory management. Optimum level of cash is when the cost of carrying cash is equal to cost of encashing cash by taking the securities to the market. Cost of carrying cash is the interest which the firm loses because it keeps the cash with it rather than by keeping cash in the bank. The optimum level of cash occurs at point where the opportunity cost or cost of borrowing or holding cost is equal to transaction cost i.e. cost of converting marketable securities cash into cash).

Baumol model is expressed as : Optimum balance = Square root of (  $2AF / O$  ) Where A is annual requirement of cash, F is fixed cost per transaction and O is the opportunity cost of holding cash.

**Baumol model is based on following assumptions:**

1. Annual requirement of cash, its holding cost and fixed cost per transaction are known with certainty.
2. All these costs remain constant for a fairly long time.
3. Cash requirement is evenly distributed uniformly over the year.

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**2011 - Dec [6]** (b) Explain the 'Hedging Approach' to financing working capital requirements of a firm. **(5 marks) [CMAIG - I]**

**Answer :**

It is prudent financial policy that the long term funds should be utilised in long term assets and while short term liabilities should match with short term assets or current assets. In funding and financing the working capital requirements, the same principle should be followed. It means that the long term component or fixed component of the working capital should be financed with long term funds and vice versa. This is also called hedging approach. Each asset is covered or hedged with a financial instrument having the same maturity value and period as the asset itself. The life of asset is equal maturity period and value of the financial instrument.

—— Space to write important points for revision ———

10.374

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**2012 - June [5]** (b) Explain the following terms in one or two sentences :

- (i) Gross working capital.
- (ii) Net working capital.
- (iii) Working capital gap.

**(1.5 + 1.5 + 2 = 5 marks) [CMAIG - I]**

**Answer :**

**Gross working capital :** It is the sum total of all the current assets of the firm and it does not take into account the current liabilities of the firm. Current assets mean cash and other cash equivalents which can be converted into cash within the current accounting year.

**Net working capital :** It is the difference between current assets and current liabilities. It can be represented by the formula:

Net Working capital = Current assets - Current liabilities.

It is the liquidity that is available for day to day running of firm.

**Working capital gap:** Working capital gap = Current assets - Current liabilities excluding bank finances. It can also be expressed as total working capital required less total funds arranged.

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**2012 - Dec [2]** (b) Briefly describe stochastic Model of Cash Management.

**(5 marks) [CMAIG - I]**

**Answer:**

**Stochastic Model of Cash Management**

This model is developed to avoid the problems associated with EOQ model. Model developed by Miller and Orr. The basic assumption of this model is that cash balances are irregular. The model prescribed two control limits.

**Upper Control Limits (UCL):** When cash balance reaches the upper limits, a transfer of cash to investment account should be made.

**Lower Control Limits (LCL):** When cash balance reaches the lower point, a portion of securities from investment account should be liquidated to return the cash balances to its return point.

The Miller and Orr model is the simplest model to determine the optimal behaviour in irregular cash flow situation. The model is a control limit model to determine the time and size of transfers between an investment account and cash account. The optimal point (O) of cash balance is determined by

$$O = 3 \sqrt{\frac{3TV}{4I}}$$

Where O-target (Optimal) cash balance; T- Fixed cost associated with security transactions; I- Interest per day on marketable securities; V- Variance of daily net cash flows.

**Limitations :** Problems in respect of collection of data- cost of time devoted by finance manager- does not take in account short-term borrowings.

- (i) The first and important problem is in respect of collection of accurate data about transfer costs, holding costs, number of transfers and expected average cash balance.
- (ii) The cost of time devoted by financial managers in dealing with the transfers of cash to Securities and vice-versa.
- (iii) The model does not take into account the short-term borrowings as an alternative to selling of marketable securities when cash balance reaches lower limit.

— Space to write important points for revision —

## PRACTICAL QUESTIONS

**2011 - June [2]** (a) Electronics Devices Ltd. sells goods to domestic market on a gross profit of 25% on sales without considering depreciation. Its estimates for the next year are as follows:

	Amount (₹ lakh)
Sales :	
Domestic market at 2 months' credit	1,600
Export selling price 10% below home price (Exports at 3 months' credit)	540

**10.376****Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)**

Costs :

Material used (Suppliers extend 2 months' credit)	600
Wages paid ( $\frac{1}{2}$ month in arrear)	400
Manufacturing expenses (paid 1 month in arrear)	600
Sales promotion (payable quarterly in advance)	80
Administration expenses (paid 1 month in arrear)	200

The company maintains one month's stock of each of raw material and finished goods. A cash balance of ₹ 20 lakh is also maintained.

You are required to work out the working capital requirement of the company. **(10 marks) [CMAIG - I]**

**Answer:****Working Notes:**

(i) Cost of Production :	₹
Material used	600
Wages paid	400
Manufacturing expenses	600
Administration expenses	<u>200</u>
	<u>1,800</u>

- (ii) Export sales at equivalent domestic price = ₹ 540 L ÷ 0.90 = ₹ 600 L  
Statement showing requirement of working capital:

₹ Lakhs

Current assets :

Cash balance to be maintained	20.00
Stock of Inventories	

Raw material	$600 \times \frac{1}{12}$	50.00	
Finished goods	$1,800 \times \frac{1}{12}$	150.00	200.00

Debtors

Domestic Market Sales	$1,600 \times 0.75 \times \frac{2}{12}$	200.00
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Export Market	$600 \times 0.75 \times \frac{3}{12}$	112.00	
Requirement of sales production expenses		<u>20.00</u>	
		<u>552.00</u>	(A)
Current Liabilities :			
for Raw material	$(600 \times \frac{2}{12})$	100.00	
for Wages	$(400 \times \frac{1}{24})$	16.66	
for Manufacturing expenses	$(600 \times \frac{1}{12})$	50.00	
for Administration expenses	$(200 \times \frac{1}{12})$	<u>16.67</u>	
		<u>183.33</u>	(B)

Working capital required = A – B = 552 – 183.33 = ₹ 368.67 lakhs

— Space to write important points for revision —

**2011 - Dec [3]** (b) (ii) Illustrate the model by using the following information about A Ltd.

The annual cash requirement of A Ltd. is ₹ 10 lac. The company has marketable securities in lot sizes of ₹ 1,00,000, ₹ 2,00,000, ₹ 2,50,000. Cost of conversion of marketable securities per lot is ₹ 1,000. The company can earn 5% annual yield on its securities. The optimal lot size to be sold will be ₹?

**(3 marks) [CMAIG - I]**

**Answer :**

The optimal lot size of the securities to be sold for A Ltd. is determined as under :

Total cash requirement for a year = T = ₹ 10,00,000

Lot size (₹) = C	1,00,000	2,00,000	2,50,000
Number of Lots (T/C)	10	5	4
Conversion Cost (₹) = (T/C) × B	10,000	5,000	4,000
[Where B = Cost of conversion per lot]			
Interest charges (₹) = (C/2) × I	2,500	5,000	6,250
Total Cost (₹) =	12,500	10,000	10,250

**10.378****Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)**

Economic lot size is ₹ 2,00,000 at which total costs are minimum.

[Alternatively, one can use the Formula : Economic lot size =  $\sqrt{\frac{2 \times TB}{I}}$

Where T = Projected cash requirement = ₹ 10,00,000

B = Conversion cost per lot = ₹ 1,000

I = Interest earned on marketable per annum = 5%

So, the Economic lot size =  $\sqrt{\frac{2 \times 10,00,000 \times 1,000}{0.05}} = ₹ 2,00,000$

— Space to write important points for revision —

**2012 - Dec [5]** (a) Trinadh Traders Limited currently sells on terms of net 30 days. All the sales are on credit basis and average collection period is 35 days. Currently, it sells 5,00,000 units at an average price of ₹ 50 per unit. The variable cost to sales ratio is 75% and a bad debt to sales ratio is 3%. In order to expand sales, the management of the company is considering changing the credit terms from net 30 to 2/10, net 30.

Due to the change in policy, sales are expected to go up by 10%, bad debt loss on additional sales will be 5% and bad debt loss on existing sales will remain unchanged at 3%. 40% of the customers are expected to avail the discount and pay on the tenth day. The average collection period for the new policy (in respect of additional sales) is expected to be 34 days. The company required a return of 20% on its investment in receivables.

You are required to find out the impact of the change in credit policy on the profit of the company. Also advise the management on implementation of new policy. Ignore taxes. Assume 1 year = 360 days.

**(10 marks) [CMAIG - I]**

**(c)** Unit Cost Structure of a product at an activity level of 60,000 units per annum:

	₹
Raw Material	5
Wages	4
Manufacturing overheads(including depreciation ₹ 1)	3
Administrative expenses	1
Selling and distribution expenses	2

Production cycle is half-month. Calculate the value of stock of work-in-progress (on cash cost basis), if the degree of completion as to material is 80% and as to conversion cost is 60%. **(2 marks) [CMAIG - I]**

**Answer:**

**(a)** ABC company currently sells on terms 'net 45'. The company has sales of ₹ 3.75 million a year with 80% being the credit sales. At present, the average collection period is 60 days.

The company is now considering offering term '2/10 net 45'. It is expected that the new credit terms will increase current credit sales by  $\frac{1}{3}$ <sup>rd</sup>. The company now expects that 60% of the credit sales will be on discount and average collection period will be reduced to 30 days.

The average selling price of the company's product is ₹ 100 unit, and variable cost per unit works out to be ₹ 85. The company is subject to tax rate of 40% and its before tax borrowing for working capital is 18%. Should the company change its credit terms to '2/10 net 45 days'? Support your answer by calculating the expected change in net profit. (Assume 360 days in a year).

**Tutorial notes:** Discounts are generally given to speed up the payment of debts. Suppose a firm has an annual sales of ₹ 300 lacs. The monthly sales would be ₹ 25 lacs and if the collection period is say 2 months, the investment in debtors would be ₹ 50 lacs. Suppose 3% discount is proposed to be given for cash discount who pay cash immediately.

Suppose further that 50% of debtors decides to avail the discount offer, this means that ₹ 25.0 lacs (50% of total debtors) would be released on account of discount offer in every two months. The discount paid to debtors for this release would be 3% of ₹ 25 lacs i.e. ₹ 75,000 every two months or say ₹ 4.5 lacs per annum. If the cost of ₹ 25 lacs for one year is greater than ₹ 4.5 lacs, the discount should be given.

Suppose further that ROI of the firm is 20%, it is obvious that the firm will gain ₹ 25 lacs for the whole year and the return would be 20% of ₹ 25 lacs i.e. ₹ 5 lacs. As the discount to be given is ₹ 4.5 lacs, the saving of ₹ 50,000 (5.0 lac less 4.5 lac) justifies the new policy.

The credit terms may be expressed as "2/15 net 45". This means that a 2% discount will be granted if the customer pays within 15 days, if he does not avail the offer he must make payment within 45 days.

Debtors can be calculated on sales or on cost of sales. If cost of sales is given as in the present case, it is better to calculate debtors on cost of sales rather than on sales.

**Illustration:** A company has annual sales amounting to ₹ 10.0 lacs for which it grants a credit of 60 days. At present no discount is offered to customers. The company is considering a plan to offer a discount '3/15 net 60'. The offer of discount is expected to bring the total credit period from 60 days to 45 days and 50% of the customers (in value) are likely to avail the discount facility. The selling price of product is ₹ 15 and its variable cost is ₹ 12.

Please advise the company which to resort to discount facility if the rate of return is 20% and a month is equal to 30 days.

Annual credit sales ₹ 10.0 lacs

Present investment in receivables : Collection period is 60 days and cost of sales is 80% (12/15) of sales. The investment is considered in cost of sales and not in sales.

Present investment would be cost of sales for 60 days collection period and expected investment would be cost of sales for 45 days period.

Present investment in receivables: ₹ 1.34 lacs  
 $10.0 \times (60/360) \times 80\%$

Expected investment in receivables: ₹ 1.00 lacs  
 $10.0 \times (45/360) \times 80\%$

Saving in investment ₹ 0.34 lacs

Return on saved investment @ 20% per annum  $(0.34 \times 0.2)$  ₹ 6,800

Cash discount to be given :  $3\% \times 50\% \times ₹ 10.0 \text{ lacs}$  ₹ 15,000

The company gives ₹ 15,000 as discount and gains ₹ 6,800 on account of saving, the policy is not recommended.

In the present case there will be two gains (i) increased contribution from increase in sales and (ii) Return on savings in investment. Total gains will be compared with the discount proposed to be given.

<u>Discount to be given</u> : 2% of 60% of ₹ 40.0 lacs	48,000
<u>Computation of return due to saving in investment</u> :	
Present investment is for a period of 60 days	
$30 \times (60 / 360) \times 85\%$	4,25,000
Proposed investment is for a period of 30 days	
$40 \times (30 / 360) \times 85\%$	3,00,000
Saving in investment	1,25,000
Return due to saving in investment (@18%)	
18% of ₹ 1,25,000	22,500
<u>Computation of increased sales</u> :	
Contribution from present sales (15% of ₹ 30 lacs)	4,50,000
Contribution from increased sales (15% of ₹ 40 lacs)	6,00,000
Extra contribution due to discount policy	1,50,000
<u>Evaluation of Discount policy</u> :	
Extra contribution	1,50,000
Return on saving	22,500
Total gain	1,72,500
Less : Discount to be given	48,000
Overall gain	1,24,500

You are advised to solve the question on the above lines. Present your findings and computations in a tabular form. Compare your solution with the one given below:

### Appraisal of Credit Policy

	Present	Proposed
Credit Terms	Net 30	2/10, Net 30
ACP (Average Collection Period)	35 days	34 days
Discount Sales	—	40%
Bad debts	3%	3% + 5%
Sales (in units)	5,00,000	5,50,000

Incremental Profit =  $50,000 \times 50 \times 25\% = 6,25,000$

Incremental Bad debts =  $50,000 \times 50 \times 5\% = (1,25,000)$

Discount =  $5,50,000 \times 40\% \times 50 \times 2\% = (2,20,000)$

Incremental Investment in receivables =  $50,000 \times 50 \times 75\% \times 34 / 360$   
 $= 1,77,083$

Finance Cost =  $1,77,083 \times 20/100 = (35,417)$

**10.382****■ Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)**

Total Benefits = ₹ 6,25,000

Total Cost = 1,25,000 + 2,20,000 + 35,417

= ₹ 3,80,417

Net benefit due to new policy = ₹ (6,25,000 – 3,80,417) = ₹ 2,44,583

Hence, Management is advised to implement the New credit policy.

**Answer:**

(c) Raw material (2,500 units x ₹ 5 x 80%)	=	₹ 10,000
Wages (2,500 units x ₹ 4 x 60 %)	=	₹ 6,000
Manufacturing overheads (Except Depreciation)		
(2500 units x ₹ 2 x 60%)	=	<u>₹ 3,000</u>
Stock of WIP		<u>₹ 19,000</u>

—— Space to write important points for revision ——

**2013 - June [5]** (a) Determine the working capital requirements on cash cost basis from the following particulars:

Annual Budget for	Amount (₹ in lakh)
Raw Materials	720
Supplies and Components	240
Manpower Expenses	480
Factory Expenses (including depreciation ₹ 10 lakhs)	130
Administration Expenses	180
Sales	2,380

You are given the following additional information:

- Stock-levels planned: Raw materials- 30 days; supplies and components-90 days.
- 50 per cent of the sales are for cash; for the remaining, 20 days credit is normal.
- Finished goods are held in stock for a period of 7 days before they are released for sale and are valued at factory cost.
- Goods remain in process for 5 days. Materials & components are supplied in the beginning and expenses are incurred evenly.

- (v) The company enjoys 30 days credit facilities on 20 per cent of the purchases.
- (vi) Cash and Bank balances had been planned to be kept at the rate of half month's budgeted expenses [Assume 360 days in a year].

(10 marks) [CMAIG - I]

**Answer:**

**Statement showing the requirements of working capital (in lakhs)**

Particulars	₹	₹
<b>A. Current Assets</b>		
Stock of Raw Materials = $720 \times \frac{30}{360}$		60.00
Stock of supplies & components = $240 \times \frac{90}{360}$		60.00
<b>Stock of WIP</b>		
Raw material = $720 \times \frac{5}{360} \times 100\%$	10.00	
Suppliers = $240 \times \frac{5}{360} \times 100\%$	3.33	
Wages = $480 \times \frac{5}{360} \times 50\%$	3.33	
F. expenses = $120 \times \frac{5}{360} \times 50\%$	0.84	17.50
Stock in Finished Goods = $(720 + 240 + 480 + 120) \times \frac{7}{360}$		30.33
<b>Debtors:</b>		
Cost of goods produced (720 + 240 + 480 + 120)	1560	
(+) Opening F. Stock	30.33	
(-) Closing F. Stock	(30.33)	
(+) Office expenses	180	
	1740	

10.384

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Cost of credit sales	$1740 \times \frac{50}{100}$ $870 \times \frac{20}{360}$	48.33
Cash in hand $(480 + 120 + 180) \times \frac{15}{360}$		32.50
<b>Total Current Assets</b>		<b>248.66</b>

Particulars	₹	₹
<b>B. Current Liabilities</b>		
Creditors for raw materials	$720 \times \frac{20}{100} \times \frac{30}{360}$	12.00
Creditors for supplies and component	$240 \times \frac{20}{100} \times \frac{30}{360}$	4.00
<b>Total Current Liabilities</b>		<b>16.00</b>
<b>C. Net Working Capital</b>		<b>232.66</b>

———— Space to write important points for revision ————

**2013 - Dec [9]** (a) From the following information, work out the average amount of working capital requirement:

	Average period of credit (in weeks)	Estimate for the year (52 weeks) (in ₹)
Purchase of material	6	26,00,000
Wages	1½	20,80,000
Rent	26	1,00,000
Other overheads	8	10,40,000
Salaries	4	13,00,000
Credit sales	8	52,00,000

Average amount of holding of stocks and WIP is ₹ 4,00,000 and there should be cash balance of ₹ 50,000. Assume that all expenses and income are made evenly throughout the year.

**(8 marks) [CMAIG - I]**



Answer:

Particulars	Estimate per annum	Estimate per week	Avg. Credit period	Working capital requirement (₹)
Purchase of raw material	26,00,000	50,000	6	3,00,000
Wages	20,80,000	40,000	1.5	60,000
Rent	1,00,000	1,92,308	26	50,000
Other overheads	10,40,000	20,000	8	1,60,000
Salaries	13,00,000	25,000	4	1,00,000
<b>Total Current liabilities (A)</b>				<u>6,70,000</u>
<b>Current assets</b>				
Credit Sales	52,00,000	1,00,000	8	8,00,000
Inventory Including WIP				4,00,000
Cash Balance				<u>50,000</u>
<b>Total Current assets (B)</b>				<u>12,50,000</u>
<b>Net working Capital Requirement (Avg.) = (B) - (A)</b>				<b>5,80,000</b>

— Space to write important points for revision —

**2014 - June [9]** (a) Z Ltd's cost sheet gives you the following information:

Items of Cost/Revenue	₹/unit
Raw Material Cost	117
Direct Labour	49
Factory Overheads (includes depreciation at ₹ 18 per unit at budgeted level of activity)	98
Total Cost per unit	264
Profit	36
Selling Price per unit	300

The following information is also available:

Average raw material in stock	4 weeks
Average Work-in-progress stock (Material 80% complete, Labour and overheads - 60% complete)	2 weeks

**10.386****■ Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)**

Credit period allowed to debtors	6 weeks
Credit availed from suppliers	8 weeks
Time lag in payment of wages	1 week
Time lag in payment of overheads	2 weeks

The company sells one-fifth of its output against cash and the remaining is credit sale. Cash balance is maintained at ₹ 2,50,000. Budgeted level of activity is 78,000 units. Production, wages and overheads may be taken as being carried out evenly throughout the year. Debtors may be valued at sales value.

Prepare a statement showing the item wise break up of the total working capital requirement needed to finance the budgeted level of activity.

**(8 marks) [CMAIG - I]****Answer:**

Budget production	78000 units p.a.							
No. of weeks	52 p.a.							
Budgeted production	1500 units per week							
	Stock	WIP	Finished Goods	Debtors	Cash Balance	Total	Creditors	Net WC
Raw Material	702000	280800	526500	842400		2351700	1404000	947700
Direct Labour		88200	220500	352800		661500	73500	588000
Overheads(Cash)		144000	360000	576000		1080000	240000	840000
Non Cash Exp/ Profit				388800		388800		388800
Cash Balance					250000	250000		250000
Total	702000	513000	1107000	2160000	250000	4732000	1717500	3014500

**Statement of Working Capital Requirement**

<b>Current Assets:</b>	
Raw Material Inventory	7,02,000
WIP Inventory	5,13,000
Finish Goods Inventory	11,07,000
Sub total - Inventory	23,22,000

Sundry Debtors	21,60,000
Cash	2,50,000
Current Asset total	47,32,000
Less:	
Creditors for purchases	14,04,000
Wages payable	73,500
Overhead payable	2,40,000
Sub total- current liability	17,17,500
Working Capital = CA - CL	30,14,500

Space to write important points for revision

**2014 - Dec [1]** Answer the question:

- (i) The proprietor's fund is ₹ 45,00,000 and ratio of fixed assets to proprietor's funds is 0.75. Find the amount of net working capital.

**(2 marks) [CMAIG - I]**

**Answer:**

Proprietors fund	= ₹ 45,00,000
Fixed Assets to Proprietors Fund	= 0.75
Fixed Assets : Proprietors Fund	= 0.75
Fixed Assets: 45,00,000	= 0.75
Fixed Assets	= 33,75,000
Net Working Capital 45,00,000 - 33,75,000	= ₹ 11,25,000

Space to write important points for revision

**2014 - Dec [3]** Answer the question:

- (a) (i) From the following details, find out the working capital requirements of G. Ltd. on cash cost basis:

Sales (at 3 months' credit)	₹ 60,00,000
Material Consumed (Suppliers extend 2 months' credit )	₹ 18,00,000
Wages paid (one month in arrear)	₹ 11,40,000

**10.388****Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)**

Cash Manufacturing expenses outstanding at the year end (cash expenses are paid one month in arrear)	₹ 90,000
Total Administrative expenses (paid as above)	₹ 4,20,000
Sales Promotion expenses (paid one month in advance)	₹ 2,70,000

It keeps two months' stock of raw materials, one month's stock of finished goods and a cash balance of ₹ 2,00,000. There is no work-in-progress.

**(8 marks) [CMAIG - I]****Answer:****Current assets:**

	₹
Cash	2,00,000
Raw material $(18,00,000/12 \times 2)$	3,00,000
Finished goods $(40,20,000/12)$	3,35,000
Debtors $(47,10,000/12 \times 3)$	11,77,500
Sales promotion expenses $(2,70,000/12)$	22,500
<b>Total</b>	<b>₹ 20,35,000</b>

**Current liabilities:**

	₹
Creditors $(18,00,000/12 \times 2)$	3,00,000
Wages $(11,40,000/12)$	95,000
Manufacturing expenses	90,000
Admin. Expenses $(4,20,000/12)$	35,000
<b>Total</b>	<b>₹ 5,20,000</b>

$$\begin{aligned}
 \text{Working capital requirement} &= \text{Current assets} - \text{current liabilities} \\
 &= 20,35,000 - 5,20,000 \\
 &= ₹ 15,15,000
 \end{aligned}$$

**Working Note:****Cost of production**

	₹
Material used	18,00,000
Wages paid	11,40,000
Manufacturing Expenses $(90,000 \times 12)$	10,80,000
Cash cost of production	40,20,000

Admin. Expenses	4,20,000
Sales promotion expenses	<u>2,70,000</u>
Total	<u>47,10,000</u>

— Space to write important points for revision —

**2015 - June [I]** (d) Average collection period is 2 months, Cash sales and average receivables are ₹ 5,00,000 and ₹ 6,50,000 respectively. Find the amount of total sales. **(2 marks) [CMAIG - I]**

**Answer:**

Average collection period is 2 months

Cash Sales ₹ 5,00,000

Average Receivable ₹ 6,50,000

$$\text{Average collection period} = \frac{12}{\text{Debtors turnover}}$$

$$2 = \frac{12}{\text{Debtors turnover}}$$

$$\text{Debtors turnover} = 6$$

$$\text{Debtors turnover} = \frac{\text{Credit Sales}}{\text{Average Receivables}}$$

$$6 = \frac{\text{Credit Sales}}{6,50,000}$$

$$\text{Credit Sales} = ₹ 39,00,000$$

$$\text{Total Sales} = ₹ 39,00,000 + ₹ 5,00,000 = ₹ 44,00,000$$

— Space to write important points for revision —

**2015 - June [III]** (c) (ii) A company manufactures a small computer component. The component is sold for ₹ 1,000 and its variable cost is ₹ 700. The company sold on an average, 300 units every month in 2014-15. At present the company grants one month credit to its customers. The company plans to extend the credit to 2 months on account of which the following is expected:

Increase in sales is 25%

Increase in stock is ₹ 1,50,000

Increase in creditors ₹ 60,000

10.390

■ Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)

Should the company extend the credit terms if

(A) All customers avail of the extended period of 2 months.

(B) Only new customers avail of 2 months credit, assuming that the increase in sales is due to new customers.

The company expects a minimum rate of return of 30% on its investment.

(Consider debtors at sales value)

(5 + 3 = 8 marks) [CMAIG - I]

**Answer:**

**Statement showing the analyses of credit policy of the company:**

	<b>Option I All customers avail extended credit policy</b>	<b>Option II Only new customers avail extended credit policy</b>
<b>Profitability of additional sales:</b>		
Present annual turnover (300 × 12 × 1,000)	36,00,000	36,00,000
Increase in turnover	<u>9,00,000</u>	<u>9,00,000</u>
	45,00,000	45,00,000
Revised sales		
PV Ratio $\frac{1,000 + 700}{1,000} \times 100$	30%	30%
Increase in contribution (a) (9,00,000 × 30%)	2,70,000	2,70,000
<b>Cost of carrying additional debtors and stock:</b>		
Proposed/Additional debtors	$45,00,000 \times \frac{2}{12}$	$90,00,000 \times \frac{2}{12}$
	= 7,50,000	= 15,00,000
Less: Existing debtors		
$36,00,000 \times \frac{1}{12}$	<u>3,00,000</u>	<u>—</u>

Increase Debtors	4,50,000	1,50,000
Investment in additional debtors (variable cost being 70% of sales value)	3,15,000	1,05,000
Increase in stock	<u>1,50,000</u>	<u>1,50,000</u>
	4,65,000	2,55,000
Less: Increase in credit	<u>60,000</u>	<u>60,000</u>
Net additional investment in working capital	<u>4,05,000</u>	<u>1,95,000</u>
Expected returns (b)	1,21,500	58,500
Excess of profit over cost [(a) - (b)]	1,48,500	2,11,500

**Suggestion:** From the above statement company can extend credit policy in the both cases however, in view of higher profit second option is more profitable. Hence, company should adopt option II.

— Space to write important points for revision —

**2015 - Dec [III]** (c) (1) S. Ltd. produces a product with the following revenue-cost structure:

	₹ per unit
<b>Raw Material</b>	115
Direct labour	80
Overheads	37
<b>Total cost</b>	<b>232</b>
Profit	58
Selling Price	290

The following additional information is available:

- Average raw materials in stock: one month
- Average work in-process: half-a-month – Raw Materials 100%, Direct labour 50%, Overheads 50% complete
- Average finished goods in stock: one month
- Credit allowed by suppliers: one month

**10.392****■ Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)**

- (v) Credit allowed to debtors: two months
- (vi) Time lag in payment of wages: half -a-month
- (vii) Overheads: one month
- (viii) One-fourth of sales are on cash basis
- (ix) Cash balance is expected to be ₹ 1,65,000

You are required to prepare a statement showing the Working Capital requirement of the company to finance a level of activity of 60,000 units of annual output. Assume uniform production throughout the year. Wages and overheads accrue uniformly. Debtors are to be taken at cost.

**(12 marks) [CMAIG - I]****Answer:****Statement showing estimate of Working Capital**

Particulars	₹	₹
Current Assets:		
Stock of Raw Material (60,000 units × 115 × 1/12)		5,75,000
Work-in-progress:		
Raw materials (60,000 units × 115 × 1/12 × ½ )	2,87,500	
Direct labour (60,000 units × 80 × 1/12 × 1/2 × ½)	1,00,000	
Overheads (60,000 units × 37 × 1/12 × 1/2 × 1/2)	46,250	4,33,750
Stock of finished goods (60,000 units × 232 × 1/12)		11,60,000
Debtors (60,000 units × 3/4 × 232 × 2/12)		17,40,000
Cash balance		1,65,000
	(a)	40,73,750
Current Liabilities:		
Creditors for raw material (60,000 units × 115 × 1/12)		5,75,000
Creditors for wages (60,000 units × 80 × 1/12 × ½)		2,00,000
Creditors for overheads (60,000 units × 37 × 1/12)		1,85,000



	(b)	9,60,000
Net Working Capital	(a) – (b)	31,13,750
<b>Total Working Capital Requirement</b>		<b>31,13,750</b>

— Space to write important points for revision —

**2016 - June [6]** (b) A company plans to sell 48000 units next year. The following information is given:

Raw Materials	= ₹ 100 (per unit)
Manufacturing expense	= ₹ 30 (per unit)
Selling Cost	= ₹ 20 (per unit)
Selling Price	= ₹ 180 (per unit)
Average Cash balance	= ₹ 1,20,000

The duration at various stages is expected to be as follows:

Raw materials stage 2 months

Work in progress 1 month (Raw Materials 100% complete; Manufacturing 25% complete)

Finished goods 1 month

Debtors 1 month

Assume uniform sales of 4000 units per month.

Estimate the gross working capital requirement taking

- (i) Debtors at Cost;
- (ii) Debtors at Sales Value.

**(7 marks) [CMAIG - I]**

**Answer:**

**Statement of Gross Working Capital:**

Item	Workings	Amount (₹)
Current Assets		
Raw Materials	$4000 \times 2 \times 100$	8,00,000
<b>WIP:</b>		
Materials	$4000 \times 100 \times 100\% \times 1 \text{ month}$	4,00,000

**10.394****■ Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)**

Manufacturing Expenses	$4000 \times 30 \times 25\% \times 1 \text{ month}$	30,000
Finished Goods	$4000 \times 130 \times 1 \text{ month}$	5,20,000
Debtors (at cost)	$4000 \times 150 \times 1 \text{ month}$	6,00,000
Cash		1,20,000
Total Gross WC Requirement		24,70,000

If Debtors are at Sales, add profit of ₹ 30 per unit. Debtors will be  $30 \times 4,000 = ₹ 1,20,000$  more than the above figure, i.e. ₹ 7,20,000

Then, Gross WC = ₹ 25,90,000.

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**2016 - Dec [8]** (a) The following information is given:

Details	
Annual production	72,000 units
Raw Materials Inventory	2 months' consumption
Finished Goods Stock	3 months
Work-in-Progress (Raw Materials 100%; Conversion Costs 50% complete)	1 month
Debtors	3 months (sales value)
Creditors	2 months
Cash balance required	1,00,000
Assume: Sales, production, costs are uniform throughout the cycle.	
Other information:	
Selling Price ₹/unit	120
Raw Material	60% of selling price

Direct Wages	20% of selling price
Overheads (assume no depreciation)	10% of selling price

You are required to estimate the working capital requirement with a detailed break up of its constituents.

(10 marks) [CMAIG - I]

**Answer:**

**Working Notes:**

1. Production for the year 72,000 units  
Production for the month - 6000 units.
- 2.

Particulars	(₹)
Selling price per unit	120
Raw material 60% of 120	72
Direct Wages 20% of 120	24
Overhead 10% of 120	12
Total Cost	108

**Working Capital Requirements:**

Particulars	Basis	Amount (₹)
<b>Current Assets:</b>		
Raw material in store	$6000 \times 2 \times 72$	8,64,000
Work-in-process R.M.	$6000 \times 1 \times 72$	4,32,000
Work-in-process Wages	$6000 \times 1 \times 24 \times 50\%$	72,000
Work-in-process Overhead	$6000 \times 1 \times 12 \times 50\%$	36,000
Finished Goods	$6000 \times 3 \times 108$	19,44,000
<b>Total Inventory</b>		<b>33,48,000</b>
Debtors (at sales price)	$6000 \times 3 \times 120$	21,60,000
Cash		1,00,000
<b>Total current assets</b>		<b>56,08,000</b>

10.396

■ Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)

<b>Current Liabilities:</b>		
Creditor	$6000 \times 2 \times 72$	8,64,000
<b>Total Current Liabilities</b>		<b>8,64,000</b>

**Working capital:**

$$CA-CL = ₹ 56,08,000 - ₹ 8,64,000$$

$$= ₹ 47,44,000$$

— Space to write important points for revision —

**2017 - June [8]** (a) From the following data, compute the duration of the Operating Cycle for each of the two years:

	Year 1 (₹)	Year 2 (₹)
Stock:		
Raw Materials	20,000	27,000
Work-in-progress	14,000	18,000
Finished goods	21,000	24,000
Purchases	96,000	1,35,000
Cost of goods sold	1,40,000	1,80,000
Sales	1,60,000	2,00,000
Debtors	32,000	50,000
Creditors	16,000	18,000

Assume 360 days per year for computational purposes.

**(6 marks)**

**Answer:**

Calculation of operating cycle

	Year 1 (₹)	Year 2 (₹)
<b>Current Assets:</b>		
1. Raw material stock = $\frac{\text{Stock of raw material}}{\text{Purchases}} \times 360$	$(20 / 96) \times 360 =$ 75 days	$(27 / 135) \times 360 =$ 72 days
2. WIP turnover = $(WIP / COGS)$ $\times 360$	$(14 / 140) \times 360 =$ 36 days	$(18 / 180) \times 360 =$ 36 days

3. Finished goods turnover = (Finished good/ COGS) × 360	(21 / 140) × 360 = 54 days	(24 / 180) × 360 = 48 days
4. Debtors turnover = (Debtors / Sales) × 360	(32 / 160) × 360 = 72 days	(50 / 200) × 360 = 90 days
Total (A)	237 days	246 days
Creditors period = (Creditors / Purchases) × 360	(16 / 96) × 360 = 60 days	(18 / 135) × 360 = 48 days
Total (B)	60 days	48 days
Operating cycle (A-B)	177 days	198 days

— Space to write important points for revision —

**2017 - Dec [8]** (a) Jai & Karti are regular customers of MJK Ltd. Kolkata and have approached the sellers for extension of credit facility for enabling them to purchase goods from MJK Ltd. On the analysis of past performance and on the basis of information supplied, the following pattern of payment schedule emerges in regard to Jai & Karti:

Schedule	Pattern
At the end of 30 days	15% of the bill
60 days	34% of the bill
90 days	30% of the bill
100 days	20% of the bill
Non-recovery	1% of the bill

Jai & Karti wants to enter into a firm commitment for purchase of goods of ₹ 15,00,000 in 2016, deliveries to be made in equal quantities on the first day of each quarter in the calendar year. The price per unit of the commodity is ₹ 150 on which a profit of ₹ 5 per unit is expected to be made. It is anticipated by the MJK Ltd. that taking up of this contract would mean an extra recurring expenditure to ₹ 5,000 per annum. If the opportunity cost of funds in the hands of MJK Ltd. is 24% per annum, would you as a Management Accountant of the seller recommend the grant of credit to Jai & Karti? Working should form part of your answer. **(8 marks)**

**10.398****Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)****Answer:****Appraisal of credit proposal from slow players:**

$$(a) \text{ Incremental Profit} = 15,00,000 \times \frac{5}{150} = ₹ 50,000$$

$$(b) \text{ Calculation of incremental Finance Cost} = 17,975 \times 4 = ₹ 71,900$$

$$\begin{aligned} \text{Sales per quarter} &= \frac{15,00,000}{4} \\ &= ₹ 3,75,000 \end{aligned}$$

**Finance Cost per quarter:**

For 15% of bill	$3,75,000 \times 15\% \times 24\% \times \frac{30}{360}$	1,125
For 34% of bill	$3,75,000 \times 34\% \times 24\% \times \frac{60}{360}$	5,100
For 30% of bill	$3,75,000 \times 30\% \times 24\% \times \frac{90}{360}$	6,750
For 20% of bill	$3,75,000 \times 20\% \times 24\% \times \frac{100}{360}$	5,000
Finance cost per quarter		17,975

$$(c) \text{ Extra Recurring expenses} = ₹ 5,000$$

$$(d) \text{ Bad Debts} = 15,00,000 \times 1\% = ₹ 15,000$$

$$\begin{aligned} \text{Therefore, Incremental Profit} &= a-b-c-d = 50,000 - 71,900 - 5,000 - 15,000 \\ &= ₹ 41,900 \text{ (loss)} \end{aligned}$$

**Comment :** As there is incremental loss, it is advice not to extend credit facility to slow players.

\_\_\_\_\_ Space to write important points for revision \_\_\_\_\_

**2018 - June [8]** (a) The management of CAMELLIA Ltd. has called for a statement showing the working capital needed to finance a level of activity of 3,00,000 units of output for the year ended March 31, 2018, The Cost Structure for the company's product, for the above mentioned activity level, is detailed below:

	Cost per unit
Raw materials	₹ 20
Direct labour	5
Overheads	<u>15</u>
Total Cost	40
Profit	<u>10</u>
Selling price	50

Past trends indicate that the raw materials are held in stock, on an average, for two months. Work-in-process (50 per cent complete) will approximate to ½ month's production. Finished goods remain in warehouse, on an average, for 1 month. Suppliers of materials extend 1 month's credit. Two month's credit is normally allowed to debtors. A minimum cash balance of ₹ 25,000 is expected to be maintained. The production pattern is assumed to be even during the year. (12 months)

**Required:**

Prepare a statement of Working Capital determination

(7 marks)

**Answer:****Statement of Determine Net working Capital of Camellia Ltd.**

(A) Current Assets	₹	₹
(i) Raw materials (25,000 units × 2 × ₹ 20)		10,00,000
(ii) Working in process		
Raw Materials (12,500 units × ₹ 10)	1,25,000	
Direct Labour (12,500 units × ₹ 2.5)	31,250	
Overhead (12,500 units × ₹ 7.5)	93,750	2,50,000
(iii) Finished Goods (25,000 units × ₹ 40)		10,00,000
(iv) Debtors (3,00,000 × ₹ 40 × 2)/12		20,00,000
(v) Minimum Cash Balance		25,000

**10.400****■ Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)**

<b>Total</b>		42,75,000
(B) Current Liabilities		
(i) Creditors for 1 month $(3,00,000 \times ₹ 20 \times 1)/12$		5,00,000
(C) Net Working Capital (NWC) (A – B)		37,75,000

Alternatively, in work-in-process [Item A(iii) above] Raw Materials may be valued at 12,500 units  $\times ₹ 20 = ₹ 2,50,000$ . Debtors [item A (iv) above] may also be valued at  $[3,00,000 \times ₹ 50 \text{ (selling price)} \times 2]/12 = ₹ 25,00,000$ .

Calculation of Net Working Capital will change accordingly.

— Space to write important points for revision —

**2018 - Dec [8]** (a) GOLDEN GARMENT LTD. manufactures readymade garments and sells them on credit basis through a network of dealers. Its present sale is ₹ 60 lakh per annum with 20 days credit period. The company is contemplating an increase in the credit period with a view to increasing sales. Present variable costs are 70 per cent of sales and the total fixed costs ₹ 8 lakh per annum. The company expects pre-tax return on investment @ 25 per cent. Some other details are given as under:

<b>Proposed credit policy</b>	<b>Average collection period (days)</b>	<b>Expected annual sales (Amount in ₹ lakh)</b>
I	30	65
II	40	70
III	50	74

**Required:**

Which credit policy should the company adopt?

Present your answer in a tabular form. Assume 360-day a year. Calculations should be made up to two digits after decimal. Ignore taxation. **(7 marks)**



# 9A

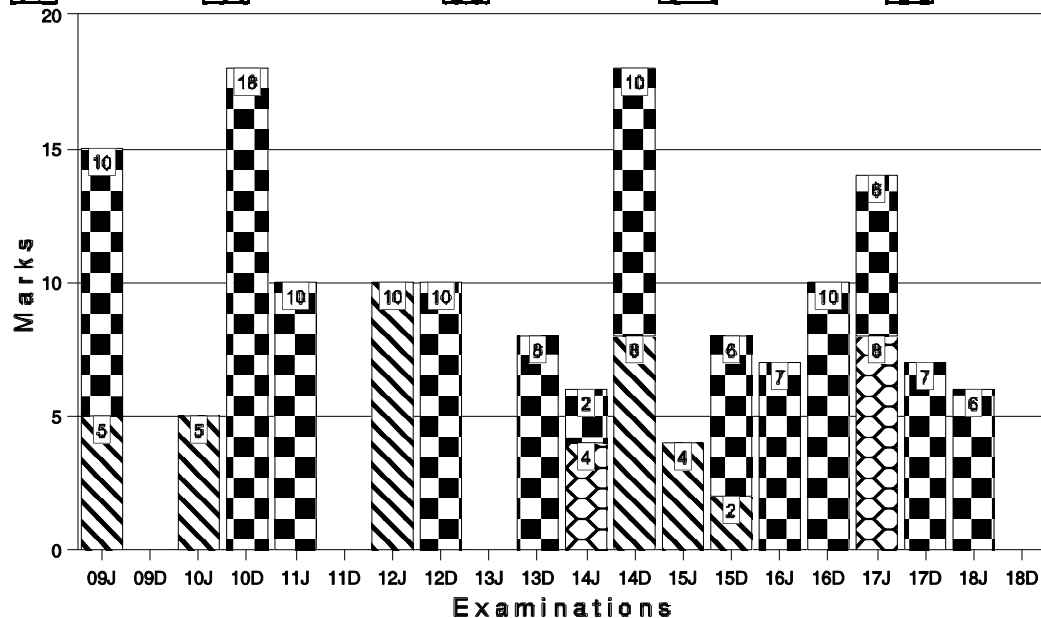
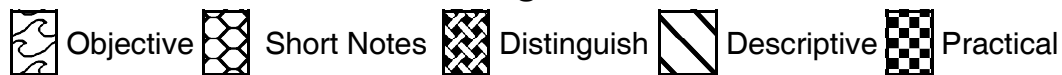
## ***COST OF CAPITAL & CAPITAL STRUCTURE***

### THIS CHAPTER INCLUDES

- Meaning of Cost of Capital
- Computation of Cost of Capital
- Importance of Cost of Capital
- Classification of Cost of Capital
- Marginal Cost of Capital
- Capital Structure Theories
- Determinants of Capital Structure
- Theories of Capital Structure

Marks of objective, Short Notes, Distinguish Between, Descriptive & Practical Questions

### Legend



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for registration and password see first page of this book.

## CHAPTER AT A GLANCE

- Cost of capital generally is used in the sense of overall cost of capital. Each component has cost to the company and is called as cost of capital.
- Cost of capital refers to the discount rate that is used in determining present value of estimated future cash proceeds of the business and eventually deciding of return that a firm must earn on its investments which will maintain the market value of share at its current level.

$$K = r_o + b + f$$

Where,  $k$  = Cost of Capital;

$r_o$  = Return at zero risk level,

$b$  = Premium for business risk, which refers to the variability in operating profit (EBIT) due to change in sales.

$f$  = Premium for financial risk which is related to the pattern of capital structure.

<b>Importance of Cost of Capital</b>	<ol style="list-style-type: none"> <li>1. It is used as a criterion in capital budgeting decision.</li> <li>2. The cost of is influenced by the capital structure change.</li> <li>3. It can be used to calculate the cost of carrying the firms' investment in receivables.</li> <li>4. It is used to evaluate the financial performance appraisal of top management.</li> </ol>
<b>Computation of Cost of Capital</b>	<p>Computation of cost capital of a firm involves the following steps:</p> <ol style="list-style-type: none"> <li>(i) Computation of cost of specific sources of a capital, viz., debt, preference capital, equity and retained earnings, and</li> <li>(ii) Computation of weighted average cost of capital</li> </ol>

**Measurement of specific sources of capital**

**(a) Cost of debenture (K<sub>d</sub>)**

(i) Cost of Irredeemable/ perpetual Debt  $K_d = \frac{I(1 - t)}{NP}$

Where, I = Interest , NP = Net proceeds and t = Tax rate

(ii) Redeemable debenture,  $K_d = \frac{I(1 - t) \frac{RV - NP}{n}}{\frac{RV + NP}{2}}$

Where, I = Interest, NP = Net proceeds, t = Tax rate,  
RV = redemption value, n = maturity period

**(b) Value of bond/debenture**

$$V_d = \frac{I_1}{(1 + k_d)^1} + \frac{I_2}{(1 + k_d)^2} + \dots + \frac{I_n}{(1 + k_d)^n} + \frac{RV_n}{(1 + k_d)^n}$$

Where, I = interest, RV = redemption value, n = maturity period

**(c) Cost of preference shares: It is not adjusted for taxes, as it is paid after tax.**

$$K_p = \frac{D_1}{MP(1 - \text{floatation cost})}$$

Where, D<sub>1</sub> = Dividend at the end of period 1, MP = market price of preference share

**(i) Irredeemable Preference shares**

$$K_p = \frac{D_1}{NP}$$

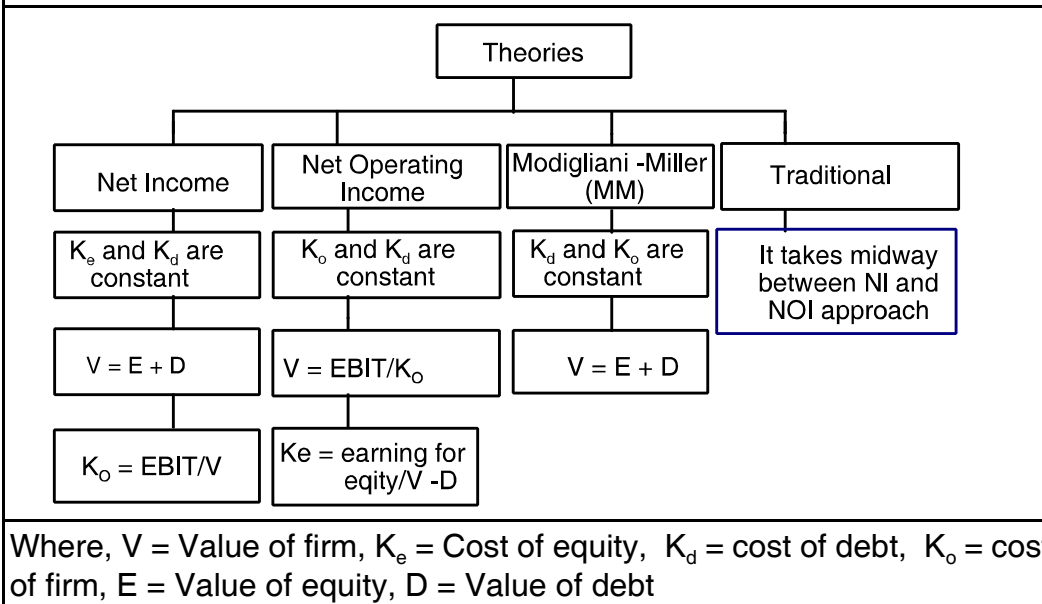
	<p>Where, <math>D_1</math> = Dividend at the end of period 1, NP = Net proceeds</p> <p><b>(ii) Redeemable Preference shares</b></p> $K_p = \frac{D_1 \frac{RV - NP}{n}}{\frac{RV + NP}{2}}$ <p>Where, <math>D_1</math> = Dividend at the end of period 1, NP = Net proceeds RV = redemption value, n = maturity period</p>	
<b>Cost of Equity</b>	It is the return which equates the PV of expected dividends with market price. It has no explicit costs.	
<b>Approach</b>	<b>Formula</b>	<b>Meaning</b>
<b>Dividend Price</b>	$K_e = \frac{D_1}{P_0 (\text{Ex - dividend})}$	Under this method cost of equity is defined as “the discount rate that equates the present value of all expected future dividends per share with the net proceeds of the sale of the share.”
<b>E/P ratio</b>	$K_e = \frac{\text{EPS}}{P_0}$	This method takes into consideration the EPS and Market value of the share.
<b>Dividend price plus growth</b>	$K_e = \frac{D_1}{P_0} + g$	Under this method an allowance for the growth in dividend is added to current dividend yield.
<b>Earning price plus growth</b>	$K_e = \frac{\text{EPS}}{P_0} + g$	Under this method an allowance for future growth in earnings is added to current earning price.

<b>Realised yield</b>	$K_e = \frac{P_1 - P_0 + D_1}{P_0}$	Under this method the average rate of return realised in the past is regarded as expected return in the future.
<b>CAPM (Capital asset price model)</b>	$K_e = r_f + (r_m - r_f)\beta$	Under this method cost of equity is divided into following: i. Risk free rate of return ii. Risk premium.
	<b>Where,</b> D1 = Dividend at the end of period 1, P0 = Price of share at period 0, P1 = Price of share at period 1 EPS = Earning per share, g = growth rate, r <sub>f</sub> = risk free rate, r <sub>m</sub> = market rate of return β = beta of security.	
<b>Cost of retained earnings</b>	When a company issues new shares it has to offer price less than the current market price of share. Cost of retained earnings will be less than cost of new equity shares. There are two approach i. $DCF = K_e = \frac{D_1}{P_0} + g$ ii. $CAPM = K_e = r_f + (r_m - r_f)\beta$	
<b>Weighted Average Cost Capital (WACC)</b>	WACC is defined as the weighted average of the cost of various sources of finance where weight is the market value of each of finance outstanding. The combined cost of equity and debt is the WACC for a company as a whole. There may be advantages and disadvantages of using debt as a capital. Company introduced debt to increase earnings of equity shareholders.	

	<p>i. Simple WACC = <math>\left[ K_e \times \frac{E}{E + D} \right] + \left[ K_d \times \frac{E}{E + D} \right]</math></p> <p>ii. WACC with tax shield = <math>\left[ K_e \times \frac{E}{E + D} \right] + \left[ K_e (1 - t) \times \frac{E}{E + D} \right]</math></p>
<b>Marginal cost of capital</b>	Marginal cost of capital is cost incurred in raising additional funds by the firm. It is calculated using marginal weights where marginal weights represent the proportion of funds the firm intends to employ. Marginal cost of capital is used as a cut-off point for new investments.
<b>Significance of capital structure</b>	Capital structure decisions affect the return and risk of a company and hence are significant to a company.
<b>Trading on equity</b>	In order to increase earnings available to equity shareholders, a firm should employ debt in its capital structure. Cost of debt is lower due to tax advantage. Also a fixed rate of return is payable to debt holders irrespective of the profit earned by firms. Any surplus received will be distributed among equity shareholders.
<b>Coverage ratio</b>	<ul style="list-style-type: none"> <li>Formula = <math>\frac{EBIT}{Interest}</math></li> <li>Interpretation – Higher the ratio more is the firm's ability to meet its interest obligations.</li> </ul>
<b>Cash flow analysis</b>	A high debt equity ratio is not risky for a company it has ability to generate cash flows.
<b>Financial break even analysis and Indifference analysis</b>	$\frac{(EBIT - I_1)(1 - t)}{E_1} = \frac{(EBIT - I_2)(1 - t)}{E_2}$ <p>Where, EBIT = Earnings before interest and tax, <math>I_1</math> = Interest charge on alternative 1</p>

$E_1$  = No. of equity shares in alternative 1,  $t$  = Tax rate  
 $I_2$  = Interest charge on alternative 2,  $E_2$  = No. of equity shares in alternative 2

### Capital structure theories



## SHORT NOTES

**2014 - June [9]** Answer the following:

(b) (i) Write a short note on the theory of net income approach relating to capital structure. **(4 marks) [CMAIG - I]**

**Answer:**

### Theory of Net Income Approach Relating to Capital Structure:

This approach was identified by David Durand. According to this approach, capital structure has relevance and a firm can increase the value of the firm and minimize the overall cost of capital by employing debt capital in its capital structure. According to this theory, greater the debt capital employed lower shall be the overall cost of capital and more shall be the value of the firm.

**This theory is subject to the following assumptions:**

- The cost of debt is less than cost of equity.
- The risk perception of investors is not affected by the use of debt. As a result, the equity capitalization rate ( $k_e$ ) and the debt - capitalization rate ( $k_d$ ) don't change with leverage.
- There are no corporate taxes.

According to the above assumptions, cost of debt is cheaper than cost of equity and they remain constant irrespective of the degree of leverage. If more debt capital is used because of its relative cheapness, the overall cost of capital declines and the value of the firm increases.

— Space to write important points for revision —

**2017 - June [10]** Write short notes on the following:

(a) Net Income Approach of Capital Structure

(b) Capital Asset Pricing Model

**(4 marks each)**

**Answer:**

**(a) Please refer 2014 - June [9] (b) (i) on page no. 407**

**(b) Capital Asset Pricing Model:**

Another technique that can be used to estimate the cost of equity is the capital asset pricing model approach. The capital asset pricing model explains the behaviour of security prices and provides a mechanism whereby investors could assess the impact of a proposed security investment on their overall portfolio risk and return. In other words, CAPM formally describes the risk required return trade off for securities.

The assumptions for CAPM approach are:

- (i) The efficiency of the security
- (ii) Investor preferences.

The capital asset pricing model describes the relationship between the required rates of return, or the cost of equity capital and the non-diversifiable or relevant risk of the firm as reflected in its index of non-diversifiable risk.

Symbolically,

$$K_e = R_f + \beta (R_m - R_f)$$



Where

$K_e$  = Cost of equity capital

$R_f$  = Risk free rate of return

$R_m$  = Return on market portfolio

$\beta$  = Beta of Security

— Space to write important points for revision —

### DESCRIPTIVE QUESTIONS

**2009 - June [2]** (a) What are the criticisms of Capital Assets Pricing Model (CAPM)? **(5 marks) [CMAIG - I]**

**Answer :**

1. It makes a number of assumptions. Being assumptions, these are away from real situation. Thus the assumptions make the model weak,
2. It does not take into account the risk free return and market rate of return are variable over a period of time. It assumes them to be constant.
3. It considers that any diversification can be done at any point of time which is not possible.

— Space to write important points for revision —

**2010 - June [2]** (a) Explain the relevancy of EBIT-EPS analysis in capital structure decisions of management. **(5 marks) [CMAIG - I]**

**Answer :**

**EBIT-EPS Analysis:** This is an important tool to analyze the impact of alternative methods of financing on the Earnings per Share (EPS) of the firm. This tool captures the sensitivity of the EPS to any changes in the Earnings Before Interest and Tax (EBIT). It gives an insight into the risk-return trade-off that governs valuation.

The relation between EBIT and EPS is as follows :

$$EPS = \frac{(EBIT - I)(1 - t)}{n}$$

Where,

I is the annual interest payment

t is the tax rate of the firm

n is the number of shares.

The EBIT Indifference Point is the level at which the EPS of the firm is same for two different capital structures. The EBIT– EPS in difference point can be mathematically represented as follows :

$$\frac{(EBIT - I_1) (1 - T)}{n_1} = \frac{(EBIT - I_2) (1 - t)}{n_2}$$

The EBIT– EPS analysis helps in understanding the impact on the earnings per share under alternative methods of financing. In case of the indifference point being lower than the expected level of EBIT, the use of debt financing is supported. The case for equity financing is stronger, if the indifference point being higher than the expected level of EBIT.

—— Space to write important points for revision ———

**2012 - June [2]** (a) “Cost of capital is used by a company as a minimum benchmark for its yield”.—Comment. Also enumerate the applications of cost of capital in managerial decisions. **(5 marks) [CMAIG - I]**

**Answer :**

Cost of capital is a term used to indicate the overall cost of all the funds of the company. It is the minimum acceptable rate of return on funds. Projects' cost of capital is different from Firm's cost of capital. A project's cost of capital is the minimum acceptable rate of return on funds committed for the project. The firm's cost of capital will be overall or average required rate of return on the aggregate of the investment projects. Thus the firm's cost of capital is not the same thing as project's cost of capital. The firm's cost of capital can be used as a standard for establishing the required rate of return of the individual investment projects. An investment project's required rate of return is equal to firm's cost of capital plus or minus a risk adjustment factor.

It is to be well understood that the cost of capital is the most difficult, disputed and debated topics in financial management. Can we use the firm's cost of capital for discounting the cash flows of an investment project ? The answer is yes if the risk related to the project is equivalent to average risk of the firm and otherwise the answer is no.

The concept of cost of capital is very important in financial decision making. It is used as a standard for :

- (i) evaluating investment decisions
- (ii) designing the debt policy of the firm
- (iii) evaluating the financial performance of top management.

**Cost of capital in investment decisions:** The cost of capital is the discount rate used for evaluating the desirability or otherwise of the project. In this context the cost of capital is the minimum required rate of return on an investment project. It is also known as cutoff rate or target rate or hurdle rate.

**Cost of capital in designing the debt policy of the firm:** The cost of capital seriously affects the debt policy of the firm. The capital structure is also influenced by cost of capital to decide what should be debt component and equity component. Every firm minimizes the overall cost of capital. The cost of capital may also be a decisive factor in deciding the methods of financing. For example an asset can be purchased with funds borrowed from bank or it can be taken on lease from the owner. The decision will involve consideration of cost of capital.

**Performance appraisal of top management :** The profits of a project must be more than the opportunity cost of funds invested into the project. The project is selected and approved by the top management and if its returns are less than the overall cost of capital of the firm, the performance of top management is not upto the mark.

**In regulating certain industries engaged directly in public utility area :** The cost of capital is very crucial in controlling the profit earning capacity of companies engaged in public utility system, like gas, electricity, telecommunication, railway, airlines etc. On the cost of capital of the firm or industry will fix the prices of the product. If the estimates are lower than standard, the company will suffer a loss and will not be able to attract the capital required by it and if the estimates are higher than standard, the customer is paying more than what she/he should pay.

**2012 - June [3]** (b) Explain briefly what is meant by Capital Asset Pricing Model (CAPM)? **(5 marks) [CMAIG - I]**

**Answer:**

The securities (security means financial instruments like shares, bonds, debentures etc) are risky because their returns are not constant but variable. The most common measure of risk is standard deviation. According to the CAPM, risk and return from a security are related in a linear function. CAPM is given by following equation:

Expected return = Risk free return + Beta x (Market return - Risk free return). Beta is a measure of security's risk which relates to market conditions. Such risks are also called market risk, non-diversifiable risk or systematic risk.

The assumptions of CAPM are as given below :

1. The number of all securities is fixed and known.
2. The investors select portfolios on the basis of risk and return. No other factors are involved.
3. All investors make decisions objectively and not subjectively. Worded differently, all investors will take same decisions under same conditions. They are homogeneous in thinking and expectations.
4. All assets of a portfolio are marketable at current price individually or collectively.
5. There are no transactions costs or taxes.
6. Holding period is same for all investors.

CAPM reflects the idea that the investor is taking risk by investing into securities and he or she should be compensated for such risk. The investor can invest into risk free asset (like fixed deposit in bank) and sleep well. This is represented by first part of risk free return of the investor. The second part of beta x (market return - risk free return) represents the compensation for investing in the securities market and taking additional risk.

—— Space to write important points for revision ———

**2014 - Dec [3]** Answer the question:

- (b) (ii) What are the assumptions of the Modigliani-Miller theory on capital structure and the overall cost of capital? **(8 marks) [CMAIG - I]**

**Answer:**

**Assumptions of the MM theory on capital structure and overall cost of capital:**

1. There is a perfect capital market. Capital markets are perfect when
  - (a) Investors are free to buy and sell securities,
  - (b) They can borrow funds without restriction at the same terms as the firms do,
  - (c) They behave rationally,
  - (d) They are well informed, and
  - (e) There are no transaction costs.
2. Firms can be classified into homogeneous risk classes. All the firms in the same risk class will have the same degree of financial risk.
3. All investors have the same expectation of a firm's net operating income (EBIT).
4. The dividend payout ratio is 100%, which means there are no retained earnings.
5. There are no corporate taxes. This assumption has been removed later.

—— Space to write important points for revision ———

**2015 - June [III]** (a) (iii) What is Marginal Cost of Capital? How is it used in decision making? **(4 marks) [CMAIG - I]**

**Answer:**

**Marginal Cost of Capital:** The weighted average cost of new or incremental capital is known as the marginal cost of capital.

**Use of Marginal Cost of Capital in decision making:** This concept is used in capital budgeting decisions. Marginal cost of capital is cost incurred in raising additional funds by the firm. It is calculated using marginal weights where marginal weights represent the proportion of funds the firm intends to employ. Marginal cost of capital is used as a cut-off point for new investments. The average cost of capital should be used to evaluate the impact of the acceptance or rejection of the entire capital expenditure on the value of the firm.

—— Space to write important points for revision ———

**2015 - Dec [I]** (g) The M-M hypothesis on capital structure assumes a perfect capital market. State 4 features of such a market assumed by the hypothesis. **(2 marks) [CMAIG - I]**

**Answer:**

The features of the capital markets assumed by MM hypothesis are:

- (i) Investors are free to buy and sell securities.
- (ii) They can borrow funds without restriction at the same to me as the firms do.
- (iii) Investors behave rationally.
- (iv) They are well informed.
- (v) These are no transaction costs.
- (vi) There is no transaction cost
- (vii) Dividend Policy has no effect on the firm's Cost of Equity.

— Space to write important points for revision —

## PRACTICAL QUESTIONS

**2008 - Dec [6]** (b) Calculate the value of the share of a company, if its beta is 1.5, the previous dividend was ₹ 2 per share, and the growth rate is expected to be 8%. The risk-free return is 10% and the market portfolio earns a return of 15%. **(5 marks)**

**(c)** The risk-free return is 6% and the return on market portfolio is 10%. If the required rate of return on stock is 13%, calculate beta.

**(5 marks) [CMAIG - I]**

**Answer :**

**(b)** Required rate of return =  $10\% + \text{beta} \times (15\% - 10\%) = 7.5\%$

Using Dividend growth model :

$$7.5\% = 2 \times 1.08 / (\text{Market price}) + \text{Growth} = 2.16/\text{MP} + 8\% \text{ Giving MP} \\ = ₹ 22.7$$

**Answer:**

**(c)** Beta is given by:  $13\% = 6\% + \text{beta} \times (10\% - 6\%)$  giving beta = 1.75.

— Space to write important points for revision —

**2009 - June [2]** (b) The capital structure of HILSON LTD. as on March 31, 2009 is given below : (Amount in ₹ lakh)

Equity shares (₹ 10 per share)	540
Reserves and surplus	360
8% Preference shares (₹ 100 per share)	180
10% Debentures (₹ 100 per debenture)	180
11% Term loans	540
	<u>1,800</u>

All these securities are traded in the Capital Markets

Recent prices are :

	₹
Ex-dividend equity share price	15
Ex-dividend 8% preference share price	120
Ex-interest 10% debenture market value	103

Additionally the following information are available:

Company's Equity Beta-1.06

Yield on long term treasury Bonds-8%

Stock market risk premium-6%

The debentures are redeemable after 3 years and interest is payable annually.

The Income -tax rate applicable to the company is 35%.

**Required :**

Using the information in the case, determine the Weighted Average Cost of Capital (WACC) of Hilson Ltd. based on market value weights.

**Note :**

(i) ignore floatation costs and transaction costs.

(ii) Extracted from the table of P.V.

Interest rate	8%	9%	10%	11%
PVIFA (3 years)	2.577	2.531	2.487	2.444
PVIF (3 years)	0.794	0.772	0.751	0.731

(1 + 1 + 1 + 2 + 5 = 10 marks) [CMAIG - I]

**Answer :**

Cost of equity capital =  $8\% + \text{beta} \times 6\% = 8\% + 1.06 \times 6\% = 14.3\%$ .

Cost of preference share =  $\text{Dividend} / \text{Market value} = 8 / 120 = 6.7\%$

Cost of Debs. = Pre-tax cost of 10% deb. =  $10 \times (1/1+k) + 10 \times (1/1+k)^2 + 110 \times (1/1+k)^3$

The cost of debentures is given as ₹ 103. K can be found out by trial and errors. It comes as 9%.

The pre-tax cost of term loan = 11% as given.

Weighted average cost of capital will be determined with respect to market values of the various components.

Market values of the component sources of capital :

	Face value	Market value	₹ Lacs	Cost %	Interest	After tax
Equity shares						
(face value : ₹10)	540	$(540/10) \times 15$	810	14.3%	115.8	115.8
Reserves and Surplus (not considered if market value of share is taken)						
8% Pref. share (₹ 100)	180	$(180/100) \times 120$	216	6.7%	14.5	14.5
10% Debentures (₹ 100)	180	$(180/100) \times 103$	185	9.0%	16.7	10.8
11% Term Loans	540	540	540	11.0%	59.4	38.6
	<u>1,440</u>		<u>1,751</u>		<u>206.4</u>	<u>179.7</u>
After tax WACC (179.7/1751)				10.3%		

— Space to write important points for revision —

**2010 - Dec [2]** (b) C. Ltd.'s current operating income is ₹ 4 lakh. The firm has ₹10 lakh of 10 percent debt outstanding. Its cost of equity capital is estimated to be 15 percent.

**Required :**

- (i) Determine the current value of the firm, using traditional valuation approach.
- (ii) Calculate the overall capitalization rate as well as both types of leverage ratio:
  - (a) B/S [Debt/Equity ratio];
  - (b) B/V [Debt/Value ratio].



- (iii) The firm is considering increasing its leverage by raising an additional ₹ 5,00,000 debt and using the proceeds to retire that amount of equity. As a result of increased financial risk,  $k_i$  is likely to go up to 12 percent and  $k_e$  to 18 percent. Would you recommend the plan?

(10 marks) [CMAIG - I]

Answer :

	₹
(i) EBIT	4,00,000
Less : Interest	<u>1,00,000</u>
Earnings for equity holders (N1)	3,00,000
Equity-capitalisation rate ( $k_e$ )	0.15
Market value of equity (S)	<u>20,00,000</u>
Market value of debt (B)	10,00,000
Total Value of firm (S + B)	<u>30,00,000</u>
(ii) Overall capitalisation rate = $EBIT/V = \frac{4,00,000}{30,00,000}$	0.1333
(a) Debt/Equity ratio (B/S)	0.5
(b) Debt/Value ratio (B/V)	0.33
(iii) EBIT	4,00,000
Less : Interest	<u>1,80,000</u>
Earnings for equity holders (N1)	2,20,000
Equity-capitalisation rate ( $k_e$ )	<u>0.18</u>
Market value of equity (S)	<u>12,22,222</u>
Market value of debt (B)	<u>15,00,000</u>
Total market value of firm (S + B) = V	<u>27,22,222</u>
The plan is not recommended as the value of the firm would decrease from ₹ 30,00,000 to ₹ 27,22,222.	

— Space to write important points for revision —

2010 - Dec [5] (a) The following particulars are available about two firms:

	Firm A	Firm B
Market price per share	₹ 75	₹ 30
Number of shares	10,00,000	5,00,000
Market value of the firm	₹ 7,50,00,000	₹ 1,50,00,000

Firm A is planning to acquire Firm B. The merger is expected to bring gains, which have present value of ₹ 1.5 crore. Firm A offers 2,50,000 shares in exchange for 5 lakh shares to the shareholders of Firm B.

Based on the above information, you are required to determine:

- (i) total value of Firm AB (Present value AB) after merger;
- (ii) gains to the shareholders of Firm A; and
- (iii) true cost of acquiring Firm B and net present value of the merger to Firm B.

**(8 marks) [CMAIG - I]**

**Answer :**

Each of the four proposals under consideration differ in their risk category as under :

- (i) **Replacement:** Bears the normal risk attached to the existing line of business. It is evaluated using the cost of capital at 9% (Grade 1)
- (ii) **Addition:** Carries a marginally higher risk in the context of other imponderables such as demand. Competition, economies of operation, etc.  $\Rightarrow$  Cost of capital  $9\% + 2\% = 11\%$  (Grade 2)
- (iii) **Acquisition of a company in a related** line of activity but effectively means moving away from existing line. So, it is evaluated as  $9\% + 6\%$  (additional) =  $15\%$  (Grade 3)
- (iv) **Movie production – totally different activity**, though possibly highly profitable and bears highest degree of risk. 25% rate is suggested. (Grade 4)

The cut-off rates are subjective, but one thing is clear. There is a gradual increase in risk level, as between project (i) and (iv).

———— Space to write important points for revision ————

**2011 - June [4]** (a) You are provided with the following estimates of cost of debt and cost of equity capital (after tax) of an organisation at various levels of debt/equity mix employed in its capital structure:

Debt as % of total

capital employed	0	10	20	30	40	50	60
Cost of debt (%)	5.0	5.0	5.0	5.5	6.0	6.5	7.0
Cost of equity (%)	12.0	12.0	12.5	13.0	14.0	16.0	20.0

Determine the optimal debt equity mix on the basis of composite cost of capital.

**(10 marks) [CMAIG - I]**

Answer :

$K_d$ (%)	$K_e$ (%)	$W_1$ (B/W)	$W_2$ (S/V) = (1 - B/V)	$K_d(W_1) + K_e(W_2)$ = $K_0$ (%)
5.0	12.0	0.0	1.0	12.00
5.0	12.0	0.1	0.9	11.30
5.0	12.5	0.2	0.8	11.00
5.5	13.0	0.3	0.7	10.75
6.0	14.0	0.4	0.6	10.80
6.5	16.0	0.5	0.5	11.25
7.0	20.0	0.6	0.4	12.20

Optimal debt-equity mix for the organisation is at a point where the composite cost of capital is minimum. When debt is 30% of the total capital employed; the  $K_0$  is minimum. Therefore, 30% debt and 70% equity mix would be an optimal debt-equity mix for the company.

— Space to write important points for revision —

**2012 - Dec [2]** (a) The following data relates to two companies belonging to the same risk class:

Particulars	X Ltd.	Y Ltd.
Expected Net Operating Income	₹ 90,00,000	₹ 90,00,000
10% debt	₹ 60,00,000	—
Equity Capitalization rate	14%	12.5%

Required:

- Determine the total value and the weighted average cost of capital for each company, assuming no taxes.
- Show the arbitrage process by which an investor who holds shares worth ₹ 90,000 in Y Ltd. will be benefitted by investing in X Ltd.
- Will he gain by investing in the undervalued firm?
- When will this arbitrage process come to an end?

(3 + 4 + 1.5 + 1.5 = 10 marks) [CMAIG - I]

**Answer:**

- (i) **Calculation of total value of Firm and weighted Average Cost of Capital**

	<b>X Ltd. (₹)</b>	<b>Y Ltd. (₹)</b>
Net Operating Income (NOI)	90,00,000	90,00,000
(–) Interest on Debt	6,00,000	—
Earnings for Eq. Shareholders (NI)	84,00,000	90,00,000
Equity Capitalization rate (Ke)	0.14	0.125
Market Value of Equity (\$) [NI/Ke]	6,00,00,000	7,20,00,000
Market Value of Debt (D)	60,00,000	—
Total Value of Firm (V)	6,60,00,000	7,20,00,000
Weighted average cost of Capital (Ko) = (Ke x S/V + Kd x D/V)	0.13636	0.12500
WACC	13.636%	12.50%

- (ii) The investor will sell his investment in overvalued firm (Y Ltd. in this case) and will purchase shares in undervalued firm. According to MM approach, this process will continue till the values of both the firm are identical.

**Arbitrage Process:**

**A. Investor present position in overvalued firm**

	₹
Market value of investment	90,000
Dividend of Income (12.5% of 90,000)	11,250
B. He sells his present equity holdings for	90,000
C. He purchases equity of under-valued firm	
[90,000 / 7,20,00,000 x 6,00,00,000]	75,000
He purchases Debt (90,000 / 7,20,00,000 x 60,00,000)	<u>7,500</u>
Total Investment	82,500
D. His Net Income after switching:	
Dividend Income (14% of ₹ 75,000)	10,500
Interest on Income of Debt (10% on 7,500)	<u>750</u>
Net Income	11,250
Reduced out lay = 90,000 – 82,500 = ₹ 7,500	

- (iii) He will gain by investing in undervalued firm, since the same amount of present income can be earned by investing ₹ 82,500 which is less than the present investment of ₹ 90,000.
- (iv) According to Modigliani and Miller, this arbitrage process will come to an end, when the values of both the companies become identical.

— Space to write important points for revision —

**2013 - Dec [7]** (b) The capital structure of J Ltd. is as under:

	₹
Equity shares @ ₹ 10 each	1,00,00,000
9% Preference Shares @ ₹ 100 each	30,00,000
14% Debentures @ ₹ 100 each	70,00,000

The market price of these securities are:

Equity Shares	35 per share
Preference Share	120 per share
Debentures	110 per debenture

Other information are:

- (i) Equity shares have a floatation cost of ₹ 5 per share. The next year's expected dividend is ₹ 3 with annual growth of 5%. The company pays all earnings in the form of dividends.
- (ii) Preference Shares are redeemable at a premium of 10%, have 2% floatation cost and 10 year maturity.
- (iii) Debentures are redeemable at par, have 4% floatation and 10 per year maturity.
- (iv) Corporate tax rate is 30%.

You are required to calculate the weighted average cost of capital using (i) book value weights and (ii) market value weights. **(8 marks) [CMAIG - I]**

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**Answer:**

$$\begin{aligned}\text{Cost of Debt (K}_d\text{)} &= \frac{1(1-t) + \frac{RV - NS}{N}}{\frac{RV + NS}{2}} \times 100 \\ &= \frac{14(1 - 0.30) + \frac{100 - 96}{10}}{\frac{100 + 96}{2}} \times 100 \\ &= \frac{9.8 + 0.4}{98} \times 100 = 10.41\%\end{aligned}$$

$$\begin{aligned}\text{Cost of preference capital (k}_p\text{)} &= \frac{\text{Pref. dividend} + \frac{RV - NS}{N}}{\frac{RV + NS}{2}} \times 100 \\ &= \frac{9 + \frac{110 - 98}{10}}{\frac{110 + 98}{2}} \times 100 \\ &= \frac{10.20}{104} \times 100 = 9.81\%\end{aligned}$$

$$\begin{aligned}\text{Cost of capital (K}_e\text{)} &= \frac{D}{\text{Net saleproceeds}} \times 100 + \text{Growth (G)} \\ &= \frac{3}{35 - 5} \times 100 + 5\% \\ &= 10\% + 5\% = 15\%\end{aligned}$$

**Calculation of WACC using book value weights**

Source of Capital	Book value (₹)	Weight (w)	Specification (k)	WACC
14% Debenture	70,00,000	0.35	10.41%	3.6435
9% Preference Shares	30,00,000	0.15	9.81%	1.4715
Equity Shares	1,00,00,000	0.50	15%	7.5000
	2,00,00,000	1.00		<b>12.615%</b>

## Calculation of WACC using Market value weights

Source of Capital	Book value (₹)	Weight (w)	Specification (k)	WACC
14% Debentures	77,00,000	0.16631	10.41%	1.73129
9% Preference Shares	36,00,000	0.07775	9.81%	0.76273
Equity Shares	3,50,00,000	0.75584	15%	11.3391
	4,63.00,000	1.00		<b>13.833%</b>

— Space to write important points for revision —

**2014 - June [6] {C}** Answer the following. (No credit will be given for answer without the reasoning)

(b) Cost of debt is 9% after tax. Cost of equity is 12% at zero leverage and it keeps increasing as leverage grows. Find the weighted average cost of capital at 60% debt proportion under the Net Operating Income Approach.

**(2 marks) [CMAIG - I]**

**Answer:**

According to Net Operating Income Approach, financial mix does not affect WACC. The cost of equity at zero leverage will be the WACC i.e. 12% always.

— Space to write important points for revision —

**2014 - Dec [1]** Answer the question:

(g) M. Ltd. does not use any debt in its capital structure. The company has earnings before interest and tax of ₹ 2,00,000 per annum and the capitalization rate is 12%. Assume corporate tax of 30%. Calculate the value of the firm according to MM Hypothesis. **(2 marks) [CMAIG - I]**

**Answer:**

Given EBIT = ₹ 2,00,000 ,  $K_e = 12\%$  , corporate tax = 30%

As per MM hypothesis , value of unlevered firm =  $\frac{EBIT}{K_0} (1 - t)$

**10.424****■ Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)**

$$\begin{aligned} &= \frac{2,00,000}{0.12} \times (1 - 0.30) \\ &= ₹ 11,66,667 \end{aligned}$$

—— Space to write important points for revision ———

**2014 - Dec [3]** Answer the question:

(a)(ii) The following is the capital structure of P Ltd. as on 31<sup>st</sup> March, 2014:

6,00,000 equity shares at ₹ 10 each fully paid

10,000 9% preference shares of ₹ 100 each fully paid

30,000 12% debentures of ₹ 100 each

The equity share sells at ₹ 20 per share. The dividend expected next year is ₹ 2.5 per share, which is expected to grow at 5% per annum forever. Corporate tax rate is 30%.

- (a) Compute the weighted average cost of capital based on the existing capital structure.
- (b) If the company raises an additional debt of ₹ 25,00,000 by issuing 14% debentures, resulting in increasing the expectation on equity dividend to ₹ 2.70 per share and leaving the growth rate unchanged and the fall in equity share price to ₹ 18 per share, find the revised weighted average cost capital.

**(8 marks) [CMAIG - I]**

**Answer:**

(a)  $K_d = 12(1-0.30) = 8.4\%$

$K_p = 9\%$

$$K_e = \frac{D_1}{P_0} + g$$

$$\frac{2.5}{20} + 0.05 = 17.5\%$$



Sources	Amount ₹	Weights	Cost of capital	K <sub>o</sub>
12% Debentures	30,00,000	0.30	8.4%	2.52
Preference shares	10,00,000	0.10	9%	0.90
Equity shares	60,00,000	0.60	17.5%	10.50
	<b>1,00,00,000</b>			<b>13.92</b>

**Weighted average cost of capital = 13.92%**

(b)  $K_e = \frac{D_1}{P_0} + g$

$= \frac{270}{18} + 5 = 20\%$

Additional debt ₹ 25,00,000

Sources	Amount ₹	Weights	Cost of capital	K <sub>o</sub>
12% Debentures	3000000	0.24	8.4%	2.016
14% Debentures	2500000	0.2	9.8%	1.96
Preference shares	1000000	0.08	9%	0.72
Equity shares	6000000	0.48	20%	9.6
	<b>12500000</b>			<b>14.3</b>

**Weighted average cost of capital = 14.30%**

— Space to write important points for revision —

**2015 - Dec [I]** (c) G Ltd. issues 20,000, 12% debentures of ₹ 100 each at premium of 10 per cent. The debentures are redeemable after the expiry of a fixed period of 10 years at 20 per cent premium. Calculate the cost of debt after 30% tax. **(2 marks) [CMAIG - I]**

**10.426****■ Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)****Answer:**

$$\begin{aligned}\text{Cost of debt (K}_d\text{)} &= \frac{12(1 - 0.30) + \left( \frac{120 - 110}{10} \right)}{\left( \frac{120 + 110}{2} \right)} \times 100 \\ &= \frac{(8.4 + 1)}{115} \times 100 \\ &= 8.17\%\end{aligned}$$

\_\_\_\_\_ Space to write important points for revision \_\_\_\_\_

**2015 - Dec [III]** (a) (2) A company has earnings of ₹ 5,00,000. The capital structure of the company has debt and equity in which debt of ₹ 8,00,000 is borrowed at 10%. The cost of equity capital is currently 12.5%. Calculate the value of the firm and overall cost of capital by the net income approach. Ignore taxes. Take market value of debt at par. **(4 marks) [CMAIG - I]**

**Answer:**

$$\begin{aligned}\text{EBIT} &= 5,00,000 \\ \text{Interest} &= 8,00,000 \times 10\% \\ &= ₹ 80,000 \\ \text{Equity Earnings} &= 5,00,000 - 80,000 \\ &= ₹ 4,20,000 \\ \text{Value of equity} &= \frac{4,20,000}{12.5\%} = ₹ 33,60,000 \\ \text{Value of debt} &= ₹ 8,00,000 \\ \text{Value of firm} &= 33,60,000 + 8,00,000 = ₹ 41,60,000 \\ \text{Overall Cost of Capital (K}_o\text{)} &= \left( \frac{12.5 \times 33,60,000}{41,60,000} \right) + \left( \frac{10 \times 8,00,000}{41,60,000} \right) \\ K_o &= 12.02\%\end{aligned}$$

\_\_\_\_\_ Space to write important points for revision \_\_\_\_\_

**2016 - June [7]** (b) ABC Ltd. has the following book value capital structure as on 31<sup>st</sup> March, 2016:

Particulars	Amount ₹
Equity share capital	40,00,000
11.5% Preference shares	10,00,000
10% Debentures	30,00,000
	<u>80,00,000</u>

The equity share of the company sells for ₹ 20. It is expected that next year the company will pay a dividend of ₹ 2 per equity share, which is expected to grow at 5% p.a. forever. Assume a 35% corporate tax rate.

Using book value weight:

- Compute weighted average cost of capital (WACC) of the company based on the existing capital structure.
- Compute the new WACC, if the company raises an additional ₹ 20 lakhs debt by issuing 12% debentures, at par ₹ 100 which would result in increasing the expected equity dividend to ₹ 2.40 and leave the growth rate unchanged, but the price of equity share will fall to ₹ 16 per share.

(7 marks) [CMAIG - I]

**Answer:**

**WACC based on existing capital structure:**

- Cost of equity capital =  $2/20 + 0.05$  = 0.15 or 15%
- Cost of preference share capital =  $11.5/100$  = 0.115 or 11.5%
- Cost of debentures =  $10\% (1 - 0.35)$  = 6.5%

**WACC (based on book values):**

Source of Capital	Book Values (₹)	Weight	Post-tax Cost	Weighted Cost %
Equity Share Capital	40,00,000	0.500	15	7.50
Preference Share Capital	10,00,000	0.125	11.5	1.44 or 1.4375

10.428

■ Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)

10% Debentures	30,00,000	0.375	6.50	2.44 or 2.4375
Total	80,00,000	1.000		11.38 or 11.375

**WACC (based revised capital structure):**

- (i) Cost of equity capital =  $2.40/16 + 0.05 = 0.20$  or 20%  
(ii) Cost of preference share capital =  $11.5/100 = 0.115$  or 11.5%  
(iii) Cost of 10% debentures =  $10\% (1-0.35) = 6.5\%$   
(iv) Cost of 12% debentures =  $12\% (1-0.35) = 7.8\%$

**WACC (based on book values, after raising additional finance by issue of 12% debentures):**

Source of Capital	Book Values (₹)	Weight	Post-tax Cost	Weighted Cost %
Equity Share Capital	40,00,000	0.400	20	8.00
Preference Share Capital	10,00,000	0.100	11.5	1.15
10% Debentures	30,00,000	0.300	6.50	1.95
12% Debentures	20,00,000	0.200	7.80	1.56
Total	1,00,00,000	1.000		12.66

———— Space to write important points for revision ————

**2016 - Dec [6]** (a) Companies X, Y and Z Ltd. have the following information with a common expectation of 15% return on investment.

Details	X Ltd.	Y Ltd.	Z Ltd.
EBIT (₹)	20,00,000	20,00,000	20,00,000
No. of equity shares	3,00,000	2,50,000	2,50,000
12% Debentures	—	15,00,000	18,00,000

Find the value of each firm and the value per equity share for each firm under the Modigliani-Miller Approach for each of the following situations:

(i) Assuming there are no taxes.

(ii) Assuming 50% tax rate.

(10 marks) [CMAIG - I]

**Answer:**

(i) **Assuming no taxes**

Particulars	X	Y	Z
EBIT (₹)	20,00,000	20,00,000	20,00,000
Value of the Firm (EBIT/15%)	1,33,33,333	1,33,33,333	1,33,33,333
Less: Value of Debt	—	15,00,000	18,00,000
Value of Equity	1,33,33,333	1,18,33,333	1,15,33,333
No. of Equity Shares	3,00,000	2,50,000	2,50,000
Value per Equity Share	44.44	47.33	46.13

(ii) **Assuming 50% tax rate**

Particulars	X	Y	Z
EBIT (₹)	20,00,000	20,00,000	20,00,000
Less: Interest	—	1,80,000	2,16,000
EAT= PBT	20,00,000	18,20,000	17,84,000
Taxes (50%)	10,00,000	9,10,000	8,92,000
PAT	10,00,000	9,10,000	8,92,000
Equity Capitalisation @ rate 15% = Value of unlevered firm	66,66,667		
Value of the firm = Value of unlevered firm + Debt (Tax rate)		66,66,667 + 15,00,000 × .5 = 74,16,667	66,66,667 + 18,00,000 × .5 = 75,66,667
Value per equity share = (Value of the firm – value of Debt)/no. of shares	66,66,667/3,00,000 = 22.22	59,16,667/2,50,000 = 23.67	57,66,667/2,50,000 = 23.07

10.430

## Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)

According to MM Hypothesis, this difference in share value will give rise to arbitrage and equilibrium will be reached where all the three firms will have the same market value proving their hypothesis that value of the firm is independent of leverage.

— Space to write important points for revision —

**2017 - June [9]** (a) A company issued 10,000, 10% Preference Share of ₹ 10 each, cost of issue is ₹ 2 per share. Calculate cost of capital, assuming that the shares are issued (a) at par, (b) at 10% premium, and (c) at 5% discount. **(6 marks)**

**Answer:**

(a) Cost of preference capital,  $(K_p) = D/NP$

Where,  $K_p$  = Cost of preference capital  $D$  = Annual preference dividend

$NP$  = Net proceeds of preference shares.

When issued at par:  $(₹ 10,000/10,000 \times 8) \times 100 = 12.5\%$

(b) When issued at 10% premium:  $(₹ 10,000/10,000 \times 9) \times 100 = 11.11\%$

(c) When issued at 5% discount:  $(₹ 10,000/10,000 \times 7.5) \times 100 = 11.11\%$   
 $= 13.33\%$

— Space to write important points for revision —

**2017 - Dec [9]** (a) Given below is the Statement of Assets and Liabilities of a company as at 31<sup>st</sup> December, 2016.

<b>Liabilities</b>	<b>₹</b>	<b>Assets</b>	<b>₹</b>
Equity share capital		Fixed Assets	6,00,000
40000 shares of ₹ 100 each	4,00,000	Investments	1,00,000
Reserve and surplus	2,60,000	Current assets	2,80,000
8% debentures	1,70,000		
<i>Current Liabilities</i>			
Short term loans	1,00,000		
Trade creditors	50,000		
	<u>9,80,000</u>		<u>9,80,000</u>

Calculate the company's weighed average cost of capital using balance sheet valuations. The following additional information are also available.

- (i) 8% Debentures were issued at par.
- (ii) All interests payments are up to date and equity dividend is currently 12%.
- (iii) Short term loan carries interest at 18% p.a.
- (iv) The shares and debentures of the company are quoted on the Calcutta Stock Exchange and current Market Prices are as follows:  
Equity Shares at ₹ 14 each and 8% Debentures at ₹ 98 each.
- (v) The rate of tax for the company may be taken at 50%. **(7 marks)**

**Answer:**

**Calculation of the Cost of Equity:**

	₹
Equity Share	4,00,000
Reserves and Surplus	2,60,000
Equity (Shareholder's) Fund	6,60,000
Book Value Per Share	$= 6,60,000/40,000 = ₹ 16.50.$
Equity Dividend Per Share	$= 12/100 \times 10 = ₹ 1.20$
Therefore, Cost of Equity (%)	$= 1.20/16.50 \times 100 = 7.273\%$

**Computation of Weighted Average Cost of Capital:  
Capital Structure or**

Type of Capital	Amount (₹)	Before Tax	After Tax	Weighted Average Cost %
Equity funds	6,60,000	7.273%	7.273%	48,000
Debentures	1,70,000	8%	4%	6,800
Total	8,30,000		54,800	

Weighted Average Cost of Capital  $= 54,800/8,30,000 \times 100 = 6.602\%$

— Space to write important points for revision —

**10.432****■ Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)**

**2018 - June [9]** (a) The CMD Ltd. has the following specific cost of capital along with the indicated book and market value weights:

Type of Capital	Cost	Book value weights	Market value weights
Equity	0.18	0.50	0.58
Preference shares	0.15	0.20	0.17
Long-term debt	0.07	<u>0.30</u>	<u>0.25</u>
		1.00	1.00

**Required:**

- Calculate the weighted cost of capital, using book and market value weights.
- Calculate the weighted average cost of capital, using marginal weights, if the company intends to raise the needed funds using 50 per cent long-term debt, 35 per cent preference shares and 15 per cent retained earnings.

Note: Ignore Taxation

**(6 marks)**

**Answer:**

- $K_o$  based on book value (BV) weights and market value (MV) weights:**

Sources of Capital	Weights		Cost	Total Cost	
	BV	MV		(BV×K)	(MV × K)
Equity Funds	0.50	0.58	0.18	0.090	0.1044
Preference Shares	0.20	0.17	0.15	0.030	0.0255
Long-term debt	0.30	0.25	0.07	0.021	0.0175
				0.141	0.1474

$K_o$  based on BV weights – 14.1 per cent.

$K_o$  based on MV weights – 14.7 per cent.



(ii)  $K_0$  using marginal weights

Sources of Capital	Weights (W)	Cost (K)	Total Cost (W×K)
Long-term Debt	0.50	0.07	0.0350
Preference Shares	0.35	0.15	0.0525
Retained Earnings	0.15	0.18	0.1145

 $K_0 = 11.45$  per cent.

— Space to write important points for revision —

Repeatedly Asked Questions		
No.	Question	Frequency
1	Write short note on Net Income Approach of Capital Structure. 14 - June [9] [b] (i), 17 - June [10] (a)	2 Times
2	Write short note on Capital Asset Pricing Model. 12 - June [3] (b), 17 - June [10] (b)	2 Times

[illegible]

# 9B






## DIVIDEND DECISIONS

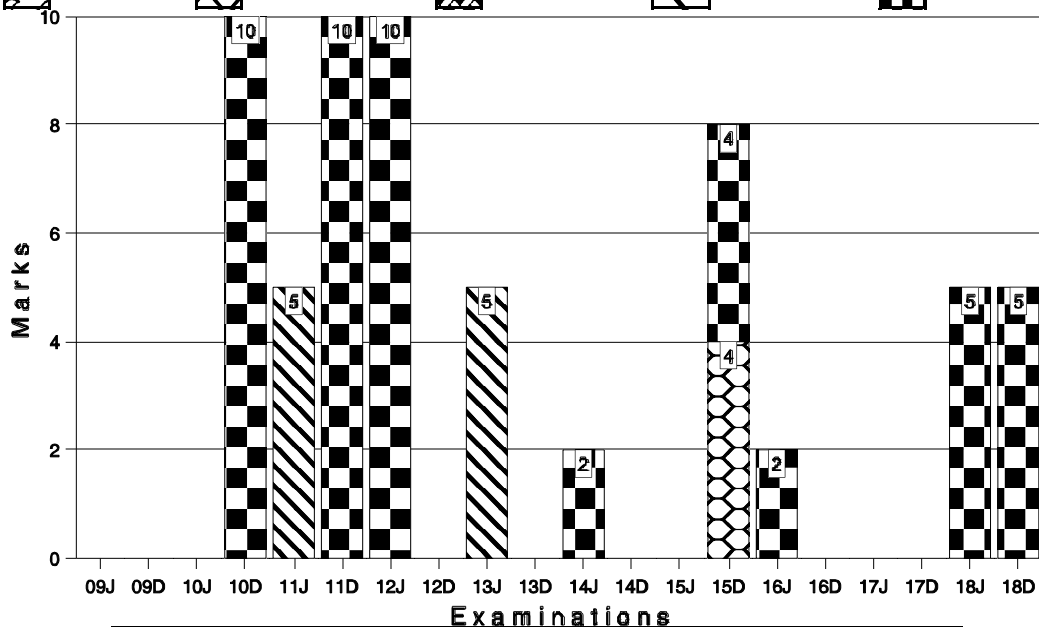
### THIS CHAPTER INCLUDES

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>Dividend Policy</li> <li>Dividend Models</li> <li>Graham &amp; Dodd Model (Traditional model)</li> <li>Walter model</li> <li>MM model [Dividend Irrelevancy Model]</li> </ul> | <ul style="list-style-type: none"> <li>Residual model</li> <li>Dividend Discount Model</li> <li>Measures of Dividend Policy</li> <li>Determinants of Dividend Policy</li> <li>Tax Considerations</li> </ul> |
|--|---|

Marks of objective, Short Notes, Distinguish Between, Descriptive & Practical Questions

### Legend

 Objective
  Short Notes
  Distinguish
  Descriptive
  Practical



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for registration and password see first page of this book.

## CHAPTER AT A GLANCE

<b>Types of Dividend</b>	<ol style="list-style-type: none"> <li>1. <b>Interim dividend:</b> It is declared between two Annual General Meetings i.e. before the declaration of final dividend.</li> <li>2. <b>Final dividend:</b> The dividend declared by BOD, to be paid to the shareholders at the end of Accounting period.</li> <li>3. <b>Preference dividend:</b> The preference shareholders are paid fixed rate of dividend before any dividend is paid to equity shareholders. They may receive both interim or final dividend.</li> </ol>
<b>Procedure</b>	<p>Date of declaration of dividend → Dividend declaration date</p> <p>Date on which trading starts without the right to receive the dividend declared → Ex-dividend rate</p> <p>Date on which warrants are delivered to shareholders → Payment date</p>
<b>Notes</b>	<ul style="list-style-type: none"> <li>❖ Dividend Rate = <math>\frac{\text{Dividend per share}}{\text{Face value}} \times 100</math></li> <li>❖ Dividend Yield = <math>\frac{\text{Dividend per share}}{\text{Current market price}} \times 100</math></li> <li>❖ Dividend Payout = <math>\frac{\text{Dividend per share}}{\text{Earning per share}} \times 100</math></li> </ul>
<b>Dividend Policy</b>	The objective of Dividend policy is to maximize the wealth of shareholders. Dividend Policy determines the division of earnings between shareholders and reinvestment in the firm.

<b>Walter's Model</b>	<p><i>According to Walter</i></p> <ul style="list-style-type: none"> <li>❖ Dividend can be used to maximize wealth.</li> <li>❖ In long run share price reflects only present value of expected dividends.</li> <li>❖ Two factors which influence the market price are:               <ul style="list-style-type: none"> <li>(a) Dividend pay out ratio.</li> <li>(b) Relation b/w internal rate of return &amp; cost of equity.</li> </ul> </li> </ul> <p><i>Formula</i></p> $P_0 = \frac{D_1}{K_e} + \frac{r/K_e (E - D)}{K_e}$ <p>Where,</p> <p>Po = Market Price  D<sub>1</sub> = Dividend  E = Earnings  r = Return on investment  K<sub>e</sub> = Cost of Equity</p>								
	<table border="1"> <thead> <tr> <th><i>If</i></th><th><i>Dividend payout ratio</i></th></tr> </thead> <tbody> <tr> <td>r &gt; K<sub>e</sub></td><td>Nil (Growth firm)</td></tr> <tr> <td>r = K<sub>e</sub></td><td>Indifferent (Constant firm)</td></tr> <tr> <td>r &lt; K<sub>e</sub></td><td>100% (Declining firm)</td></tr> </tbody> </table>	<i>If</i>	<i>Dividend payout ratio</i>	r > K <sub>e</sub>	Nil (Growth firm)	r = K <sub>e</sub>	Indifferent (Constant firm)	r < K <sub>e</sub>	100% (Declining firm)
<i>If</i>	<i>Dividend payout ratio</i>								
r > K <sub>e</sub>	Nil (Growth firm)								
r = K <sub>e</sub>	Indifferent (Constant firm)								
r < K <sub>e</sub>	100% (Declining firm)								
<b>Gordon Model</b>	<p><i>According to Gordon</i></p> <ul style="list-style-type: none"> <li>❖ Market price of share is equal to present value of future dividend.</li> <li>❖ Growth is a function of retained earnings (b), &amp; return on capital (r).</li> </ul> <p style="text-align: right;">g = br</p> <p><i>Formula</i></p> $P_0 = \frac{D_0 (1 + g)}{K_e - g}$								

	<p>Or</p> $P_0 = \frac{D_1}{K_e - g}$ <p>Where,</p> <p><math>D_1</math> = Expected dividend</p> <p><math>K_e</math> = Cost of equity</p> <p><math>g</math> = Growth rate of dividends.</p>	
	<i>If</i>	<i>Dividend payout ratio</i>
	$r > K_e$	Nil (Growth firm)
	$r = K_e$	Indifferent (Constant firm)
	$r < K_e$	100% (Declining firm)
<b>Traditional Model (Graham &amp; DODD)</b>	<p>❖ According to them liberal policy of paying dividend increases the value of stock.</p> <p><i>Formula</i></p> $P = m (D + E/3)$ <p>Where</p> <p><math>P</math> = Market price</p> <p><math>m</math> = Multiplier</p> <p><math>D</math> = Dividend</p> <p>Also,</p> $P = m \{D + (D + b)/3\}$ $P = m (4D + b)/3 \text{ or}$ $P = m (4E/3 + b)$	
<b>Modigliani &amp; Miller Theory</b>	<p>❖ The price of equity share of firm depends on its earning power.</p> <p>❖ It does not depend on dividend or retained earnings.</p> <p>❖ If a company retains earnings, shareholders earn capital appreciation equal to retained earnings.</p> <p>❖ If shareholders receive dividend, they enjoy dividend equal to capital appreciation.</p> <p>❖ So dividend &amp; retained earnings are irrelevant.</p>	

	<p><i>Formula</i></p> $P_0 = \frac{P_1 + D_1}{1 + K_e}$ <p>Where,</p> <p><math>P_1</math> = Market price of share at the end of period 1  <math>D_1</math> = Dividend received at the end of period 1  <math>K_e</math> = Cost of equity</p> $nP_0 = \frac{(n + m) P_1 - I_1 + X_1}{1 + K_e}$ <p><math>n</math> = Present no. of shares  <math>m</math> = Additional no. of shares.  <math>I_1</math> = Investment made at the end of year 1  <math>X_1</math> = Earning for year 1</p>
<b>Determinants of dividend policy</b>	<p>(a) Dividend payout ratio  (b) Stability of dividends  (c) Legal consideration  (d) Tax consideration  (e) Inflation</p>
<b>DIVIDEND DATES</b>	<ol style="list-style-type: none"> <li>1. <b>Declaration date:</b> The date on which board of directors declare dividend is called the declaration date.</li> <li>2. <b>Record date:</b> Record date, is that date when the company closes its stock transfer books and makes up a list of the shareholders for payment of dividends.</li> <li>3. <b>Ex-dividend date:</b> It is that date notified by the stock exchange, as a date which will entail a buyer of shares, the dividend, if bought before the ex-dividend date. This date sets up the convention of declaring that the right to the dividend remains with the stock until 'x' days prior to the Record date. Thus whoever buys share on or beyond the ex-dividend date are not entitled to dividend.</li> <li>4. <b>Payment date:</b> The date on which the company mails the cheques to the recorded holders.</li> </ol>

**SHORT NOTES**

**2015 - Dec [III]** (b) (3) Write a short note on the Dividend Irrelevance Theory of Modigliani and Miller. **(4 marks) [CMAIG - I]**

**Answer:**

**Dividend Irrelevance Theory of Modigliani and Miller:** This model explains the irrelevance of the dividend policy. When profits are used to declare dividends, the market price increases. At the same time there is a fall in the reserves for reinvestment. Hence for expansion, the company raises additional capital by issuing new shares; increase in the overall number of shares will lead to a fall in the market price per share. Hence the shareholders will be indifferent towards the dividend policy.

**Modigliani and Miller stated the reason:** The value of the firm is determined by its basic earnings power and its risk class, and therefore, the firm's value depend on its asset investment policy rather than on how earnings are split between dividends and retained earnings.

— Space to write important points for revision —

**DESCRIPTIVE QUESTIONS**

**2011 - June [2]** (b) Discuss the important factors that determine the dividend policy of a company. **(5 marks) [CMAIG - I]**

**Answer :**

Factors determining the Dividend Policy of a company:

- (i) Cash flow situation of the company based on its current and future needs of funds.
- (ii) Expectation of shareholders and performance by similar industries.
- (iii) Constraints in payment of dividend, legal requirements.

10.440

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- (iv) Investment opportunities available to the company.
- (v) Trends in capital market.
- (vi) Ownership pattern of the company.

—— Space to write important points for revision ———

**2013 - June [5]** (b) Discuss the important factors that affect the dividend policy of a firm. **(5 marks) [CMAIG - I]**

**Answer:**

Factors determining the Dividend policy of a company:

- (a) Dividend payout ratio
- (b) Company's liquidity position
- (c) Expected rate of returns
- (d) Stability of earning
- (e) Expectation of shareholders and performance by similar industries.
- (f) Constraints in payment of Dividend, Legal requirements
- (g) Investment opportunities available to the company and its benefits vis-a-vis funding requirement
- (h) Access to the capital market
- (i) Shareholders individual tax situation
- (j) Ownership pattern of the company.

—— Space to write important points for revision ———

## PRACTICAL QUESTIONS

**2010 - Dec [3]** (a) Sarvesh Ltd. is planning to start a major restructuring plan. If the restructuring plan is undertaken, it will reduce the EPS of the company to ₹ 6.50, but will enhance the payout rate to 75%. The restructuring plan will enable the company to pay dividend that is expected to grow at the rate of 22% for the next 4 years and decline to 11% and remain at that level forever.



The risk free rate of return is 5% per annum and the market return is expected to be 12% with a standard deviation of 12.5%. The covariance of Sarvesh's stock with that of market is 175%.

You are required to calculate the price of the stock, if the restructuring is undertaken by the company. (10 marks) [CMAIG - I]

**Answer:**

EPS = 6.5    Payout rate = 75%

DPS =  $0.75 \times 6.5 = 4.875$

$$\text{Beta} = \frac{\text{Cov}_{im}}{\sigma_m^2} = \frac{175}{(12.5)^2} = 1.12$$

$$K_e = R_f + \beta (R_m - R_f)$$

Required rate of return =  $5 + 1.12(12 - 5) = 12.84\%$

Value of stock can be calculated using H Model

$$\begin{aligned} V_0 &= D_0 \left[ \frac{(1 + g_n) + H(g_a - g_n)}{k_e - g_n} \right] \\ &= 4.875 \left[ \frac{1 + 0.11 + 4(0.22 - 0.11)}{0.1284 - 0.11} \right] = ₹ 410.67 \end{aligned}$$

— Space to write important points for revision —

**2011 - Dec [6]** (a) A company expects to generate the following net income and incur the following capex in the next five years:

Year	1	2	3	4	5
<b>₹ (crore)</b>					
NP	75	60	45	40	25
Capex	40	45	55	47	50

The total number of outstanding shares are 18,00,000 and the current dividend is ₹ 6.50 per share.

**Required:**

- (i) Determine the dividend per share if the firm follows a residual dividend policy.
- (ii) Determine the external financing needed if the current dividend is maintained.

**10.442****Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)**

- (iii) Determine the external financing required if the company maintains a 50% dividend payout ratio.
- (iv) Under which of the above is the external need of funds maximized ?

**(2.5 × 4 = 10 marks) [CMAIG - I]****Answer :**

Year	1	2	3	4	5	Total
N/P (₹ in crore)	75	60	45	40	25	
CAPEX (₹ in crore)	40	45	55	47	50	
(i) Residual Income (₹ in crore)	35	15	–	–	–	50
External funds (₹ In crore)	–	–	10	7	25	42
Dividend per share (₹)	194.44	83.33	Nil	Nil	Nil	277.77
(ii) Current dividend (₹ in crore)	1.17	1.17	1.17	1.17	1.17	5.85
External fund required (₹ in crore)	0	0	11.17	8.17	26.17	45.51
(iii) Dividend @ 50% (₹ In crore)	37.5	30	22.5	20	12.5	122.5
External funds (₹ in crore)	2.5	15	32.5	27	37.5	114.5

- (iv) Maximum external funds are required when dividend rate is 50%.

— Space to write important points for revision —

**2012 - June [2]** (b) National Textile Corporation belongs to a risk-class for which the appropriate PE ratio is 15. It currently has 75,000 outstanding shares selling at ₹ 150 each. The corporation is contemplating declaration of dividend @ ₹ 12 per share at the end of the current fiscal year, which has just started. Given the assumption of Modigliani-Miller approach, answer the following questions:

- (i) What will be the price of the share at the end of the year, if:
- (a) dividend is not declared?
- (b) dividend is declared?
- (ii) Assuming that the corporation pays dividend, has net income of ₹ 7,50,000 and makes new investments of ₹ 15,00,000 during the period, how many new shares must be issued?
- (iii) What would be the current value of the corporation, if:
- (a) dividend is declared?
- (b) dividend is not declared?

**(3 + 3 + 4 = 10 marks) [CMAIG - I]**

**Answer :**

Given,

P/E Ratio	=	15
n	=	75000 shares
$P_o$	=	150
$D_1$	=	₹ 12
E	=	₹ 7,50,000
I(Investment)	=	₹ 15,00,000
$K_e$	=	$1/(P/E \text{ Ratio})$ .

(i) (a) If dividend not declared:

$$P_o = (D_1 + P_1)/(1 + K_e)$$

$$D_1 = 0, \therefore P_o = P_1/(1 + K_e); \text{ or, } P_1 = P_o(1 + K_e)$$

$$\therefore P_1 = 150 \left( 1 + \frac{1}{15} \right); \text{ or } P_1 = ₹ 160.$$

(b) If dividend declared :

$$\text{Then, } P_o = (D_1 + P_1)/(1 + K_e)$$

$$\text{or, } 150 = (12 + P_1) / \left( 1 + \frac{1}{15} \right)$$

$$\text{or, } 12 + P_1 = 150 \times \frac{16}{15}; \text{ or } P_1 = 160 - 12 = ₹ 148.$$

(ii) The company requires 15 lacs minus 7.5 lacs (income) i.e. ₹ 7.5 lacs and it also needs to pay dividend at the rate of ₹ 12 per share for 75,000 shares, i.e. ₹ 9.0 lacs. Thus net fund requirement is  $(15.0 - 7.5 + 9.0) = ₹ 16.5$  lacs. The share is available at ₹ 148. Number of shares would be  $16,50,000 / 148 = 11149$  shares.

The above can also be done by using the following formula:

If the Corpn. pays Dividend:

$P_1 = ₹ 148$ ; No. of shares to be issued :

$$\Delta n = (I - E + n D_1) / P_1$$

$\therefore$  No. of New shares,  $\Delta n$

$$= \frac{15,00,000 - 7,50,000 + 75,000 \times 12}{148}$$

**10.444****Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)**

$$\text{or, } \Delta n = \frac{7,50,000 + 9,00,000}{148}; \text{ or,}$$

$$\Delta n = \frac{16,50,000}{148}$$

$$= 11,148.65 \text{ shares.}$$

- (iii) **If dividend is paid the value of the firm will be given by :** Value = Number of shares x Market price per share. The number of shares would  $75,000 + 11,149 = 86,149$ . Value would be  $86,149 \times ₹ 148 = ₹ 1,27,50,052$  or ₹127.50 lacs.

If dividend is not paid, the market price would go up to 160 as determined in previous step. The earnings of the firm is ₹7.50 lacs. Number of additional shares would be  $7,50,000 / 160$  i.e. 4,688 shares. Total number of shares would be  $75,000 + 4,688 = 79,688$  and the value of the firm would be  $79,688 \times ₹ 160 = ₹ 127.50$  lacs.

The above could also be done by using the following formula:

Value of the Corpn.

- (a) If dividend is paid -

$$\begin{aligned} V &= (n + \Delta n)P_1 = (75,000 + 11,148.65) \times 148 \\ &= ₹ (86,148.65) \times 148 \\ &= ₹ 1,27,50,000. \end{aligned}$$

- (b) If dividend not paid -

$$V = (n + \Delta n)P_1 \quad \text{Hence, } \Delta n = \frac{15,00,000 - 7,50,000}{160}$$

$$= \frac{7,50,000}{160} = 4,687.5$$

$$\begin{aligned} \therefore V &= (75,000 + 4,687.5)P_1 \\ &= (79,687.5) P_1 = 79,687.5 \times ₹ 160 = ₹ 1,27,50,000. \end{aligned}$$

— Space to write important points for revision —

**2014 - June [6] {C}** Answer the following. (No credit will be given for answer without the reasoning)

(c) The earnings of a company = ₹ 5,00,000. Dividend pay out ratio is 60%. The number of shares outstanding = 1,50,000. Equity capitalization rate = 11% and rate of return on investment = 16%. Calculate the market value of the share as per Walter's model. **(2 marks) [CMAIG - I]**

**Answer:**

Market Value of Shares as per Walter's Model

$$\begin{aligned}
 P &= \frac{D}{K_e} + \frac{\left(\frac{r}{K_e}\right) \times (E-D)}{K_e} \\
 &= \frac{2}{0.11} + \frac{\left(\frac{0.16}{0.11}\right) \times \left(\frac{50}{15} - 2\right)}{0.11} \\
 &= 18.18 + \frac{1.45 \times 1.33}{0.11} \\
 &= 18.18 + 17.53 \\
 &= ₹ 35.71
 \end{aligned}$$

\_\_\_\_\_ Space to write important points for revision \_\_\_\_\_

**2015 - Dec [III] (b) (2)** Following are the details regarding two companies A Ltd. and B Ltd.:

Details	A Ltd.	B Ltd.
Internal Rate of Return	15%	5%
Cost of equity capital	10%	10%
Earnings per share	₹ 8	₹ 8

Calculate the value of an equity share of each of these companies according to Walter's model when dividend payout ratio is 75%.

What should be each company's strategy to maximize the market value of its share? **(4 marks) [CMAIG - I]**

**10.446****Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)****Answer:**

When DP ratio is 75%, Dividend per share is 75% of ₹ 8 = ₹ 6 per share

$$\text{Value of an equity share} = \frac{D + (r/k) \times (E - D)}{K}$$

**Computation of value per share:**

Particulars	A Ltd.	B Ltd.
When D/P ratio 75% =	$[6 + 0.15/0.10 \times 2]/0.10$ = ₹ 90	$[6 + 0.05/0.10 \times 2]/0.10$ = ₹ 70

**Inference:**

**A Ltd:** A Ltd. is treated as Growth firm. IRR exceeds cost of capital. When (r) retained earnings exceeds capitalisation rate (k) the market value per share increases and D/P ratio decreases. The market value per share will be maximum when it retains all its earnings without distributing any dividend. The optimum payment ratio is 0.

**B Ltd:** B Ltd. is treated as a decline firm. IRR is less than cost of capital. In case of declining firms, where r is less than k, the market value per share increases as D/P ratio increases. It is beneficial to the company if it distributes the earnings to its shareholders.

The market value per share will be maximum when it declares 100% dividend without retaining its earnings optimum D/P ratio is 100% .

———— Space to write important points for revision ————

**2016 - June [1] {C}** (I) Answer the following question.

- (v) The current market price and expected year-end dividend of an equity share are ₹ 90 and ₹ 4.50 respectively. The dividend growth rate is expected at 7% annually. Compute the cost of capital under the dividend growth model.

**(2 marks) [CMAIG - I]**

**Answer:**

$$\begin{aligned}
 K_e &= \frac{D_1}{P_0} + g \\
 &= \frac{4.5}{90} + 0.07 \\
 &= 0.12 \text{ or } 12\%
 \end{aligned}$$

———— Space to write important points for revision ————

**2018 - June [8]** (b) The following information is available for AVANTI CORPORATION:

Earning per Share	₹ 6
Rate of Return on Investment	20%
Rate of Return by Share holders	16 %

**Required:**

What should be the approximate dividend pay-out ratio so as to keep the share price at ₹ 44 by using Walter Model? **(5 marks)**

**Answer:**

Let, the dividend pay-out ratio be  $x$  and so the share price will be:

$$P = \frac{D}{K_e} + \frac{r(E - D)}{K_e}$$

Here  $D = 6x$ ;  $E = ₹ 6$ ;  $r = 0.20$  and  $K_e = 0.16$  and  $P = ₹ 44$

$$\text{Hence } ₹ 44 = \frac{6x}{0.16} + \frac{0.2(6 - 6x)}{0.16 \times 0.16}$$

$$\text{Or } ₹ 44 = 37.50x + 46.875(1 - x)$$

$$\text{Or, } 9.375x = 2.875$$

$$X = 0.3066 \text{ i.e. } 0.31$$

So, the required dividend payout ratio will be = 31%.

\_\_\_\_\_ Space to write important points for revision \_\_\_\_\_

**2018 - Dec [9]** (a) You have been provided the following particulars pertaining to the three companies A LTD., B LTD. and D LTD. operating identical business:

Company	A LTD	B LTD	D LTD
EBIT (₹)	15,00,000	15,00,000	15,00,000
No. of Shares	3,00,000	2,50,000	2,00,000
12% debentures (₹)		9,00,000	10,00,000

Every company expects 12% Return on investment (ROI).

**Required:**

Find out the value of the Companies A LTD., B LTD. and D LTD. and value of their equity shares as per the Modigliani-Miller (MM) approach.

**(5 marks)**

**10.448****Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)****Table Showing Marks of Compulsory Questions**

<b>Year</b>	<b>14 J</b>	<b>14 D</b>	<b>15 J</b>	<b>15 D</b>	<b>16 J</b>	<b>16 D</b>	<b>17 J</b>	<b>17 D</b>	<b>18 J</b>	<b>18 D</b>
<b>Practical</b>	2				2					
<b>Total</b>	2				2					



# 9C

## LEVERAGE ANALYSIS

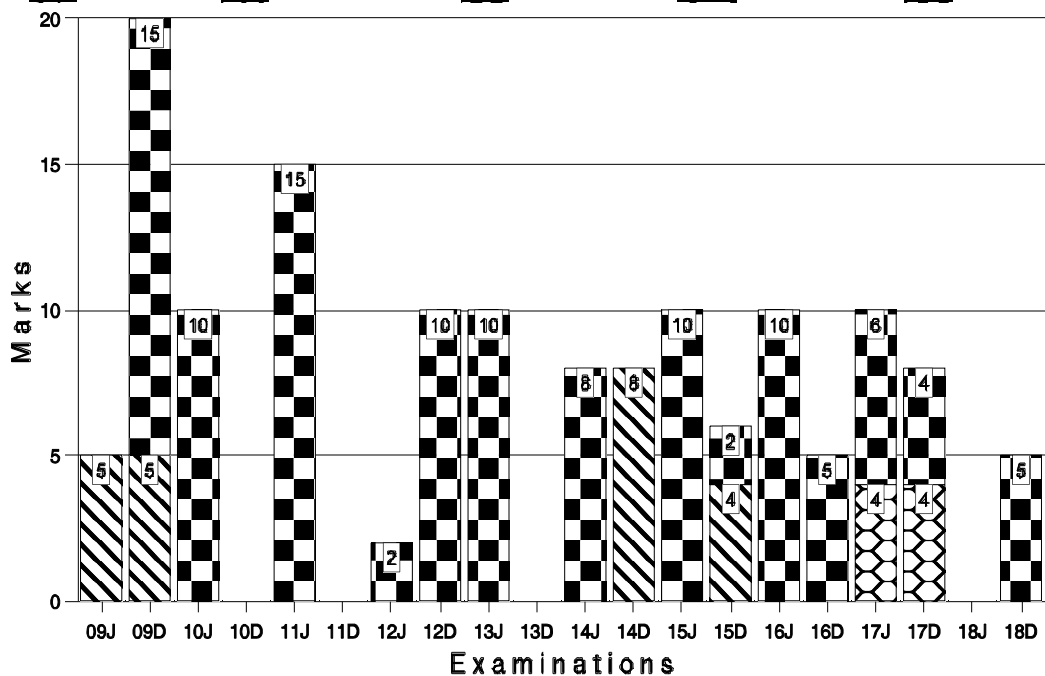
### THIS CHAPTER INCLUDES

- Leverage
- Operating Leverage
- Financing Leverage
- Combined Leverage
- EBIT-EPS Indifference Point Level
- Calculation of Indifference Point

Marks of objective, Short Notes, Distinguish Between, Descriptive & Practical Questions

### Legend

Objective Short Notes Distinguish Descriptive Practical



For detailed analysis Login at [www.scannerclasses.com](http://www.scannerclasses.com) for registration and password see first page of this book.

## CHAPTER AT A GLANCE

<b>Leverage</b>	Ability of a firm in employing long term funds having a fixed cost, to enhance returns to the owners.	
<b>Operating leverage</b>	<b>Financial Leverage</b>	<b>Combined Leverage</b>
It is the responsiveness of firm's EBIT to the changes in sales value.	It arises when a firm deploys debt funds with fixed change to increase EPS. Higher the DFL higher will be the change in EPS for the same change in EBIT. Higher the interest burden higher is the DFL.	It takes into effect both operating and Financial leverage. DCL also calculated by the formula, $DCL = \frac{\text{Contribution}}{\text{Earning after sales}} = \frac{C}{EBT}$
$DOL = \frac{\% \text{ Change in EPS}}{\% \text{ Change in EBIT}}$	$DFL = \frac{\% \text{ Change in EPS}}{\% \text{ Change in sales}}$	$DCL = \frac{\% \text{ Change in EPS}}{\% \text{ Change in sales}}$
<b>EBIT – Eps indifference point/level</b>	The indifference level of EBIT is one at which the EPS remains same irrespective of the debt-equity mix. While designing a capital structure, a firm may evaluate the effect of different financial plans on the level of EPS, for a given level of EBIT. Out of several available financial plans, the firm may have two or more financial plans which result in the same level of EPS for a given EBIT. Such a level of EBIT at which the firm has two or more financial plans resulting in same level of EPS, is known as indifference level of EBIT.	

**Calculation of Indifference Point**

	EPS under Plan I (100% equity)	EPS under Plan II (Debt Plan)	EPS under Plan III (Preference Capital)
EPS	$\frac{EBIT(1-t)}{N_a}$	$\frac{EBIT - I(1-t)}{N_B}$	$\frac{EBIT(1-t) - P.D}{N_c}$
<p>Where EBIT = Earnings before interest and taxes  t = Corporate tax rate  Na = Nb = Nc = No. of equity shares under different plans.  Where Plan I = 100% equity  Plan II = Debt plan  Plan III = Preference Capital</p>			

**Interpretation of the Indifference Point**

**Case I** - EBIT below Indifference Point

**Option-** Option with lower debt (Interest Burden)

**Reason:** When rate of earnings and operating profits (EBIT) are low, more interest and debt burden is not advisable. A high DOL should be properly managed by low Financial Leverage.

**Case II** - EBIT equal to Indifference Point

**Option-** Any alternative can be chosen.

**Reason:** Same EPS due to Indifference Point.

**Case III** - EBIT above Indifference Point

**Option-** Option with higher debt (Interest Burden)

**Reason:** When EBIT is high, Financial Leverage works till the EPS is maximised. Low DOL should be coupled with high DFL, to maximize gain of Equity Shareholders.

**SHORT NOTES**

**2008 - Dec [8]** Write short notes on the following :

(c) Operating & Financial Leverage;

**(5 marks)**

(d) Break-even Point;

**(5 marks) [CMAIG - I]**

**Answer :**

**(c) Operating and Financial Leverage :** Operating leverage is the extent to which fixed costs are used in a firm's operations. If a high percentage of a firm's total costs are fixed costs, then the firm is said to have a high degree of operating leverage. Operating leverage is a measure of one element of business risk, but does not include the second major element, i.e, sales variability.

Financial leverage is the extent to which fixed-income securities (debt and preferred stock) are used in a firm's capital structure. If a high percentage of a firm's capital structure is in the form of debt and preferred stock, then the firm is said to have a high degree of financial leverage.

**(d) Break Event Point :** Break-even point refers to the point where total cost is equal to revenue. It is a point of no profit no loss. The point is also known as the volume of operations where profit begins. This is also the minimum point of production when total costs are recovered.

Break-even analysis may be performed with or without the inclusion of financial costs. If financial costs are not included, break-even occurs when EBIT equals zero. If financial costs are included, break-even occurs when EBT equals zero.

Break-even point can be stated in the form of an equation.

Sales revenue at break-even point = Fixed cost + Variable costs.

Finding out a break-even point requires separation of cost into fixed and variable components.

**Computation of Break-even Point.** The computation of break-even point can be understood with the following illustration :

1. *Based on unit costs :*

Break-even point = Total fixed cost/Contribution per unit  
(in units)

Fixed cost = ₹ 80,000.

Variable cost = ₹ 4 per unit.

Selling price = ₹ 20 per unit.

Contribution per unit = ₹ 20 – ₹ 4 = ₹ 16.

Break-even point  $80,000/16 = 5,000$  units

Break-even point (in amount)

= Break- even output × Selling price per unit

=  $5,000 \times ₹ 20 = ₹ 1,00,000$ .

—— Space to write important points for revision ———

**2017 - June [10]** Write short note on the following:

(c) Financial Leverage

**(4 marks)**

**Answer:**

**Financial Leverage:**

The Financial Leverage may be defined as a % increase in EPS associated with a given percentage increase in the level of EBIT. Financial leverage emerges as a result of fixed financial charge against the operating profits of the firm. The fixed financial charge appears in case the funds requirement of the firm are partly financed by the debt financing. By using this relatively cheaper source of finance, in the debt financing, the firm is able to magnify the effect of change in EBIT on the level of EPS.

**The significance of DFL may be interpreted as follows:**

- Other things remaining constant, higher the DFL, higher will be the change in EPS for same change in EBIT. In other words, if firm K has higher DFL than firm L, EPS of firm K increases at faster rate than that of firm L for same increase in EBIT. However, EPS of firm K falls at a faster rate than that of firm K for same fall in EBIT. This means, higher the DFL more is the risk.

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- Higher the interest burden, higher is the DFL, which means more a firm borrows more is its risk.
- Since DFL depends on interest burden, it indicates risk inherent in a particular capital mix, and hence the name financial leverage.

—— Space to write important points for revision ——

**2017 - Dec [10]** Write short note on the following:

(d) Combined Leverage

**(4 marks)**

**Answer:**

**Combined Leverage:**

A combination of the operating and financial leverages is the total or Combination Leverage. The Operating leverage causes a magnified effect of the change in sales level on the EBIT level and if the Financial leverage combined simultaneously, then the change in EBIT will, in turn, have a magnified effect on the EPS. A firm will have wide fluctuations in the EPS for even a small change in the sales level. Thus effect of change in sales level on the EPS is known as combined leverage. Thus Degree of Combined Leverage may be calculated as follows:

$DCL = \text{Contribution} / \text{Earning after Interest}$ .

—— Space to write important points for revision ——

**DESCRIPTIVE QUESTIONS**

**2009 - June [5]** (a) How does financial leverage increase the potential reward to the shareholders?

**(5 marks) [CMAIG - I]**

**Answer :**

Financial Leverage is based on the assumption that firm is to earn more on the assets that acquired by the use of Funds on which a Fixed Rate of interest/dividend is to be paid. Financial Leverage can be calculated as follows :

Financial Leverage = EBIT/EBT

The Financial Leverage increases the reward to the shareholders, as by increasing the debt, the organization enjoys the tax benefit as the interest on the debt capital is chargeable to the profit, thus reducing the tax burden. Again the Profit Before Tax (PBT) will be higher with lower or nil interest on debt, leading to high incidence of Corporate tax. The balance representing Profit After Tax (PAT) becomes proportionately lower when such PAT is related to the higher equity capital and lower or nil debt capital. As the shareholder's reward is the PAT earned against the volume of capital invested, the Financial Leverage increases the potential reward to the shareholders. Further, increase in Equity to finance low risk activities will lead to lower return for the shareholders. Companies having lower risk for cash flow can therefore enhance the shareholders' return by increasing the debt instead of Equity. The Net operating surplus represents PAT when related to the lower level of paid-up share capital shows a higher reward to the shareholders.

—— Space to write important points for revision ———

**2009 - Dec [2]** (a) Explain how the combined effect of operating and financial leverages provide the risk profile of an organization.

**(5 marks) [CMAIG - I]**

**Answer :**

The total risk involved in a firm can be determined by combining the operating and financial leverages. The Degree of combined leverage is calculated by multiplying the two leverages. As a rule, a firm having a high operating leverage should have a low financial leverage and vice versa. If a firm has both the leverages at a high level, it will be a very risky proposition because the combined effect of the two is a multiple of these two leverages. As such if a firm has a high operating leverage the financial leverage should be kept low. Thus it will be necessary to have a proper balance between operating and financial leverage to keep the risk profile of a firm within a reasonable limit. Such a situation would also maximize return to shareholders.

—— Space to write important points for revision ———

**2014 - Dec [3]** Answer the question:

- (c) (ii) Explain the concepts of operating and financial leverage and the EBIT-EPS indifference point. What financial plan would you opt for when EBIT is (i) above, (ii) at and (iii) below the indifference point?

**(8 marks) [CMAIG - I]**

**Answer:**

**Operating leverage:**

It is the responsiveness of firm's EBIT to the changes in sales value.

$$\text{Degree of Operating Leverage} = \frac{\text{Contribution}}{\% \text{Change in EBIT}}$$

**Financial Leverage:**

It arises when a firm deploys debt funds with fixed charge to increase EPS. Higher the DFL higher will be the change in EPS for the same change in EBIT. Higher the interest burden higher is the DFL.

$$\text{Financial Leverage} = \frac{\% \text{Change in EPS}}{\% \text{Change in EBIT}}$$

**EBIT – EPS INDIFFERENCE POINT/LEVEL**

The indifference level of EBIT is one at which the EPS remains same irrespective of the debt-equity mix. While designing a capital structure, a firm may evaluate the effect of different financial plans on the level of EPS, for a given level of EBIT. Out of several available financial plans, the firm may have two or more financial plans which result in the same level of EPS for a given EBIT. Such a level of EBIT at which the firm has two or more financial plans resulting in same level of EPS, is known as indifference level of EBIT.

**Interpretation of the Indifference Point**

**Case I - EBIT below Indifference Point**

**Option -** Option with lower debt (Interest Burden)

**Reason:** When rate of earnings and operating profits (EBIT) are low, more interest and debt burden is not advisable. A high DOL should be properly managed by low Financial Leverage.

**Case II - EBIT equal to Indifference Point**

**Option -** Any alternative can be chosen.

**Reason:** Same EPS due to Indifference Point.



**Case III - EBIT above Indifference Point**

**Option - Option with higher debt (Interest Burden)**

**Reason:** When EBIT is high, Financial Leverage works till the EPS is maximized. Low DOL should be coupled with high DFL, to maximize gain of Equity Shareholders.

—— Space to write important points for revision ———

**2015 - Dec [III] (a) (3)** Explain the concepts of operating leverage and financial leverage. **(4 marks) [CMAIG - I]**

**Answer:**

**Operating Leverage:** Leverage associated with asset acquisition or investment activities is referred to as the operating leverage. It refers to the firm's ability to use fixed operating costs to magnify the effect of changes in sales on its operating profit (EBIT) and results in more than a proportionate change ( $\pm$ ) in EBIT with change in the sales revenue. It is measured by calculating Degree of Operating Leverage (DOL). The DOL measures the sensitivity of operating income (EBIT) to the changes in revenues. The greater the DOL, the higher is the operating leverage.

$DOL = (\text{Percentage change in EBIT} / \text{Percentage change in Sales}) > 1$

Alternatively,  $DOL = (\Delta EBIT / EBIT) / (\Delta Q / Q)$  where EBIT

$$= Q(S - V) - F$$

$$DOL = Q(S - V) / Q(S - V) - F$$

$$DOL = \text{Contribution} / EBIT$$

High operating leverage is good when revenues are rising and bad when they are falling. The DOL is a measure of the business/ operating risk of the firm. Operating risk is the of the firm not being able to cover its fixed operating costs. DOL depends on fixed operating costs. High DOL shows high risk thus helping to measure business risk.

**Financial Leverage:** Financial leverage is related to the financing activities of a firm. It results from the presence of fixed financial charges (*such as interest on debt and dividend on preference shares*). Since such financial expenses do not vary with the operating profits, financial leverage is concerned with the effect of changes in EBIT on the earnings available to equity shareholders.

It is defined as the ability of a firm to use fixed financial charges to magnify the effect of changes in EBT on the Earnings Per Share (EPS). Financial leverage also refers to the mix of debt and equity in the capital structure of the company.

The measure of financial leverage is the Degree of Financial Leverage (DFL). The DFL reflects the responsiveness of EPS to changes in EBIT. It is defined as :

$DFL = (\text{Percentage change in EPS} / \text{Percentage change in EBIT})$

$DFL = \Delta \text{EPS} \div \text{EPS} \div \Delta \text{EBIT} \div \text{EBIT}$

$DFL = \text{EBIT} / \text{EBIT} - I - (D_p + D_t) / (1 - t)$  {where  $D_p$  = dividend paid

$D_t$  = dividend tax

$t$  = Tax rate

High fixed financial costs increases the financial leverage and thus financial risk. The EBIT – EPS analysis is widely used method of examining the effect of financial leverage/use of debt.

As the company becomes more financial leveraged, it becomes riskier, which leads to increased fluctuations in return on equity and increase in the interest rate on debts.

— Space to write important points for revision —

## PRACTICAL QUESTIONS

**2009 - Dec [4]** The key information pertaining to the proposed new financing plans of ADVENTURE LTD. is given below :

Sources of Funds	Financing Plan I	Financing Plan II
Equity	15,000 shares of ₹ 100 each	30,000 shares of ₹ 100 each
Preference shares 12%	25,000 shares of ₹ 100 each	
Debentures ₹ 5,00,000 at a coupon rate of 10%		
	₹ 15,00,000, coupon rate 11%	

The corporate tax rate is 35 percent.

*Required :*

- (a) Determine the two EBIT-EPS coordinates for each financial plan.
- (b) Determine the
  - (i) Indifference point; and
  - (ii) Financial break-even point for each financing plan.
- (c) Which plan has more financial risk and why ?
- (d) Indicate over what EBIT range, if any, one plan is better than the other.
- (e) If the firm is fairly certain that its EBIT will be ₹ 12,50,000, which plan would you recommend, and why ?

**[(3 + 4) + 3 + 2 + [1 × 3] = 15 marks) [CMAIG - I]**

**Answer :**

1. Financial break even point is the level of EBIT which is just able to pay the total financial charges i.e. interests and preference dividend. At financial break even point the eps is zero.

It is easy to calculate the fbep if capital structure does not contain preference shares. In such case fbep is equal to fixed interest charges.

However, if preference shares appear in the capital structure, in addition to fixed interest charges, pref. dividend is also to be paid. Pretax pref. dividend should be added to fixed interest charges to arrive at fbep.

What is financial risk? How it is measured?

Particulars	Plan 1	Plan 2
EBIT	1,250	1,250
Less : Interest on debentures	50	165
EBT	1,200	1,085
Less : Taxes @ 35%	420	380
EAT	780	705
Less : Preference dividend	300	0
Earning for shareholders	480	705
Number of equity shares in '000	15	30
EPS	32	24

Indifference point is the point where the eps remains same irrespective of capital structure. At this level of EBIT, the rate of return on capital employed is equal to the cost of debt and this also known as break even level of EBIT for alternative financial plans.

Particulars	Plan 1	Plan 2
EBIT	E	E
Less: Interest on debentures	50	165
EBT	E - 50	E - 165
Less: Taxes @ 35%	0.35 (E - 50)	0.35 (E - 165)
EAT	0.65 (E - 50)	0.65 (E - 165)
Less: Preference dividend	300	0
Earning for shareholders	0.65 (E - 50) - 300	0.65 (E - 165)
Number of equity shares in '000	15	30
EPS	$[0.65(E - 50) - 300]/15$	$[0.65(E - 165)]/30$

At financial indifference point the EPS is same for both the plans. Hence we have:

$$[0.65(E - 50) - 300]/15 = [0.65(E - 165)]/30 \text{ Which on solution gives } E = 858$$

At E equal to ₹ 8,58,000 the EPS is same under both the plans.

Financial break even point is the point when EBIT is just equal to financial charges.

	Plan 1	Plan 2
Fixed interest charges:		
Debenture interest	50	165
Preference dividend (Pref. div/(1 - tax rate) (300/0.65)	462	0
Financial break even point	<u>512</u>	<u>165</u>

Financial risk is measured by financial leverage. It is measured by EBIT/EBT.

It is also given by % change in EPS/% change in EBIT.

	Plan 1	Plan 2
EBIT	1,250	1,250
Interest	50	165
EBT	1,200	1,035
Financial leverage (EBIT/EBT)	1.04	1.21

More the fixed interest charges, more is the financial risk. In that criteria, financial risk is more in plan 2.

EPS is same in both the plans at EBIT of ₹ 8,58,000. Beyond this plan 1 will give more EPS, hence should be considered better.

(e) As shown in (a) above, plan 1 gives more EPS for EBIT of ₹ 12,50,000.

— Space to write important points for revision —

**2010 - June [4]** (b) ATUL COMPANY LTD. earned an EBIT of ₹ 3 crore for the year just ended. The company has 10 lakh equity shares outstanding with a face value of ₹ 10 each and an outstanding debt of ₹ 2 crore, which carries interest at 12%. The company also has free reserves to the extent of ₹ 5 crore, which can be capitalized. The company is planning a bonus issue to utilize the entire free reserves and later a stock split to make the face value of the shares ₹ 2.

After the bonus issue and stock split are complete, the company plans to raise funds to the extent of ₹ 5 crore to finance additional investments. The required funds may be raised either as debt at an interest of 14% or equity, which can be issued at the par value of ₹ 2. The company expects the standard deviation of total EBIT after the investments are made is ₹ 1.8 crore. Assume the income tax rate to the company is 30%.

You are required to calculate the minimum level of EBIT at which the debt issue is better than the equity from the point of view of EPS by at least 95%.

(7 + 3 = 10 marks) [CMAIG - I]

**Answer :**

1. You must revise the reading of normal distribution curve. You must also know how to compute the value of parameter, if standard deviation is given and also the degree is also given, here the degree is 95%.

Total no. of shares of ₹ 10	10 lakhs
No. of shares if converted to ₹ 2	$10 \times 5$ 50 lakhs
No. of bonus shares (500/2)	250 lakhs
Total no. of shares after bonus and alteration	300 lakhs

Comparison of two plans:

**Plan 1:** Raising through equity issue of ₹ 5 cores of ₹ 2. In all 250 lakhs shares will be issued making total number of outstanding shares as 550 lakhs.

**Plan 2:** Raising through debt of ₹ 5 crores at 14%.

	Plan 1	Plan 2
EBIT	E	E
Interest on existing debt	E	E
Interest on additional debt	24	24
	0	70
EBT	(E - 24)	(E - 94)
Less taxes at 30%	0.30 (E - 24)	0.30 (E - 94)
EAT	0.70 (E - 24)	0.70 (E - 94)

**Part 2:** This is statistically solved with the help of normal distribution curve. You should revise this knowledge. The required EBIT (expected) is  $2.97 + 1.78 = ₹ 4.75$  crore.

— Space to write important points for revision —

- What is the firm's ROI?
- Does it have favorable financial leverage?
- If the firm belongs to an industry whose asset turnover is 3, does it have a high or low asset leverage?
- What are the operating, financial and combined leverages of the firm?
- If the sales drop to ₹ 50,00,000, what will the new EBIT be?
- At what level will the EBT of the firm equal to zero?

**(2  $\frac{1}{2}$  × 6 = 15 marks) [CMA/IG - I]**

(a) ROI = EBIT/ Investment  
EBIT = Sales – VC – FC = (₹ 75 – ₹ 42 – ₹ 6) lakh  
= ₹ 27 lakh  
ROI = ₹ 27 lakh / ₹ 100 lakh  
= 27%

(c) Asset turnover = Sales / Total assets or Total investments  
= ₹ 75 lakh / ₹ 100 lakh  
= 0.75. It is lower than the industry average.

$$\begin{aligned} \text{(d) Operating leverage} &= \frac{\text{Sales} - \text{Variable cost}}{\text{EBIT}} \\ &= (\text{₹ } 75 - \text{₹ } 42) \text{ lakh} / \text{₹ } 27 \\ &= 1.22 \end{aligned}$$

$$\begin{aligned} \text{Financial leverage} &= \frac{\text{EBIT}}{\text{EBIT} - \text{Interest}} \\ &= \frac{\text{₹ } 27 \text{ lakh}}{\text{₹ } 27 \text{ lakh} - \text{₹ } 4.05 \text{ lakh}} = 1.18 \end{aligned}$$

$$\begin{aligned} \text{Combined leverage} &= \frac{\text{Sales} - \text{Variable cost}}{\text{EBIT} - \text{Interest}} \\ &= \frac{\text{₹ } 33 \text{ lakh}}{\text{₹ } 22,95,000} \\ &= 1.44 \end{aligned}$$

$$\begin{aligned} \text{Alternatively} &= \text{OL} \times \text{FL} = 1.22 \times 1.18 \\ &= 1.44 \end{aligned}$$

(e) **EBIT at sales level of ₹ 50 lakh:**

	₹
Sales revenue	50,00,000
Less: Variable costs (50 lakh × 0.56)	28,00,000
Less: Fixed costs	<u>6,00,000</u>
EBIT	<u>16,00,000</u>

(f) Zero EBT implies Break-Even Sales Revenue (BESR)  
 = FC/CV ratio, CV ratio = ₹ 33 lakh / ₹ 75 lakh = 44%  
 BESR = (₹ 6 lakh + ₹ 4.05 lakh) / 0.44 = ₹ 22,84,091.

— Space to write important points for revision —

**2012 - June [6]** (d) The degree of operating leverage of XYZ Limited is increased by 30%. What will be the change in the degree of total leverage, if the degree of financial leverage is decreased by 20% ?

**(2 marks) [CMAIG - I]**

10.464

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**Answer :**

The DTL is defined as the product between the DOL & DFL.

The resultant DTL = 1.30 DOL x 0.8 DFL = 1.04 DTL

Therefore, DTL will increase by 4% (i.e. 1.04 - 1.00).

— Space to write important points for revision —

**2012 - Dec [4]** (a) The selected financial data for A, B and C companies for the year ended March 31, 2012 are as follows:

Company	A	B	C
Financial Leverage	3 : 1	4 : 1	2 : 1
Interest	₹ 200	₹ 300	₹ 1,000
Operating Leverage	4 : 1	5 : 1	3 : 1
Variable cost as a % to sales	66 2/3%	75%	50%
Income-tax rate	45%	45%	45%

- (i) Prepare Income statement for the year ended 31<sup>st</sup> March, 2012 for each company.  
(ii) Comment on the financial position and capital structure of these companies.  
**(7 + 3 = 10 marks) [CMAIG - I]**

**Answer:**

<b>Company A:</b>	
Financial Leverage = 3	Operating Leverage = 4
$\frac{\text{EBIT}}{\text{EBIT} - 200} = 3$ $3 (\text{EBIT} - 200) = \text{EBIT}$ $3 \text{ EBIT} - \text{EBIT} = 600$ $\text{EBIT} = 300$	$\frac{\text{Contribution}}{\text{EBIT}} = 4$ $\frac{\text{Sales} - \text{V. Cost}}{300} = 4$ $\text{Sales} - 66 \frac{2}{3}\% \text{ sales} = 1,200$ $33 \frac{1}{3}\% \text{ of Sales} = 1,200$ $\text{Sales} = 1,200 \times 3 = 3,600$
<b>Company B:</b> $\frac{\text{EBIT}}{\text{EBIT} - 300} = 4$ $4 (\text{EBIT} - 300) = \text{EBIT}$ $3 \text{ EBIT} = 1,200$	$\frac{\text{Sales} - \text{V. Cost}}{400} = 5$ $\text{Sales} - 75\% \text{ Sales} = 2,000$ $25\% \text{ Sales} = 2,000$ $\text{Sales} = 2,000 \times 4 = 8,000$



EBIT = 400	
<b>Company C:</b> $\frac{\text{EBIT}}{\text{EBIT} - 1,000} = 2$ $2 (\text{EBIT} - 1,000) = \text{EBIT}$ $\text{EBIT} = 2,000$	$\frac{\text{Sales} - \text{V. Cost}}{2,000} = 3$ $\text{Sales} - 50\% \text{ on Sales} = 6,000$ $50\% \text{ Sales} = 6,000$ $\text{Sales} = 12,000$

### Income Statement of Companies

	A	B	C
Sales	3,600	8,000	12,000
(-) Variable Cost	2,400	6,000	6,000
Contribution	1,200	2,000	6,000
(-) Fixed Cost (Contribution-EBIT)	900	1,600	4,000
EBIT	300	400	2,000
(-) Interest	200	300	1,000
	100	100	1,000
(-) Tax @ 45%	45	45	450
	55	55	550

Comment on the financial position – Company C is better than that of the other companies A and B because of the following reasons:

- Company C has the least financial risk
- Total risk (business and financial) complexion of company is the lowest (DCL: A-12, B-20, C-6)
- Capacity of Company C to meet interest liability is better than that of companies A and C (from EBIT/Interest ratio)  
 $[A = 300/200 = 1.5 \text{ B} = 400/300 = 1.33 \text{ C} = 2,000/1,000 = 2]$

— Space to write important points for revision —

**2013 - June [4]** (a) M/s Circuit Manufacturing Corporation (CMC) furnishes the following information:

Total Sales : 1,45,000 units

Selling price per unit : ₹ 23

Fixed Cost : ₹ 2,80,000

Variable Cost : ₹ 17 per unit

10.466

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Debt : ₹ 10,00,000 @ 11% interest rate

Equity : ₹ 20,00,000

Face Value of each share : ₹ 10

Tax rate applicable : 45%

You are required to work out the following:

- (i) By what amount the firm's sales have to come down, so that the Earnings Before Taxes is equal to zero?
- (ii) If Earnings Before Interest & Taxes (EBIT) double, what is the new level of Earning Before Taxes (EBT)?
- (iii) What will be the degree of operating, financial and combined leverage?
- (iv) If the asset turnover of the industry is 0.75, does the firm have a high or low degree of asset turnover?

(3 + 2 + 3 + 2 = 10 marks) [CMAIG - I]

**Answer:**

- (i) Sales of the firm = ₹ 23 x 1,45,000 = ₹ 33,35,000

Total cost = ₹ 17 x 1,45,000 + ₹ 2,80,000 = ₹ 27,45,000

EBIT = ₹ (33,35,000 – 27,45,000) = ₹ 5,90,000

Interest Charges = ₹ 10,00,000 x 0.11 = ₹ 1,10,000

If the earning before taxes is equal to Zero, EBIT should be equal to interest charges.

Let this happen at a sales level of X units.

Profit function (EBIT) = (SP – VC) X – FC;

Then, ₹(23-17) X - ₹2,80,000 = ₹1,10,000

X = ₹ 3,90,000/ ₹ 6 = 65,000 Units

Or, Sales required =  $\frac{\text{Required EBIT} + \text{FC}}{\text{Contribution per unit}} = \frac{1,10,000 + 2,80,000}{6}$

= 65,000 units

Hence, the sales should come down by (1,45,000 – 65,000) or 80,000 units, or by (₹80,000 x ₹ 23) or ₹18,40,000, so that EBT is equal to Zero.

- (ii) If EBIT doubles, the new level of EBIT would be equal to ₹(2 x 5,90,000) = ₹11,80,000

New level of EBT = EBIT – I = ₹ 11,80,000 - ₹ 1,10,000 = ₹ 10,70,000

(iii) Degree of operating

$$\text{leverage} = \frac{Q(SP - VC)}{Q(SP - VC) - F} = \frac{1,45,000 (23 - 17)}{1,45,000 (23 - 17) - 2,80,000} = 1.475$$

$$\text{Degree of Financial Leverage} = \frac{EBIT}{EBIT - I} = \frac{5,90,000}{5,90,000 - 1,10,000} = 1.23$$

$$\begin{aligned} \text{Combined leverage} &= \text{Degree of operating leverage} \times \text{Degree of Financial Leverage} \\ &= 1.475 \times 1.23 = 1.814 \end{aligned}$$

(iv) Turnover of the firm = ₹ 23 × 1,45,000 = ₹ 33,35,000

$$\begin{aligned} \text{The Asset turnover of the firm} &= \frac{\text{Total sales}}{\text{Total assets}} = \frac{33,35,000}{10,00,000 + 20,00,000} \\ &= 1.11 \end{aligned}$$

(v) Since, the asset turnover of the industry is 0.75, the firm is considered to have a high degree of asset turnover.

**Note:** It is assumed that the firm has no other liabilities. Therefore, Total Asset = debt + Equity.

— Space to write important points for revision —

**2014 - June [7]** (a) The following details relating to a company are given:

Sales per annum	1,00,000 units
Variable Cost	₹ 90 per unit
Fixed Cost including interest per annum	₹ 18,00,000
P/V ratio	25%
10% Debentures	₹ 30,00,000
Equity Shares capital (shares of ₹ 10 each)	₹ 40,00,000
Corporate Tax Rate	30%

Calculate:

- (i) Operating Leverage
- (ii) Financial Leverage
- (iii) Combined Leverage
- (iv) Earnings per share

**(8 marks) [CMAIG - I]**

**10.468****Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)****Answer:**

$$\text{PV ratio} = \frac{\text{Contribution}}{\text{Sales}} \times 100$$

$$25\% = \frac{\text{SP} - 90}{\text{SP}}$$

$$0.25\text{SP} = \text{SP} - 90$$

$$0.25\text{SP} - \text{SP} = -90$$

$$\text{Or Selling Price} = 90 / 0.75 = 120$$

$$\text{Sales per Annum} = 1,00,000 \times 120 = 120 \text{ lakhs}$$

Less: Variable Cost 90 lakhs

Contribution 30 lakhs

Less: Fixed Cost 15 lakhs

EBIT 15 lakhs

Less: Interest 3 lakhs

EBT 12 lakhs

Less: Tax @ 30% 3.6 lakhs

EAT 8.4 lakhs

$$(i) \text{ Operating Leverage} = \frac{\text{Contribution}}{\text{EBIT}} = \frac{30}{15} = 2$$

$$(ii) \text{ Financial Leverage} = \frac{\text{EBIT}}{\text{EBIT} - \text{Interest}} = \frac{15}{15 - 3} = 1.25$$

$$(iii) \text{ Combined Leverage} = \text{Operating Leverage} \times \text{Financial Leverage} \\ = 2 \times 1.25 = 2.5$$

$$(iv) \text{ Earnings Per Share} = \frac{\text{Earning after tax}}{\text{no. of shares}} = \frac{8,40,000}{4,00,000} = ₹ 2.1 / \text{share}$$

— Space to write important points for revision —

**2015 - June [I]** (e) Toli Ltd. earned a contribution of ₹ 50 per unit on 65,000 units sold. Company's debt is ₹ 30,00,000 at 12% rate of interest and Fixed Costs are ₹ 7,50,000. Calculate the Financial Leverage.

**(2 marks) [CMAIG - I]**

**Answer:**

Total contribution =  $65,000 \times 50$  = ₹ 32,50,000

Interest cost =  $30,00,000 \times 12\%$  = ₹ 3,60,000

Fixed costs = ₹ 7,50,000

Financial leverage = EBIT/EBT

	(₹)
Contribution	32,50,000
Less: Fixed costs	<u>7,50,000</u>
EBIT	25,00,000
Less: Interest	<u>3,60,000</u>
EBT	<u>21,40,000</u>

Financial leverage = EBIT/EBT  
 = 25,00,000/21,40,000  
 = 1.17

Hence, financial leverage of company is = 1.17

— Space to write important points for revision —

**2015 - June [III]** (c) (i) Calculate the operating leverage and financial leverage under situations A, B and C and financial plans I, II and III respectively from the following information relating to the operating and capital structure of ABC Co. Also find out the combination of leverages which give the highest value and the least value.

Installed capacity	1,200 units
Actual production and sales	800 units
Selling price per unit	₹ 15
Variable cost per unit	₹ 10
Fixed cost: Situation A	₹ 1,000
Situation B	₹ 2,000
Situation C	₹ 3,000

#### Capital structure

#### Financial plan

	I	II	III
Equity	₹ 5,000	₹ 7,500	₹ 2,500
Debt	₹ 5,000	₹ 2,500	₹ 7,500
Cost of debt	12%	12%	12%

(8 marks) [CMAIG - I]

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**Answer:****Calculation of Operating Leverage:**

	<b>Situation A</b>	<b>Situation B</b>	<b>Situation C</b>
Number of unit sold	800	800	800
Sales @ ₹ 15	12,000	12,000	12,000
Variable Cost @ ₹ 10	8,000	8,000	8,000
Contribution	4,000	4,000	4,000
Fixed Cost	1,000	2,000	3,000
EBIT	3,000	2,000	1,000
Opening Leverage	1.33	2.00	4.00
Contribution/EBIT			

**Calculation of Financial Leverage:**

	<b>Plan I</b>	<b>Plan II</b>	<b>Plan III</b>
<b>Situation A</b>			
EBIT	₹ 3,000	₹ 3,000	₹ 3,000
Less: Interest @ 12%	<u>600</u>	<u>300</u>	<u>900</u>
Profit before Tax	<u>2,400</u>	<u>2,700</u>	<u>2,100</u>
Financial Leverage (EBIT/Profit before tax)	1.25	1.11	1.43
<b>Situation B</b>			
EBIT	₹ 2,000	₹ 2,000	₹ 2,000
Less: Interest @ 12%	<u>600</u>	<u>300</u>	<u>900</u>
Profit before Tax	<u>1,400</u>	<u>1,700</u>	<u>1,100</u>
Financial Leverage (EBIT/Profit before tax)	1.43	1.18	1.82
<b>Situation C</b>			
EBIT	₹ 1,000	₹ 1,000	₹ 1,000
Less: Interest @ 12%	<u>600</u>	<u>300</u>	<u>900</u>
Profit before Tax	<u>400</u>	<u>700</u>	<u>100</u>
Financial Leverage (EBIT/Profit before tax)	2.50	1.43	10.0

The combined leverage may be calculated by multiplying the operating leverage and financial leverage for different combination of Situation A, B & C and the Financial Plans I, II & III as follows:

Situation A	Situation B	Situation C
Plan I	1.66	2.86
Plan II	1.47	2.36
Plan III	1.90	3.64

The calculation of combined leverage shows the extent of the total risk and is helpful to understand the variability of EPS as a consequence of change in sales levels. In this case, the highest combined leverages is there when financial plan III is implemented in situation C; and lowest value of combined leverage is attained when financial plan II is implemented in situation A.

—— Space to write important points for revision ——

**2015 - Dec [I]** (h) A firm earns a contribution of ₹ 4,80,000. Its operating leverage and financial leverage are respectively 4 and 5. Find the firm's PAT if the effective tax rate is 25%. **(2 marks) [CMAIG - I]**

**Answer:**

$$\begin{aligned}
 \text{Operating Leverage} &= \frac{\text{Contribution}}{\text{EBIT}} \\
 4 &= \frac{4,80,000}{\text{EBIT}} \\
 \text{EBIT} &= ₹ 1,20,000 \\
 \text{Financial Leverage} &= \frac{\text{EBIT}}{\text{EBT}} \\
 5 &= \frac{1,20,000}{\text{EBT}} \\
 \text{EBT} &= ₹ 24,000 \\
 \text{PAT} &= \text{EBT} - \text{Tax} \\
 &= 24,000 - 24,000 \times 25\% \\
 \text{Or PAT} &= ₹ 18,000
 \end{aligned}$$

—— Space to write important points for revision ——

**2016 - June [8]** (a) Calculate the degree of Operating Leverage, degree of Financial Leverage and the degree of Combined Leverage for the following firms and also interpret the result obtained:

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	Firm X	Firm Y	Firm Z
(i) Output (Units)	80,000	22,500	1,50,000
(ii) Variable Cost per unit (₹)	1.50	1.10	1.20
(iii) Fixed Cost (₹)	10,000	20,000	8,000
(iv) Interest on Loan Fund (₹)	6,000	10,000	—
(v) Selling price per unit (₹)	2.50	5.00	1.50

**(10 marks) [CMAIG - I]****Answer:**

Particulars	Firm X	Firm Y	Firm Z
Output (Units)	80,000	22,500	1,50,000
Selling Price per unit (₹)	2.50	5.00	1.50
Less: Variable Cost per unit (₹)	1.50	1.10	1.20
Contribution per unit (₹)	1.00	3.90	0.30
Total Contribution (₹)	80,000	87,750	45,000
Less: Fixed Cost (₹)	10,000	20,000	8,000
EBIT (₹)	70,000	67,750	37,000
Less: Interest (₹)	6,000	10,000	—
EBT (₹)	64,000	57,750	37,000
DOL	1.14	1.29	1.22
DFL	1.09	1.17	1.00
DCL	1.25	1.52	1.22

Firm Y is most risky as it has highest DOL, DFL and DCL.

— Space to write important points for revision —

**2016 - Dec [8]** (b) The following information is available from the records of A Ltd.:

Profit after Tax	₹ 7,91,000
10% Debentures at par	₹ 25,00,000
Operating Leverage	1.80 times
Variable cost ratio	60%
Corporate Tax rate	30%

- (i) Prepare an Income Statement for A Ltd.  
(ii) Calculate the combined leverage for A Ltd. **(5 marks) [CMAIG - I]**



Answer:

**Income Statement**

Details	Amount (₹)	Working Note
Sales	62,10,000	Contribution/40%
Cost of Sale( Variable Cost)	37,26,000	60% of Sales
Contribution (40 %)	24,84,000	(Operating Leverage 1.8 × PBIT 13,80,000)
Less: Fixed Cost	11,04,000	Difference between PBIT and Contribution
Profit Before Interest and Taxes	13,80,000	(PAT/70%) + Interest
Less: Interest	2,50,000	10% of 25,00,000
PBT	11,30,000	(PAT + Taxes)
Less: Taxes 30%	3,39,000	(PAT/70 × 30%)
PAT	7,91,000	(given; starting point)
Combined Leverage	24,84,000/ 11,30,000 = 2.198 say 2.2	Combined Leverage = Contribution/PBT

— Space to write important points for revision —

**2017 - June [8]** (b) The following information are available in respect of ABC company:

Liabilities	Amount ₹	Assets	Amount ₹
Equity share capital	1,20,000	Fixed Assets	3,00,000
Retained Earnings	40,000	Current Assets	1,00,000
10% Long Term Debt	1,60,000		
Current Liabilities	80,000		
	<u>4,00,000</u>		<u>4,00,000</u>

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The company's total assets turnover ratio is 3, its fixed operating costs are ₹ 2,00,000 and its variable operating cost ratio is 40%. The income tax rate is 50%. Calculate the different types of leverages, given that the face value of share is ₹ 10. **(6 marks)**

**Answer:**

$$\frac{\text{Sales}}{\text{Total Assets}} = 3 \Rightarrow \text{Sales} = 3 \times 4,00,000 = 12,00,000$$

$$\text{Contribution} = S - VC = 12,00,000 - (12,00,000) \times 40\%$$

$$\Rightarrow C = 7,20,000$$

$$\text{EBIT} = C - FC = 7,20,000 - 2,00,000 = 5,20,000$$

$$\text{EBT} = \text{EBIT} - \text{Interest} = 5,20,000 - (1,60,000 \times 10\%)$$

$$\Rightarrow \text{EBT} = 5,04,000$$

$$\text{Profit} = \text{EBT} - \text{Tax} = 5,04,000 - (5,04,000 \times 50\%)$$

$$\Rightarrow \text{Profit} = 2,52,000$$

$$\text{Operating leverage} = \frac{C}{\text{EBIT}} = \frac{7,20,000}{5,20,000} = 1.385$$

$$\text{Financial Leverage} = \frac{\text{EBIT}}{\text{EBT}} = \frac{5,20,000}{5,04,000} = 1.032$$

$$\text{Combined Leverage} = 1.385 \times 1.032 = 1.429$$

— Space to write important points for revision —

**2017 - Dec [8]** (b) Company A reports the following information from its financial statements.

	₹
Sales	8,00,000
Less: Variable cost	2,40,000
Contribution	5,60,000
Fixed Cost	4,00,000
EBIT	1,60,000
Less: Interest	20,000
Profit before Tax	1,40,000

Find out:

- (i) Using concept of financial leverage, by what percentage will the taxable income increase, if EBIT increases by 10%? Verify the results in terms of Rupees.
- (ii) Using the concept of operating leverage, by what percentage will EBIT increase if there is 10% increase in sales? Verify the results in terms of Rupees. **(2+2 = 4 marks)**

**Answer:**

- i. Degree of Financial Leverage:

$$FL = EBIT / \text{Profit before Tax} = 1,60,000 / 1,40,000 = 1.1428$$

If EBIT increases by 10%, the taxable income will increase by  $1.1428 \times 10 = 11.428\%$  and it may be verified as follows:

EBIT (after 10% increase)	₹ 1,76,000
Less interest	20,000
Profit before Tax	1,56,000
Increase in taxable income is ₹ 16,000 i.e., 11.428% of ₹ 1,40,000	

- ii. Degree of Operating leverage:

$$OL = \text{Contribution} / EBIT = 5,60,000 / 1,60,000 = 3.50$$

If sale increases by 10%, the EBIT will increase by  $3.50 \times 10 = 35\%$  and it may be verified as follow:

Sales (after 10% increase)	₹ 8,80,000
Less variable expenses @ 30%	2,64,000
Contribution	6,16,000
Less Fixed cost	4,00,000
EBIT	2,16,000

Increase in EBIT is ₹ 56,000 i.e. 35% of ₹ 1,60,000

— Space to write important points for revision —

**2018 - Dec [8]** (b) Jai & Karti Ltd. sells 10,00,000 bottles of Soda in a year. Each bottle produced has a variable cost of ₹ 5 and sells for ₹ 10. Fixed operating costs are ₹ 10,00,000. The company has debt of ₹ 12,00,000 at 10% rate of interest.

10.476



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As a Cost and Management Accountant you are required to **calculate:**

- (i) The Degree of Operating Leverage,
- (ii) The Degree of Financial Leverage, and
- (iii) The Degree of Total Leverage.

**(5 marks)**

# 10




## CAPITAL BUDGETING

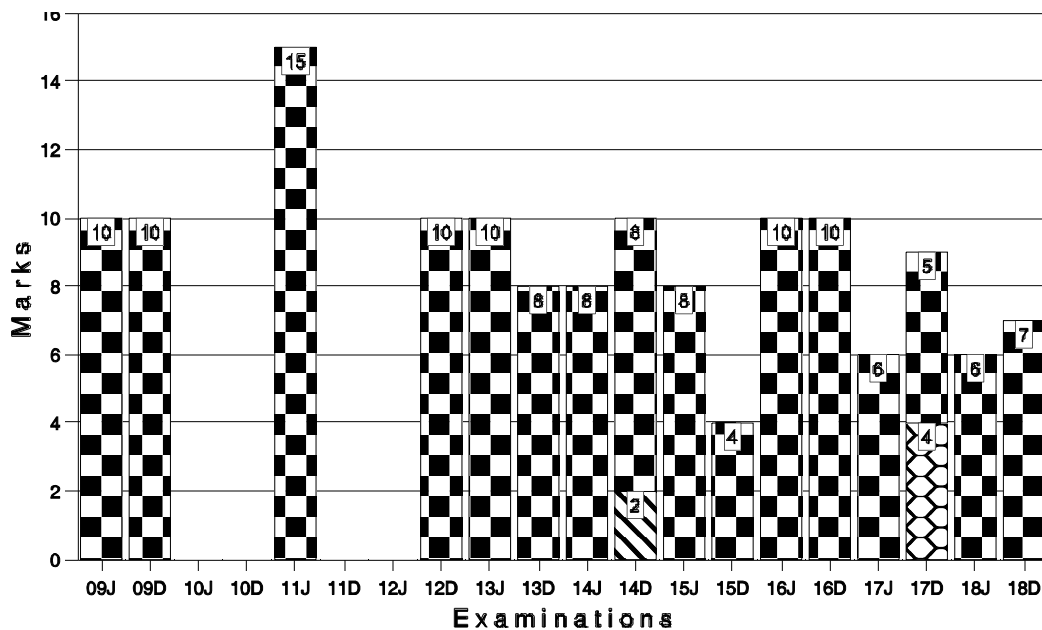
### THIS CHAPTER INCLUDES

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>• Capital Budgeting</li> <li>• Need of Capital Budgeting Decision</li> <li>• Significance of Capital Budgeting Decisions</li> </ul> | <ul style="list-style-type: none"> <li>• Process of Capital Budgeting</li> <li>• Investment Criterion – Methods of Appraisal</li> </ul> |
|--|---|

Marks of objective, Short Notes, Distinguish Between, Descriptive & Practical Questions

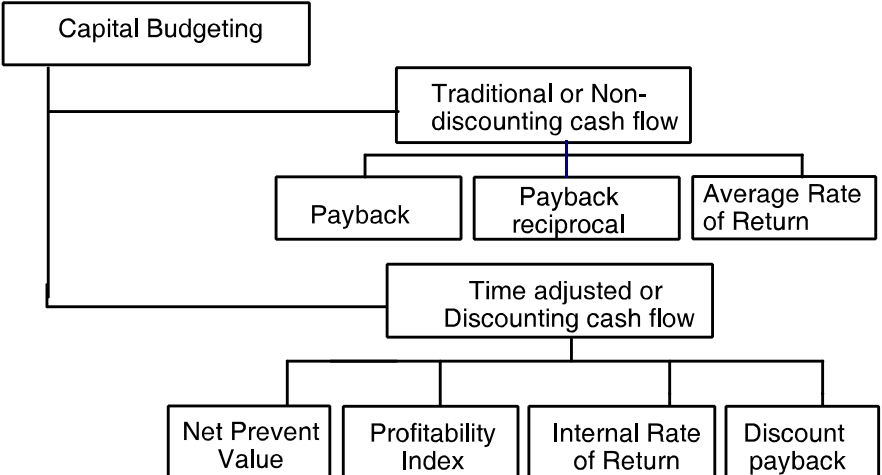
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 Objective
  Short Notes
  Distinguish
  Descriptive
  Practical



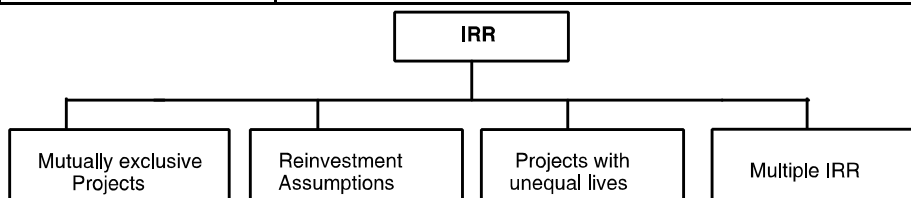
For detailed analysis Login at [www.scannerclasses.com](http://www.scannerclasses.com)  
for registration and password see first page of this book.

## CHAPTER AT A GLANCE

<b>1. Capital Budgeting</b>	Capital budgeting is the technique of making long term planning capital expenditure which is to be made to maximize the long term profitability of the organisation.
<b>2. Need of Capital Budgeting Decision</b>	<ul style="list-style-type: none"> <li>(i) Replacement and Modernization</li> <li>(ii) Capacity expansion</li> <li>(iii) Vertical integration</li> <li>(iv) Concentric diversification</li> <li>(v) Conglomerate diversification</li> <li>(vi) Research and developments</li> </ul>
<b>3. Significance of Capital Budgeting Decision</b>	<ul style="list-style-type: none"> <li>(i) Long time period</li> <li>(ii) Implied sales forecast</li> <li>(iii) Over and under capacity</li> <li>(iv) Affect the future operation</li> </ul>
<b>4. Process of Capital Budgeting</b> <b>5. Capital budgeting techniques or Method of Appraisal</b>	
 <pre> graph TD     CB[Capital Budgeting] --&gt; TNC[Traditional or Non-discounting cash flow]     CB --&gt; TADC[Time adjusted or Discounting cash flow]     TNC --&gt; P[Payback]     TNC --&gt; PR[Payback reciprocal]     TNC --&gt; AR[Average Rate of Return]     TADC --&gt; NPV[Net Present Value]     TADC --&gt; PI[Profitability Index]     TADC --&gt; IRR[Internal Rate of Return]     TADC --&gt; DP[Discount payback]           </pre> <p>The flowchart illustrates the classification of capital budgeting techniques. It starts with 'Capital Budgeting' at the top, which branches into two main categories: 'Traditional or Non-discounting cash flow' and 'Time adjusted or Discounting cash flow'. The 'Traditional or Non-discounting cash flow' category further branches into three techniques: 'Payback', 'Payback reciprocal', and 'Average Rate of Return'. The 'Time adjusted or Discounting cash flow' category branches into four techniques: 'Net Present Value', 'Profitability Index', 'Internal Rate of Return', and 'Discount payback'.</p>	

<b>1. Payback period</b>	Period for which the cumulative cash flows equals its cash flows.
<b>There are two methods of calculating the Pay Back Period</b>	<p>(i) <b>When cash flows are uniform:</b> This method can be applied when the cash flows after tax are uniform for each year of the project life.  <math>\text{Payback period} = (\text{Original Investment}) / (\text{Annual cash flow})</math></p> <p>(ii) <b>When cash flows are not uniform:</b> This method can be applied when the cash flows are not equal but vary from year to year. Pay back period is calculated by the process of cumulating cash inflows till the time when cumulative cash flows become equal to the original investment outlay.</p>
<b>2. Payback Reciprocal</b>	<ul style="list-style-type: none"> <li>It is reciprocal of payback period.</li> <li>It gives close approximation to IRR if the life of the project is at least twice the payback period.</li> </ul>
<b>3. Average Rate of Return (ARR)</b>	<p>The ratio of average profit to average capital is called Average Rate of Return.</p> <ul style="list-style-type: none"> <li>It is average annual profit earned on average funds invested.</li> <li>It is presented in the form of percentage or yield.</li> </ul> $\text{ARR} = (\text{Annual profit (after tax)}) / (\text{Average investment})$ $\text{Average investment} = \frac{1}{2} (\text{Initial cost} + \text{Installation expenses} - \text{Salvage value}) + \text{Salvage value} + (\text{Additional capital})$ <ul style="list-style-type: none"> <li>It ignores time value of money.</li> <li>Decision rule              If <math>\text{ARR} &gt; \text{Specific rate}</math> Accept              If <math>\text{ARR} &lt; \text{Pre specified rate}</math> Reject</li> <li>It is based on profits not cash flows.</li> <li>It ignores life and salvage value of the project.</li> </ul>

<b>Time adjusted or discounting cash flow</b>	The length of time required for an investment's cash flows, discounted at the investment's cost of capital, to cover its cost. Discounted Cash Flows methods enable us to isolate the differences in the timing of cash flows of the project by discounting them to know the present value.
<b>1. Net Present Value (NPV)</b>	<p>It is the sum of all the present value of cash inflows less present value of cash outflows of a project.</p> $NPV = \frac{CF_1}{(1+r)} + \frac{CF_2}{(1+r)^2} + \dots + \frac{CF_n}{(1+r)^n} - CF_0$ <p>Decision rule  NPV → Positive → Accept  NPV → Negative → Reject</p>
<b>2. Profitability Index/ Desirability factor (PI)</b>	<ul style="list-style-type: none"> <li>It is Present value of cash inflows to present value of cash outflows.</li> <li>It cannot be used if projects are indivisible.</li> <li><b>Profitability index</b> = (PI of inflow)/(Pi of outflow)</li> <li>Decision Rule  If PI &gt; 1 → Accept  If PI &lt; 1 → Reject</li> <li>PI and NPV give similar solution i.e. if NPV is positive, PI is greater than 1 and if NPV is negative, PI is less than 1.</li> </ul>
<b>3. Internal Rate of Return (IRR)</b>	<ul style="list-style-type: none"> <li>It is discounted cash flow technique.</li> </ul>





- IRR is a discounted rate at which NPV = 0

$$\frac{C}{(1+r)} + \frac{F}{(1+r)^2} + \dots + \frac{0}{(1+r)^n} = \frac{SV + WC}{(1+r)^n}$$

Here, SV = Salvage Value  
and WC = Working Capital  
Released

	<ul style="list-style-type: none"> <li>• Trial and error method is used to calculate IRR.</li> <li>• Approximate method of calculating IRR can also be used.</li> <li>• <math>IRR = LDR + (NPV \text{ at } LDR (HDR-LDR))/(NPV \text{ at } HDR - NPV \text{ at } LDR)</math> Where, LDR= Lower discount rate HDR= Higher discount rate</li> <li>• IRR is the rate at which the discounted cash inflows are equal to the discounted cash outflows.</li> <li>• A conflict may rise in situation of mutually exclusive projects between NPV and IRR.</li> </ul>
<b>Demerits</b>	<ul style="list-style-type: none"> <li>• Decision Criteria If <math>IRR &gt; \text{Cut off rate}</math> ? Accept the project If <math>IRR &lt; \text{Cut off rate}</math> ? Reject the project</li> </ul>
<b>Capital rationing</b>	<ul style="list-style-type: none"> <li>• It means short supply of funds.</li> <li>• A firm has various attractive opportunities but does not have sufficient funds to invest in all.</li> <li>• So, capital rationing refers to selection of investment proposals in situations of scarcity of funds, to maximize wealth and overall NPV of the firm.</li> <li>• The decision makers have to reject some of the projects. (It may includes those whose IRR is above the overall cost of the firm)</li> </ul>

<b>4. Modified Internal Rate of Returns (MIRR)</b>	<p>The discount rate at which the present value of the project's cost is equal to the present value of its terminal value, where the terminal value is found as the sum of the future values of the cash inflows, compounded at the firms cost capital.</p> <p><b>Step 1:</b> Calculate the present value of the costs (PVC) associated with the project, using cost of capital (r) as the discount rate.</p> $PVC = \sum_{t=0}^n \frac{\text{Cash out flow}}{(1 + r)^t}$ <p><b>Step 2 :</b> Calculate the future value (TV) of the cash inflows expected from the project:  <math>TV = \sum_{t=0}^n \text{cash in flow} (1 + r)^{n-t}</math></p> <p><b>Step 3 :</b> Obtain MIRR by solving the following equation.</p> $PVC = \frac{TV}{(1 + \text{MIRR})^n}$
<b>Discounted Pay Back Method</b>	<p>Under this method the discounted cash inflows are calculated and where the discounted cash flows are equal to original investment then the period which is required is called discounting pay back period. While calculating discounting cash inflows the firm's cost of capital has been used.</p> <p><b>Discounted Payback Period (DPP)</b> = Investment/ Discounted Annual cash in flow.</p>
<b>Decision criteria</b>	<p>Out of two projects, selection should be based on the period of discounting payback period (Lesser payback period should be preferred).</p>

## SHORT NOTES

**2017 - Dec [10]** Write short note on the following:

(a) Internal Rate of Return

**(4 marks)**

**Answer:**

**Internal Rate of return:**

IRR method follows discounted cash flow technique which takes into account the time value of money. The internal rate of return is the interest rate which equates the present value of expected future cash inflows with the initial capital outlay. In other words, it is the rate at which NPV is equal zero. Whenever a project report is prepared, IRR is to be worked out in order to ascertain the viability of the project. This is also an important guiding factor to financial institutions and investors.

**Formula:**

$$C = \left[ \frac{A_1}{(1+r)} \right] + \left[ \frac{A_2}{(1+r_2)} \right] + \dots + \left[ \frac{A_n}{(1+R_n)} \right]$$

Where C = Initial Capital outlay.

A1, A2, A3 etc. = Expected future cash inflows at the end of year 1, 2, 3 and so on.

r = Rate of interest

n = Number of years of project

In the above equation – 'r' is to be solved in order to find out IRR.

**Computation of IRR:**

The Internal Rate of return is to be determined by trial and error method. The following steps can be used for its computation,

- (i) Compute the present value of the cash flows from an investment, by using arbitrary by selected Interest Rate,
- (ii) Then compare the present value so obtained with capital outlay,
- (iii) If the Present Value is higher than the cost, then the present value of inflows is to be determined by using higher rate,
- (iv) This procedure is to be continued until the Present Value of the inflows from the investment are approximately equal to its outflow,
- (v) The Interest Rate that bring about equality is the internal rate of return.

— Space to write important points for revision —

**DESCRIPTIVE QUESTIONS**

**2008 - Dec [4]** (a) What are the main stages in the Capital Budgeting process? **(5 marks) [CMAIG - I]**

**Answer :**

The main stages in capital budgeting process are :

1. Identify and select the project.
2. Compute the funds required for the project and stages of fund requirement.
3. Compute the various cash inflows under various conditions due to the project.
4. Finalise the project for implementation. Develop MIS.
5. Decide control parameters for successful implementation of the project.
6. Monitor regularly the progress of the project.

—— Space to write important points for revision ———

**2014 - Dec [1]** Answer the question:

- (j) What is the acceptance rule for a project under the internal rate of return parameter? **(2 marks) [CMAIG - I]**

**Answer:**

**Acceptance Rule**

If the internal rate of return exceeds the required rate of return, then the project will be accepted. If the project's IRR is less than the required rate of return, it should be rejected. In case of ranking the proposals the technique of IRR is significantly used. The projects with highest rate of return will be ranked as first compared to the lowest rate of return projects.

Thus, the IRR acceptance rules are

Accept if  $IRR > k$

Reject if  $IRR < k$

May accept or reject if  $IRR = k$

Where,  $k$  is the cost of capital.

—— Space to write important points for revision ———

## PRACTICAL QUESTIONS

**2008 - Dec [5]** (b) XYZ Ltd. is considering two mutually-exclusive projects. Both require an initial cash outlay of ₹10,000 each for machinery and have a life of 5 years. The company's required rate of return is 10% and it pays tax at 50%. The projects will be depreciated on a straight-line basis. The net cash flows (before taxes) expected to be generated by the projects and the present value (PV) factor (at 10%) are as follows:

	Year				
	1	2	3	4	5
	₹	₹	₹	₹	₹
Project 1	4,000	4,000	4,000	4,000	4,000
Project 2	6,000	3,000	3,000	5,000	5,000
PV factor (at 10%)	0.909	0.826	0.751	0.683	0.621

You are required to calculate

- (i) the Pay Back Period of each project;
- (ii) the NPV and the Profitability Index of each project.

**(10 marks) [CMAIG - I]**

**Answer :**

### Pay Back Periods of Project- 1

Year	1	2	3	4	5
Cash flows	4,000	4,000	4,000	4,000	4,000
Less : Depreciation	2,000	2,000	2,000	2,000	2,000
EBT	2,000	2,000	2,000	2,000	2,000
Less : tax at 50%	1,000	1,000	1,000	1,000	1,000
Net income	1,000	1,000	1,000	1,000	1,000
CASH flows after tax	3,000	3,000	3,000	3,000	3,000
Cumulative cash flows	3,000	6,000	9,000	12,000	15,000

Payback period would be the time when initial investment is recovered in cash. The investment is ₹ 10,000. Payback period would be between 3 and 4 years.

$$\text{Payback period} = 3 + \frac{10,000 - 9,000}{9,000} = 3.11 \text{ Years}$$

**Pay Back Periods of Project- 2**

Year	1	2	3	4	5
Cash flows	6,000	3,000	2,000	5,000	5,000
Less : Depreciation	2,000	2,000	2,000	2,000	2,000
EBT	4,000	1,000	0	3,000	3,000
Less : tax at 50%	2,000	500	0	1,500	1,500
Net income	2,000	500	0	1,500	1,500
CASH flows after tax	4,000	2,500	2,000	3,500	3,500
Cumulative cash flows	4,000	6,500	8,500	1,200	15,500

Payback period would be between 3 and 4 years.

$$\text{Payback periods} = 3 + \frac{10,000 - 8,500}{3,500} = 3.43 \text{ Years}$$

— Space to write important points for revision —

**2009 - June [5]** (b) VEDIKA LTD. with a limited investment funds of ₹ 6,00,000 is evaluating the desirability of 5 (five) investment proposals. There profiles are summarised below :

Project Investment Annual cash flow (after tax) Life (in years)

	(₹)	(₹)	
M	1,00,000	36,000	10
N	2,00,000	1,00,000	4
O	2,40,000	60,000	8
P	3,00,000	80,000	16
Q	4,00,000	60,000	25

Project N and Q are mutually exclusive. The cost of funds is 10 percent.

**Required :**

Find out the feasible combination of projects and rank them on the basis of Net Present Value (NPV).

**Note :** Extracted from the table:

Year	10	4	8	16	25
PVIFA at 10%	6.145	3.170	5.335	7.824	9.077

**(8 + 2 = 10 marks) [CMAIG - I]**

**Answer :**

Project	Investment	Cash flow	Annuity	PV (cash flow×annuity)	NPV (PV–invest.)
M	1,00,000	36,000	6.145	2,21,220	1,21,220
N	2,00,000	1,00,000	3.170	3,17,000	1,17,000
O	2,40,000	60,000	5.335	3,20,100	80,100
P	3,00,000	80,000	7.824	6,25,920	3,25,920
Q	4,00,000	60,000	9.077	5,44,620	1,44,620

Life of project is not relevant in determination of NPV.

**Statement of feasible combination :**

Combination Rank	Investment	NPV
M, N and P	6,00,000	5,64,140
M, N and O	5,40,000	3,18,320
O and P	5,40,000	4,06,020
M and Q	5,00,000	2,65,840
N and P	5,00,000	4,42,920

— Space to write important points for revision —

**2009 - Dec [3]** (b) ANKIT LTD. a manufacturing company produces 25,000 litres of special lubricants in its plant. The existing plant is not fully depreciated for tax purposes and has a book value of ₹ 3 lakh (it was bought for ₹ 6 lakh six years ago). The cost of the product is as under :

Cost/litre (₹)

Variable Costs	60.00
Fixed Overheads	<u>15.00</u>
	<u>75.00</u>

It is expected that the old machine can be used for further period of 10 years by carrying out suitable repairs at a cost of ₹ 2 lakh annually.

A manufacturer of machinery is offering a new machine with the latest technology at ₹ 10 lakh after trading off the old plant (machine) for ₹ 1 lakh. The projected cost of the product will then be :

Cost/litre (₹)

Variable Costs	45.00
Fixed Overheads	<u>20.00</u>
	<u>65.00</u>

**10.488****Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)**

The fixed overheads are allocations from other department plus the depreciation of plant and machinery.

The old machine can be sold for ₹ 2 lakh in the open market. The new machine is expected to last for 10 years at the end of which, its salvage value will be ₹ 1 lakh. Rate of corporate taxation is 50%. For tax purposes, the cost of the new machine and that of the old one may be depreciated in 10 years. The minimum rate of return expected is 10%.

It is also anticipated that in future the demand for the product will remain at 25,000 litres.

Advise whether the new machine can be purchased. Ignore capital gain taxes.

[Given: PVIFA (10%, 10 years) = 6.145, PVIF (10%, 10 years) = 0.386.]

**(5 + 3 + 2 = 10 marks) [CMAIG - I]**

**Answer :**

Solved on lines of previously problem. Salient figures are given below.

Year	Cash flows	₹ lacs	PV factor	PV
0	Out flow due to cost	10.0	1	(10)
1 - 10	Annual saving	3.225	6.145	19.82
10	Salvage	1.0	0.386	0.38
<b>Net present value</b>				<b>10.20</b>

— Space to write important points for revision —

**2011 - June [6]** A company is faced with the problem of choosing between two mutually exclusive projects. Project A requires a cash outlay of ₹ 1,00,000 and cash running expenses of ₹ 35,000 per year. On the other hand, Project B will cost ₹ 1,50,000 and require cash running expenses of ₹ 20,000 per year. Both the machines have an eight-year life. Project A has a salvage value of ₹ 4,000 and Project B has a salvage value of ₹ 14,000. The company's tax rate is 50% and it has a 10% required rate of return.

Assuming depreciation on straight line basis and that there is no funds constraint for the company, ascertain which project should be accepted. Present value of an annuity of ₹ 1 for 8 years = 5.335 and present value of ₹ 1 at the end of 8 years = 0.467, both at the discount rate of 10%.

Please solve the problem by an incremental cash flow approach.

**(15 marks) [CMAIG - I]**



**Answer:**

<b>A Company</b>			
<b>Financial Evaluation of Project A &amp; Project B</b>			
	<b>Project A</b>	<b>Project B</b>	<b>Incremental</b>
	<b>₹</b>	<b>₹</b>	<b>Cash Flows</b>
			<b>₹</b>
Cash outflows	1,00,000	1,50,000	50,000
Cash running expenses (for 8 years)	35,000	20,000	15,000
Depreciation (for 8 year)	12,000	17,000	(5,000)
Total saving			10,000
Less : Tax @ 50%			(5,000)
Saving after tax			5,000
Add : Depreciation (not being cash outflow)			5,000
Net Saving			10,000
Salvage value at the end of year 8	4,000	14,000	10,000
Present value of annual saving for 8 years = PV of annuity x Net savings for 8 years = 10,000 x 5.335			53,350
Present value of incremental Salvage value at end of year 8 = 0.467 x 10,000			4,670
Total			58,020
Less : Cash out flow (incremental)			(50,000)
Net Present value (incremental)			8,020

**Recommendation :**

Since Project B has positive NPV over and above the NPV of Project A at 10% Discount rate, Project B is recommended for acceptance.

**Note :**

Working for depreciation

Project A	(₹ 1,00,000 – 4,000) / 8 years	= ₹ 12,000
Project B	(₹ 1,50,000 – 14,000) / 8 years	= ₹ 17,000

— Space to write important points for revision —

**10.490****Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)**

**2012 - Dec [3]** (a) A Company has developed a new toy which has been estimated to have a life cycle of 3 years. To manufacture the toy, the company will have to purchase a semi-automatic injection moulding machine at a cost of ₹ 8,60,000. The machine will have to be scrapped after 3 years at a salvage value of ₹ 1,10,000. Variable cost of producing the toy would be 40% of the sales price.

Fixed expenses, apart from depreciation will be ₹ 50,000 per year. Besides, advertising and selling expenses will have to be incurred at the rate of ₹ 1,00,000 in the first year, ₹ 1,50,000 in the second year and ₹ 50,000 in the third year. The following projection of sales have been made after evaluating the consumer demand:

Probability	Estimated Sales in year (₹ lakhs)		
	Year 1	Year 2	Year 3
0.3	12	25	10
0.6	7	17	15
0.1	2	9	4

The Company is subject to corporate tax rate of 30% and its cost of capital is 15%.

Prepare a schedule computing the probable sales of the new toy and estimated cash flows in each of the three years. Also determine net present value (NPV) of the proposal. Ignore tax on salvage value.

The present value of ₹ 1 earned at the year end discounted at 15%—

Year 1	Year 2	Year 3
0.87	0.756	0.658

**(10 marks) [CMAIG - I]**

**Answer:**

**Statement of Estimated Sales**  
**(Amount in ₹ lakh)**

Probability	Year 1		Year 2		Year 3	
0.3	0.3 x 12	3.6	0.3 x 25	7.5	0.3 x 10	3
0.6	0.6 x 7	4.2	0.6 x 17	10.2	0.6 x 15	9
0.1	0.1 x 2	0.2	0.1 x 9	0.9	0.1 x 4	0.4
		8		18.6		12.4

Determination of estimated cash flow:

₹ (lakh)

	Year 1	Year 2	Year 3
Probable Sales revenue	8.00	18.60	12.40
Less: Variable cost @ 40%	3.20	7.44	4.96
Contribution	4.80	11.16	7.44
Less: Depreciation ₹ (8,60,000 – 1,10,000) / 3	2.50	2.50	2.50
Fixed cost	0.50	0.50	0.50
Profit	1.80	8.16	4.44
Less: Advt. & Sales Exp.	1.00	1.50	0.50
Earning before Tax	0.80	6.66	3.94
Tax @ 30%	0.24	2.00	1.18
Earning after Tax	0.56	4.66	2.76
Cash flow (Eat + Depreciation)	3.06	7.16	5.26
Add: Salvage value	—	—	1.10
Total Cash Flow	3.06	7.16	6.36

#### Determination of NPV

Year	CFAT	PV factor	Total PV
1	3.06	0.870	2.662
2	7.16	0.756	5.413
3	6.36	0.658	4.185
			12.26
Less : Cash outflow (Investment)			8.60
NPV			3.66

— Space to write important points for revision —

**2013 - June [3]** (a) VEDAVYAS Ltd. is considering two mutually exclusive projects M and project N. The Finance Director thinks that the project with the higher NPV should be chosen, whereas the Managing Director thinks that the one with the higher IRR should be undertaken, especially as both projects have the same initial outlay and length of life. The company anticipates a cost of capital of 10% and the net after-tax cash flow of the projects are as follows:

Year	0	1	2	3	4	5
Cash flows (₹)						
Project M	(4,00,000)	70,000	1,60,000	1,80,000	1,50,000	40,000
Project N	(4,00,000)	4,36,000	20,000	20,000	8,000	6,000

You are required to:

- Calculate the NPV and IRR of each project.
- State with reasons, which project you would recommend.
- Explain the inconsistency in the ranking of the two projects.

Present value Table is given:

Year	0	1	2	3	4	5
PVIF at 10%	1.000	0.909	0.826	0.751	0.683	0.621
PVIF at 20%	1.000	0.833	0.694	0.579	0.482	0.402

(3 + 4) + 2 + 1 = 10 marks) [CMAIG - I]

**Answer:**

**(i) Calculation of NPV and IRR**

**NPV of Project M**

Year	Cash Flows (₹)	Discount factor (10%)	Discount Values (₹)	Discount factor (20%)	Discounted Values (₹)
0	(4,00,000)	1.000	(4,00,000)	1.000	(4,00,000)
1	70,000	0.909	63,630	0.833	58,310
2	1,60,000	0.826	1,32,160	0.694	1,11,040
3	1,80,000	0.751	1,35,180	0.579	1,04,220

4	1,50,000	0.683	1,02,450	0.482	72,300
5	40,000	0.621	24,840	0.402	16,080
NPV			58,260		(38,050)

**IRR of Project M:**

At 20%, NPV is (-) 38,050 and at 10% NPV is 58,260

$$\therefore \text{IRR} = 10 + \frac{58,260}{58,260 + 38,050} \times 10 = 16.05\%$$

**NPV of Project N**

Year	Cash Flows (₹)	Discount factor (10%)	Discounted Values (₹)	Discount factor (20%)	Discounted Values (₹)
0	(4,00,000)	1.000	(4,00,000)	1.000	(4,00,000)
1	4,36,000	0.909	3,96,324	0.833	3,63,188
2	20,000	0.826	16,520	0.694	13,880
3	20,000	0.751	15,020	0.579	11,580
4	8,000	0.683	5,464	0.482	3,856
5	6,000	0.621	3,726	0.402	2,412
NPV			37,054		(5,084)

At 20%, NPV is (-) 5,084 and at 10% NPV is 37,054

$$\therefore \text{IRR} = 10 + \frac{37,054}{37,054 + 5,084} \times 10 = 18.79\%$$

- (ii) Since, both the projects are generating the positive NVP at the company's cost of capital at 10% hence, they are acceptable. If company follows NPV method, then the company will have to select PROJECT M because it has higher NPV.

If the company follows IRR method, then PROJECT N should be selected because of higher Internal Rate of Return (IRR). But when NPV and IRR give contradictory results, a project with higher NPV is generally preferred because of higher return in absolute terms. Hence, Project M should be selected.

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## ■ Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)

- (iii) Because of the difference in the pattern of the cash flows the inconsistency in the ranking of the projects arises. Project M's major cash flow occur mainly in the middle three years whereas project N generated the major cash flow in the first year itself.

— Space to write important points for revision —

**2013 - Dec [8]** (a) A company has received an offer to purchase a new machinery in replacement of the existing one. The cost of the new machine will be ₹ 30 lacs. The supplier has offered to take the existing machine at ₹ 4 lacs.

The new machine will have an expected life of 5 years after which it will fetch a salvage value of ₹ 3 lacs. Currently, the company generates sales revenue of ₹ 40 lacs per annum and earns a contribution of 40% of sales. The new machine will reduce the unit variable cost by 20% and increase the output by 20%. The extra output can be sold.

The revenue cash flows may be considered at the end of each year. The company's after tax cost of capital is 14% per annum. The present value factors at 14% at each year end are as follows:

Year	1	2	3	4	5
P.V. factor	0.877	0.769	0.675	0.592	0.519

Based on the Net Present Value criterion, advise whether the proposal is acceptable. Ignore taxation.

**(8 marks) [CMAIG - I]**

**Answer:**

Current Sales Revenue	= ₹ 40,00,000
New Current Sales Revenue	= ₹ 48,00,000
Cost 60% existing	= ₹ 24,00,000
New Cost 60% existing	= ₹ 23,04,000
Contribution 40% of sales (existing)	= ₹ 16,00,000
New Contribution 40% of sales	= ₹ 24,96,000
Increase in contribution	= ₹ 8,96,000

**At existing situation (Cash flow)**

End of year	0	1	2	3	4	5
Investments	0					
Contribution	0	16,00,000	16,00,000	16,00,000	16,00,000	16,00,000
P.V. factor	1	0.877	0.769	0.675	0.592	0.519

P.V. of cash inflow		14,03,200	12,30,400	10,80,000	9,47,200	8,30,400
Total P.V. of Net Inflow	<b>54,91,200</b>					
(It is assumed that there is no salvage value for the existing machine after 5 year and that its useful life is 5 more years)						
<b>Proposed Machine</b>						
End of year	0	1	2	3	4	5
Cost of new machine	-30,00,000					
Salvage value of old machine	4,00,000					
Contribution	0	24,96,000	24,96,000	24,96,000	24,96,000	24,96,000
New Inflow/ (Outflow)	(-26,00,000)	24,96,000	24,96,000	24,96,000	24,96,000	24,96,000
P.V. factor	1	0.877	0.769	0.675	0.592	0.519
P.V. of cash flow	(-26,00,000)	21,88,992	19,19,424	16,84,800	14,77,632	12,95,424
Net P.V	59,66,272					
Increase in NPV with new machine	4,75,072					

**Advice- Based on NPV criterion, purchase the new machine.**

— Space to write important points for revision —

**2014 - June [8]** (b) Information on two projects is given below:

Project.....	A	B
Cash Inflows (₹ '000) Year-end		
1	50	282
2	300	250
3	360	180
4	208	Nil
Initial Investment - beginning of year 1	535	540

**10.496****Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)**

Evaluate which project is better under each of the following criteria taking discount rate as 10% p.a.

- (i) NPV
- (ii) Discounted pay Back period
- (iii) Profitability Index

**(8 marks) [CMAIG - I]****Answer:**

Year	PV factor @10%	Cash flows of Project A	Present Value of Project A	Cumulative PV of Project A	Cash Flows of Project B	Present Value of Project B	Cumulative PV of Project B
0	1.00	(535)	(535)	-	(540)	(540)	-
1	0.909	50	45.45	45.45	282	256.338	256.338
2	0.826	300	247.8	293.25	250	206.5	462.838
3	0.751	360	270.36	563.61	180	135.18	598.018
4	0.683	208	142.06	705.67	-	-	598.018

$$\begin{aligned}
 \text{(i) Net present value of project A} &= \text{PV of inflows} - \text{PV of outflows} \\
 &= 705.67 - 535 \\
 &= 170.67
 \end{aligned}$$

$$\begin{aligned}
 \text{Net present value of project B} &= \text{PV of inflows} - \text{PV of outflows} \\
 &= 598.018 - 540 \\
 &= 58.018
 \end{aligned}$$

Project A is better. Since, it has higher NPV.

- (ii) Discounted payback period

$$\text{Payback period} = 2 + \frac{241.75}{270.36} = 2.89 \text{ years}$$

Project B

$$\text{Payback period} = 2 + \frac{77.162}{135.18} = 2.57 \text{ years}$$

Project B is better. Since, it has lower payback period.

$$\text{(iii) Profitability Index} = \frac{\text{Present value of inflows}}{\text{Present value of outflows}}$$

Project A

$$\text{Profitability Index} = \frac{705.67}{535} = 1.32$$



Project B

$$\text{Profitability Index} = \frac{598.018}{540} = 1.12$$

Project A is better. Since, it has lower Profitability Index.

— Space to write important points for revision —

**2014 - Dec [3]** Answer the question:

- (b) (i) Lokesh Ltd. is considering buying a machine costing ₹ 15,00,000 which yields the following annual income:

End of year	1	2	3	4	5
Annual Income after Depreciation but before tax	3,50,000	3,72,000	3,10,000	1,75,000	1,10,000
P.V. factor at 12% of ₹1	0.893	0.797	0.712	0.636	0.567

Corporate tax rate applicable is 30%. Depreciation is on straight line basis for 5 years. There is no scrap value. Normal rate of return is 12%. Round off calculations to the nearest rupee and calculate:

- Pay-back period
- Discounted pay back period
- Net Present Value
- Profitability Index.

**(8 marks) [CMAIG - I]**

**Answer:**

Year	Profit before tax	Profit after tax	Cash inflows (PAT + Dep <sup>n</sup> )	Cumulative Cash inflows	Discounting factors @ 12%	Present Value	Cumulative present value
1	3,50,000	2,45,000	5,45,000	5,45,000	0.893	4,86,685	4,86,685
2	3,72,000	2,60,000	5,60,400	11,05,400	0.797	4,46,639	9,33,324
3	3,10,000	2,17,000	5,17,000	16,22,400	0.712	3,68,104	13,01,428
4	1,75,000	1,22,500	4,22,500	20,44,900	0.636	2,68,710	15,70,138
5	1,10,000	77,000	3,77,000	24,21,900	0.567	2,13,759	17,83,897

**10.498****Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)**

- (1) Pay-back period =  $2 + 394600/517000 = 2.76$  years  
(2) Discounted pay-back period =  $3 + 198572/268710 = 3.74$  years  
(3) Net present value = Present value of cash inflows - Present value of cash outflows  
=  $17,83,897 - 15,00,000 = ₹ 2,83,897$   
(4) Profitability index = Present value of cash inflows / Present value of cash outflows  
=  $17,83,897 / 15,00,000 = 1.19$

**Note:**

$$\text{Depreciation} = \frac{\text{Cost} - \text{Scrap value}}{\text{Life}} = \frac{15,00,000 - 0}{5} = ₹ 3,00,000$$

— Space to write important points for revision —

**2015 - June [III]** (b) (i) Annu Ltd. is examining two mutually exclusive investment proposals. The management uses Net Present Value Method to evaluate new investment proposals. Depreciation is charged using Straightline Method. Other details relating to these proposals are:

Particulars	Proposal X	Proposal Y
Annual Profit before tax (₹)	13,00,000	24,50,000
Cost of the Project (₹)	90,00,000	1,80,00,000
Salvage Value (₹)	1,20,000	1,50,000
Working Life	4 years	5 years
Cost of capital	10%	10%
Corporate Tax Rate	30%	30%

The present value of ₹ 1 at 10% discount rates at the end of first, second, third, fourth and fifth year are 0.9091; 0.8264; 0.7513; 0.683; and 0.6209 respectively.

You are required to advise the company on which proposal should be taken up by it.

**(8 marks) [CMAIG - I]**

**Answer:**

	Proposal X (₹)	Proposal Y (₹)
EBIT	13,00,000	24,50,000
Less: Tax @ 30%	<u>3,90,000</u>	<u>7,35,000</u>
EAT	9,10,000	17,15,000
Add: Depreciation	22,20,000	35,70,000
Cash inflow (a)	31,30,000	52,85,000
Present Value annuity factor @ 10% (b)	3.1698	3.7907
Present Value of Cash inflow (a) × (b)	99,21,474	2,00,33,850
Add: Present value of salvage value:		
Proposal X: 1,20,000 × 0.683	81,960	-
Proposal Y: 1,50,000 × 0.6209	-	93,135
Total Present Value	1,00,03,434	2,01,26,985
Less: Initial Outflow	90,00,000	1,80,00,000
Net Present Value	10,03,434	21,26,985

**Working note:**

	x	y
<b>Depreciation</b>		
Cost	₹ 90,00,000	₹ 1,80,00,000
Less: Salvage Value	<u>₹ 1,20,000</u>	<u>₹ 1,50,000</u>
	₹ 88,80,000	₹ 1,78,50,000
Working Life	4 year	5 year
Depreciation per Annum	₹ 22,20,000	₹ 35,70,000

**Advise:** Annualized Net Present Value is more in case of Project Y hence, we should accept project Y.

— Space to write important points for revision —

**10.500****■ Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)**

**2015 - Dec [III]** (c) (2) M/s. Progressive Co. Ltd. is considering an investment in Machine X. The cash flows expected are as under:

Initial Outflow ( in lakhs ₹) Cost of Machine	Cash in flows (in lakhs ₹) at the end of				
	1 <sup>st</sup> year	2 <sup>nd</sup> year	3 <sup>rd</sup> year	4 <sup>th</sup> year	5 <sup>th</sup> year
30	—	10	15	12	16

The cost of capital is 10% p.a. PV of ₹ 1 at 10% from year one to five:

End of year	1	2	3	4	5
P/V factor:	·91	·83	·75	·68	·62

Advise the Management whether the machine may be bought using the Net Present Value Method. **(4 marks) [CMAIG - I]**

**Answer:**

(₹ in lakhs)

Year	Cash Flow	PV Factor @ 10%	PV
0	(30)	1	(30)
1	-	0.91	-
2	10	0.83	8.3
3	15	0.75	11.25
4	12	0.68	8.16
5	16	0.62	9.92
<b>NPV</b>			<b>+ 7.63</b>

As the NPV is positive the machine should be purchased.

— Space to write important points for revision —

**2016 - June [1] {C}** (I) Answer the following question.

- (iv) B's cash flows are ₹ 1,000 on 01.07.2014; ₹ 1,100 on 01.07.2016; ₹ 1,000 on 01.07.2018; Considering annual rests, interest rate of 10% and using p.v. factor only up to one decimal, calculate the present value of his cash flows as on 01.07.2016. **(2 marks) [CMAIG - I]**

**Answer:**

P.V. on 1.7.2016 = ₹  $[(1.2 \times 1,000) + (0.8 \times 1,000) + (1 \times 1,100)] = ₹ 3,100$   
 or Simply, ₹  $(1,000 + 1,000 + 1,100) = ₹ 3,100$

(Since the Cash Flows are equidistant and equal from the date of P.V., the undiscounted Cash Flows may be added. Alternatively, a student can do the above usual working.)

— Space to write important points for revision —

**2016 - June [7]** (a) MN Ltd. wishes to evaluate two mutually exclusive proposals to acquire a machine. Machines M and N are being considered, each costing ₹ 2,00,000 and having an estimated life of 5 years and 4 years respectively. Both have nil salvage value. The anticipated cash inflows after adjustment of taxes for M and N are given below:

End of Year	Machine M	Machine N
1	70,000	1,00,000
2	60,000	90,000
3	60,000	80,000
4	50,000	40,000
5	90,000	Nil

Find the accounting rate of return and net present value for both the machines and advise MN Ltd. which machine should be bought. The required rate of return is 10% p.a.

Present Value factor for 10%:

End of Year	1	2	3	4	5
	.909	.826	.751	.683	.621

(8 marks) [CMAIG - I]

**Answer:**

**Ranking of Proposals:**

Year	Cash Inflow		P.V. Factor (10% p.a.)	Total P.V.	
	M (₹)	N (₹)		M (₹)	N (₹)
1	70,000	1,00,000	0.909	63,630	90,900

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2	60,000	90,000	0.826	49,560	74,340
3	60,000	80,000	0.751	45,060	60,080
4	50,000	40,000	0.683	34,150	27,320
5	90,000	-	0.621	55,890	-
				2,48,290	2,52,640
Less: Cash Outflow				2,00,000	2,00,000
<b>Net P.V.</b>				<b>48,290</b>	<b>52,640</b>

Average Rate of Return:

$$\frac{\text{Average Profit}}{\text{Average Investment}} \times 100$$

**Note:** [For evaluation of ARR the average investment has been taken at half of the initial cost for all the two machines]

$$M = 70,000 + 60,000 + 60,000 + 50,000 + 90,000 = 3,30,000 \div 5 = ₹ 66,000$$

$$N = 1,00,000 + 90,000 + 80,000 + 40,000 = 3,10,000 \div 4 = ₹ 77,500$$

$$M \quad ARR = \frac{AV \text{ Profit}}{AV \text{ Investment}} \times 100$$

$$= \text{Average Cash-in-flow-Depreciation}$$

$$= \frac{66,000 - 40,000}{1,00,000} \times 100 = 26\%$$

$$N \quad = \frac{77,500 - 50,000}{1,00,000} \times 100 = 27.5\%$$

**Rank:** Machine 'N' to be selected under both the methods.

—— Space to write important points for revision ———

**2016 - Dec [7]** (a) A company is considering the purchase of a stapler manufacturing machine. Two mutually exclusive machines, A and B are being evaluated. Relevant information is given below:

Particulars	Machine A	Machine B
Cost of the machine (₹)	10,00,000	15,00,000

Life in years	5	5
Salvage value (₹)	20,000	40,000
Cost of production per stapler (excluding depreciation)	30	28

**Other Information:**

The staplers can be sold at ₹ 40 each. Depreciation is based on cost net of residual value over the life of the machines on a straight line basis. Assume that taxes and operating cash flows occur at the end of the year and that salvage value is also taxed at the end of the 5<sup>th</sup> year. Assume 50% tax rate. Use 12% discount rate and P.V. factors with decimal places as given.

Present your calculations up to the nearest rupee.

Production volume = 1,00,000 units annually.

You are required to evaluate the proposals using NPV method, showing the discounted cash flows for each of the machines and advise from a financial perspective on the choice of a suitable alternative.

Do you feel the NPV would be the ideal measure in this case to take the decision?

End of year	1	2	3	4	5	6	7	8	9
P.V. factor @ 12%	0.893	0.797	0.712	0.636	0.567	0.507	0.452	0.404	0.361

**(10 marks) [CMAIG - I]**

**Answer:**

Details	Machine A	Machine B	Working Notes
Revenue ₹/unit	40	40	
Cost excluding Depreciation	30	28	
Cash Profit	10	12	
Tax (50 %)	5	6	
Cash profit per unit after tax	5	6	
Cash profit for 1,00,000 units p.a.	5,00,000	6,00,000	

Depreciation Shield	98,000	1,46,000	$50\%(10,00,000-20,000)/5$ $50\%(15,00,000-40,000)/5$ (Cost less salvage value over 5 years)
Annual Cash Inflows	5,98,000	7,46,000	
P.V. factor yr 1 to 5 annuity	3.605	3.605	
P.V. of annual cash inflows	21,55,790	26,89,330	
Discounted Salvage value after tax at the end of year 5	5,670	11,340	$20,000 \times .5 \times .567$ $40,000 \times .5 \times .567$
P.V. of inflows	21,61,460	27,00,670	
P.V. of Outflows = Initial outlay	10,00,000	15,00,000	
Net Present Value (NPV)	+11,61,460	+ 12,00,670	
<b>Conclusion:</b> As per NPV method, B is preferable. NPV is not the best method in this case since B's NPV are only marginally higher than A's, whereas initial outlay is 1.5 times that of A.			

**Note:** The question is specific that nearest rupee is used, discount factors only as given be taken and each proposal is to be presented. Hence alternative solutions where figures vary due to being in rupees in lacs or p.v. factors being different or incremental approach are not acceptable.

Even if a student works out cash flows showing profit after adding back depreciation instead of cash profits + shield on depreciation, he will have to arrive at the annual cash inflows.

\_\_\_\_\_ Space to write important points for revision \_\_\_\_\_

**2017 - June [9]** (b) FB Chemical Ltd. has three potential projects, all with an initial cost of ₹ 20,00,000 and estimated life of five years. The capital budget for the year will only allow the company to accept one of the three projects. Given the discount rates and the future cash flows of each project, which project should the company accept?

Project 1 has an annual cash flow of ₹ 5,00,000 and discount rate of 6%

Project 2 has an annual cash flow of ₹ 6,00,000 and discount rate of 9%

Project 3 has the following cash inflow and discount rate of 15%



Year	1	2	3	4	5
Cash Inflows ₹	10,00,000	8,00,000	6,00,000	2,00,000	1,00,000

(6 marks)

**Answer:**

NPV = PV of Inflow - PV of outflow

Project 1's NPV = ₹ [5,00,000 (.943+.889+.839+.792+.747) - 20,00,000]  
= ₹ 1,05,000

Project 2's NPV = ₹ [6,00,000 (.917+.841+.772+.708+.649) - 20,00,000]  
= ₹ 3,32,200

Project 3's NPV = ₹ 20,31,900 - 20,00,000 = 31,900.

Project 2 should be accepted as its NPV is maximum.

— Space to write important points for revision —

**2017 - Dec [9]** (b) ZZZ Co. has four potential projects all with an initial cost of ₹ 15,00,000. The capital budget for the year will only allow the company to take up only one of the three projects. Given the discount rates and the future cash flows of each project, which project should they accept?

PROJECT	Annual Net Cash Flows per year for five years (₹)	Discount Rates
A	3,50,000	4%
B	4,00,000	8%
C	5,00,000	10%

(5 marks)

**Answer:**

Cash Outflow = 15,00,000

Life of Project = 5 years

1. **Calculation of NPV of Project A**

NPV = P.V. of CI – P.V. of cash outflow

P.V. of CI = CI × P.V. of Annuity factor for 5 years @ 4%

= 3,50,000 × 4.452

= 15,58,200

NPV = 15,58,200 – 15,00,000

= ₹ 58,200

**2. Calculation of NPV of Project B**

$$\begin{aligned}\text{P.V. of CI} &= \text{CI} \times \text{PV of Annuity factor for 5 years @ 8\%} \\ &= 4,00,000 \times 3.993 \\ &= 15,97,200 \\ \therefore \text{NPV} &= 15,97,200 - 15,00,000 \\ &= ₹ 97,200\end{aligned}$$

**3. Calculation of NPV of Project C**

$$\begin{aligned}\text{P.V. of CI} &= \text{CI} \times \text{PV of Annuity factor for 5 years @ 10\%} \\ &= 5,00,000 \times 3.791 \\ &= 18,95,500 \\ \text{NPV} &= 18,95,500 - 15,00,000 \\ &= ₹ 3,95,500\end{aligned}$$

**Recommendation :** The management of ZZZ Company may be advised to select Project C as its NPV is more than NPV of Project A&B.

—— Space to write important points for revision ———

**2018 - June [9]** (b) ANURAG MILLS LTD. has number of machines that were used to make a product that the firm has phased out its operations. An existing machine was originally purchased six years ago for ₹ 5,00,000 and is being depreciated by the straight line method: its remaining useful life is 4 years. No salvage value is expected at the end of the useful life. It can currently be sold for ₹ 1,50,000. The machine can also be modified to produce another product at a cost of ₹ 2,00,000. The Modifications would not affect the useful life, or salvage value and would be depreciated using the straight line method.

If the firm does not modify the existing machine, it will have to buy a new machine at a cost of ₹ 4,40,000 (no salvage value) and the new machine would be depreciated over 4 years. The engineers estimate that the cash operating costs with the new machine would be ₹ 25,000 per year less than with the existing machine. Cost of Capital is 15 per cent and Corporate Tax Rate is 35 per cent.

**Advice** The Company whether the new machine should be bought, or the old equipment modified. Assume straight line method of depreciation for tax purposes and loss on sale of existing machine can be claimed as short-term capital loss in the current year itself.

[Given : PVIFA (15% 4 year) = 2.855]

(6 marks)

**Answer:**

**Cash Outflows:**

Particulars	₹
Price of new machine	4,40,000
Less: Sale proceeds of existing machine	1,50,000
Less: Tax savings on loss of the sale of existing machine [0.35 × (₹ 2,00,000, Book Value – ₹ 1,50,000, Sale Value)]	17,500
Less: Modifications avoided if the new machine is bought	2,00,000
Net Cash Outflows	72,500

Cash Inflows (annual savings):

Particulars	Amount Before Tax (₹)	Amount After Tax (₹)
Cost savings	25,000	16,250
Differential depreciation (1,10,000 – 1,00,000)	10,000	3,500
Total Cash advantage per year		19,750
(x) PV Factor		(x) 2.855
PF of future savings from buying new machine		56,386

**10.508****■ Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)**

Cash flow required		72,500
Negative PV favouring modifying machine		(16,114)

Recommendation: The old machine should be modified.

— Space to write important points for revision —

**2018 - Dec [9]** (b) ZENITH LTD. is faced with the problem of choosing between two mutually exclusive projects A and B. Project A requires a cash outlay of ₹ 10,00,000 and cash running expenses of ₹ 3,50,000 per year. On the other hand, Project B will cost ₹ 15,00,000 and require cash running expenses of ₹ 2,00,000 per year. Both the projects have an eight-year life. Project A has a salvage value of ₹ 40,000 and Project B has a salvage value ₹ 1,40,000. The company's tax rate is 50% and it has a 10% required rate of return.

**Required:**

Assuming depreciation on straight line basis and that there is no funds constraint for the company, Ascertain which project should be accepted.

[Given: PVIFA (10%, 8 years) = 5.335 and PVIF (10%, 8 years) = 0.467]

**Note:** Solve the problem by an incremental cash flow approach. **(7 marks)**

Table Showing Marks of Compulsory Questions										
Year	14 J	14 D	15 J	15 D	16 J	16 D	17 J	17 D	18 J	18 D
Practical					2					
Total					2					

# 11

## ***OBJECTIVE QUESTIONS*** ***FINANCIAL MANAGEMENT***

**2008 - Dec [1] {C}** (a) In each of the questions given below, one out of four is correct. Indicate the correct answer (1 mark each).

- (i) Which of the following statements is most correct?
  - (a) Risk refers to the chance that some unfavourable event will occur and a probability distribution is completely described by a listing of the likelihood of unfavourable events.
  - (b) Portfolio diversification reduces the variability of returns on an individual stock.
  - (c) When company-specific risk has been diversified, the inherent risk that remains is market risk which is constant for all the securities in the market.
  - (d) The SML relates required returns to firm's market risk. The slope and intercept of this line cannot be controlled by the finance manager.
- (ii) Stock A and Stock B each has an expected return of 15 per cent, a standard deviation of 20 percent and a beta of 1.2. The returns of the two stocks are not perfectly correlated. The correlation coefficient is 0.6. You have put together a portfolio which is 50 percent Stock A and 50 percent Stock B. Which of the following statements is most correct?
  - (a) The portfolio's expected return is 15 percent.
  - (b) The portfolio's beta is less than 1.2.
  - (c) The portfolio's standard deviation is 20 percent.
  - (d) Statements (a) and (b) are correct.
- (iii) Stock A has a beta of 1.5 and Stock B has a beta of 0.5. Which of the following statements must be true about these securities? (Assume market equilibrium.)
  - (a) When held in isolation, Stock A has greater risk than Stock B.
  - (b) Stock B would be a more desirable addition to a portfolio than Stock A.

- (c) Stock A would be a more desirable addition to a portfolio than Stock B.
- (d) The expected return on Stock A will be greater than that on Stock B.
- (v) Essar Steel Ltd. uses the CAPM to calculate the cost of equity capital. The company's capital structure consists of common stock, preferred stock, and debt. Which of the following events will reduce the company's WACC?
  - (a) A reduction in the market-risk premium,
  - (b) An increase in the risk-free rate,
  - (c) An increase in the company's beta,
  - (d) An increase in expected inflation.
- (vi) Assume that a project has normal cash flows i.e., the initial cash flow is negative and all other cash flows are positive. Which of the following statements is most correct?
  - (a) All else equal a project's IRR increases as the cost of capital declines,
  - (b) All else equal a project's NPV increases as the cost of capital declines,
  - (c) All else equal a project's MIRR is unaffected by changes in the cost of capital,
  - (d) Answers (a) and (b) are correct.
- (vii) Which of the following statements is most correct?
  - (a) The NPV method assumes that cash flows will be reinvested at the cost of capital, while the IRR method, assumes reinvestment at the IRR.
  - (b) The NPV method assumes that cash flows will be reinvested at the risk-free rate, while the IRR method assumes reinvestment at the IRR.
  - (c) The NPV method assumes that cash flows will be reinvested at the cost of capital, while the IRR method assumes reinvestment at the risk-free rate.
  - (d) The NPV method does not consider the inflation premium.

- (viii) You have determined the profitability of a planned project by finding the present value of all the cash flows from that project. Which of the following would cause the project to look more appealing in terms of the present value of those cash flows?
- (a) The discount rate decreases.
  - (b) The cash flows are extended over a longer period of time but the total amount of the cash flows remains the same.
  - (c) The discount rate increases.
  - (d) Answer (b) and (c) are correct.
- (ix) Which of the following could explain why a business might choose to organize as a corporation rather than as a sole proprietorship or as a partnership?
- (a) Corporations generally face fewer regulations.
  - (b) Corporations generally face lower taxes.
  - (c) Corporations generally find it easier to raise capital.
  - (d) Corporations enjoy unlimited liability.

**(8 × 1 = 8 marks) [CMAIG - I]**

**Answer :**

- (a)** (i) (d)  
(ii) (a)  
(iii) (d)  
(v) (a)  
(vi) (b)  
(vii) (a)  
(viii) (a)  
(ix) (c)

\_\_\_\_\_ Space to write important points for revision \_\_\_\_\_

**2008 - Dec [1] {C}** (b) For each of the questions given below, one out of four answers is correct. Indicate the correct answer (1 mark each) and give your workings/reasons briefly (1 mark).

- (iii) Tata Ltd. has a target capital structure of 40% debt and 60% equity for one of its new subsidiaries. The yield to maturity of the company's outstanding bonds is 9% and the tax rate is 40%. The CFO has calculated the company's WACC as 9.96%. The company's equity cost of capital is

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- (a) 8%  
(b) 10%  
(c) 13%  
(d) 15%
- (iv) Airtel Communications is trying to estimate the first-year operating cash flow (at  $t = 1$ ) for a proposed project. The finance staff has collected the following information:  
Projected sales = ₹ 1 crore  
Operating costs = ₹ 70 lakhs (not including depreciation)  
Depreciation = ₹ 20 lakhs  
Interest expense = ₹ 20 lakhs  
The company faces a 40% tax rate. The project's operating cash flow for the first year ( $t = 1$ ) is  
(a) ₹ 35 lakhs  
(b) ₹ 26 lakhs  
(c) ₹ 22 lakhs  
(d) None of the above
- (v) Reliance Ltd. has an ROA of 10% and a Profit Margin of 2%. The company's total Asset Turnover is  
(a) 3%  
(b) 4%  
(c) 5%  
(d) 6%

**(3×2 = 6 marks) [CMAIG - I]****Answer :****(b)(iii)** c : 13%40% Debt; 60% Equity;  $r_d = 9\%$ ;  $T = 40\%$ ;  $WACC = 9.96\%$ ;  $r_s = ?$ 

$$WACC = (W_d)(r_d)(1 - T) + (W_{ce})(r_s)$$

$$9.96\% = (0.4)(9\%)(1 - 0.4) + (0.6)r_s$$

$$9.96\% = 2.16\% + 0.6r_s$$

$$7.8\% = 0.6r_s$$

$$r_s = 13\%.$$

(iv) b : ₹ 26 lakhs.

Operating Cash Flow : ( $t = 1$ )

Sales revenue 1,00,00,000

Operating costs 70,00,000



Depreciation	<u>20,00,000</u>
Operating income before taxes	10,00,000
Taxes (40%)	<u>4,00,000</u>
Operating income after taxes	6,00,000
Add back depreciation	<u>20,00,000</u>
Operating cash flow	<u>26,00,000</u>

(v) c : 5%

ROA = 10%                      Profit Margin = 2% S/TA = ?

ROA = NI/TA;                  PM = NI/S

ROA = PM × S/TA

NI/TA = NI/S × S/TA

10% = 2% × S/TA

S/TA = 5%

\_\_\_\_\_ Space to write important points for revision \_\_\_\_\_

**2008 - Dec [1] {C}** (c) State whether each of the following statements is true or false:

- (ii) Given two mutually-exclusive projects and a zero cost of capital, the payback method and the NPV method of selecting investments will always lead to the same decision on which project to undertake.
- (iii) A firm's capital structure can never affect its free cash flows.
- (iv) In a world with no taxes, MM Hypothesis shows that the capital structure of a firm does not affect the value of the firm. However, when taxes are considered, MM Hypothesis shows a positive relationship between debt and value. **(3 × 1 = 3 marks) [CMAIG - I]**

**Answer :**

- (c)** (ii) False  
 (iii) False  
 (iv) True

\_\_\_\_\_ Space to write important points for revision \_\_\_\_\_

**2009 - June [1] {C}** (a) In each of the cases given below, one out of four alternatives is correct. Indicate the correct answer (= 1 mark) and give your workings/reasons briefly (= 1 mark).

- (i) ZENEETH Ltd. is a manufacturing company having asset turnover ratio of 2 and debt-asset ratio of 0.60 for the year ended 31st March, 2009. If its net profit margin is 5 percent, the Return on Equity (ROE) of the company will be
- (a) 20%
  - (b) 25%
  - (c) 16.7%
  - (d) Data insufficient
- (ii) The degree of operating leverage and degree of financial leverage of VINTEX LTD. are 2.00 and 1.5 respectively. What will be the percentage change in EPS, if the sale increases by 10%?
- (a) 10% increase
  - (b) 15% increase
  - (c) 30% increase
  - (d) insufficient information
- (iv) ASHRIN Ltd. has an EPS of ₹ 3 last year and it paid out 60% of its earnings as dividends that year. The growth rate in earnings and dividends in the long term is expected to be 6%. If the required rate of return on equity for Ashrin Ltd. is 14%. What would be its P/E ratio?
- (a) 8.20
  - (b) 7.95
  - (c) 7.00
  - (d) 6.50
- (vi) Two firms PREETI LTD. and MAHATI LTD. are similar in all respects except that Mahati Ltd. uses ₹ 10,00,000 debt in its capital structure. If the corporate tax rate for these firms is 40%, the value of Mahati Ltd. exceeds that of Preeti Ltd. by.
- (a) ₹ 4,00,000
  - (b) ₹ 6,00,000
  - (c) ₹ 6,20,000
  - (d) ₹ 7,00,000
- (vii) The stock of ANUSA Ltd. has a beta of 0.95 and an expected return of 13.60 percent. The market portfolio has an expected return of 14.00 percent. Based on CAPM what would be the risk premium for Anusa Ltd.'s stock?

- (a) 7.60%
- (b) 6.00%
- (c) 5.54%
- (d) None of (a), (b) and (c)

**( 2 × 5 = 10 marks) [CMAIG - I]**

**(b)** Choose the most appropriate one from the stated options and Write it down (only indicate A, B, C, D as you think correct) (1= marks each)

- (i) Which of the following statements is most correct?
  - (a) The NPV method assumes that cash flows will be reinvested at the cost of capital while the IRR method assumes reinvestment at the IRR.
  - (b) The NPV method assumes that cash flows will be reinvested at the risk free rate while the IRR method assumes reinvestment at the IRR.
  - (c) The NPV method assumes that cash flows will be reinvested at the cost of capital while the IRR method assumes reinvestment at the risk-free rate.
  - (d) The NPV method does not consider the inflation premium.
- (ii) A decrease in a firm's willingness to pay dividends is likely to result from an increase in its
  - (a) Earnings stability
  - (b) Access to capital markets
  - (c) Profitable investment opportunities
  - (d) Collection of accounts receivable
- (iii) Which of the following statements is true in respect to the mobilization of funds by a finance Manager?
  - (a) Assessing the costs and benefits of a project under consideration
  - (b) Interacting with banking agencies for procuring funds.
  - (c) Appraisal of investment proposals given by various departments.
  - (d) Deciding the optimum quantity of raw materials to be ordered for procurement.
- (vi) Which of the following is not an issue considered as part of economical appraisal of projects?
  - (a) Impact of the project on income distribution in the society.
  - (b) Impact of the project on the wealth of the shareholders.

(c) Impact of the project on the level of savings and investment in the society.

(d) Impact of the project in creating self-sufficiency in the society

**(1 × 4 = 4 marks) [CMAIG - I]**

**(c)** Mention whether the following statements are *True* or *False*:

(iv) Working Capital Management is primarily concerned with striking a balance between liquidity and profitability. **(1 mark) [CMAIG - I]**

**Answer :**

**(a)** (i) b : 25%

According to the Du-Pont Analysis

ROE = (Net Profit/Sales) × (Sales/Avg Assets) × (Avg assets/Avg Equity)

Avg assets/Avg Equity =  $1/(1-0.60) = 2.50$

ROE =  $0.05 \times 2 \times 2.50 = 0.25$  i.e. 25%

(ii) c : 30% increase

DOL = 2, DFL = 1.5 \ DTL =  $2 \times 1.5 = 3$

Increase in EPS = DTL × change in sales quantity =  $3 \times 10\% = 30\%$

(iv) b : 7.95

P/E Ratio =  $\frac{\text{Pay-out ratio}}{r - g_n} = \frac{0.6(1.06)}{0.14 - 0.06} = \frac{0.636}{0.08} = 7.95$

(vi) a : ₹ 4,00,000

When Corporate taxes are considered, the value of the firm that is levered would be equal to the value of the unlevered firm increased by the tax shield associated with debt i.e.

$$V = \frac{O(1 - t_e)}{K} + t_e B$$

∴ Value of Mahati Ltd. would exceed the value of Preeti Ltd. by only  $t_e B$  i.e.  $0.4 \times 10,00,000 = ₹ 4,00,000$ .

(vii) a : 7.60%

Applying the SML equation to Anusa Ltd's stock :

$0.136 = R_f + 0.95 (14.00 - R_1) \Rightarrow R_1 (1 - 0.95) = (0.136 - 0.95 \times 0.140)$

∴  $R_1 = \frac{0.136 - 0.133}{0.05} = 0.06$  i.e. 7.6%

Hence, Risk Premium for Anusa Ltd.'s stock :

$E(R_1) - R_1 = 0.136 - 0.06 = 0.076$  i.e. 7.60%

- (b) (i) a  
(ii) c  
(iii) b  
(vi) b  
(c)(iv) True

\_\_\_\_\_ Space to write important points for revision \_\_\_\_\_

**2009 - Dec [1] {C}** (a) In each of the cases given below, one out of four alternatives is correct. Indicate the correct answer (= 1 mark) and give your workings/reasons briefly in support of your answer (= 1 mark) :

- (i) The Board of Director of MOULIN LTD. (ML) is dissatisfied with last year's ROE of 15%. If the net profit margin and asset turnover ratio remain unchanged at 10% and 1.25 respectively, by how much must the asset to equity increase to achieve 20% of ROE ?  
A. Must increase by 0.6  
B. Must increase by 0.5  
C. Must increase by 0.4  
D. Insufficient information
- (iii) The degree of operating leverage of SHEETAL LTD. is increased by 30 percent. What will be the change in the degree of total leverage, if the degree of financial leverage is decreased by 20 percent ?  
A. 2% decrease  
B. 3% increase  
C. 4% increase  
D. Data insufficient
- (v) The current price of a share of RONEX LTD. is ₹ 55. The company is planning to issue one right share for every four equity shares. If the company targets that the ex-rights value of a share shall not fall below ₹ 52, the subscription price for one rights share should be more than or equal to:  
A. ₹ 50  
B. ₹ 48  
C. ₹ 40  
D. None of (A), (B), (C)

- (vi) ASHLEEN LTD. is to pay dividend of ₹ 3.00 at the end of the year and expected to grow at 12% per year forever. If the required rate of return on the company stock is 15 per cent per annum, its intrinsic value will be
- A. ₹ 100
  - B. ₹ 110
  - C. ₹ 115
  - D. None of (A), (B), (C)
- (vii) The earning power of SYNTEX LTD. is 0.30. If the average of total assets and interest expenses are ₹ 2,00,000 and ₹ 15,000 respectively, the interest coverage ratio will be
- A. 1.5
  - B. 3.00
  - C. 4.00
  - D. None of (A), (B), (C)
- (2 × 5 = 10 marks) [CMAIG - I]**
- (b)** Choose the most appropriate one from the stated options and write it down [only indicate A, B, C, D as you think correct (= 1 mark each)] :
- (i) Which one of the following would describe commercial paper most appropriately ?
    - A. Unsecured long-term notes as loan
    - B. Unsecured short-term loan notes
    - C. Secured short-term loan notes
    - D. Secured long-term loan notes
  - (iii) In which of the following appraisals by the financial institutions, is the schedule of implementing the whole project critically studied ?
    - A. Market appraisal
    - B. Technical appraisal
    - C. Financial appraisal
    - D. Economical appraisal
  - (v) When cost of capital of a project is equal to its Internal Rate of Return (IRR)
    - A. The NPV will be zero
    - B. The NPV will be + ve
    - C. The NPV will be - ve
    - D. Benefit cost ratio will be zero
- (1 × 3 = 3 marks) [CMAIG - I]**

(c) Mention whether the following statements are True (T) or False (F) :

- (ii) In the Bank's parlance, net working capital represents margin money.

(1 mark) [CMAIG - I]

**Answer :**

- (a) (i) → C : Must increase by 0.4

ROE = N.P. Margin × Asset - Turnover Ratio × Asset to Equity Ratio

$$0.15 = 0.10 \times 1.25 \times \text{Asset to equity Ratio}$$

$$\therefore \text{Asset to Equity Ratio} = 0.15/0.125 = 1.20$$

Again  $0.20 = \text{NP Margin} \times \text{Asset - Turnover Ratio} \times \text{Asset to equity Ratio}$ .

$$\therefore \text{Asset to Equity Ratio} = 0.20/(0.10 \times 1.25) = 1.60$$

$$\text{Increase in Asset to Equity} = 1.60 - 1.20 = 0.40.$$

- (iii) → C : 4% increase

The Degree of Total Leverage (DTL) is defined as the product between the Degree of Financial Leverage (DFL) and the Degree of Operating Leverage (DOL). The resultant  $\text{DTL} = 1.30 \text{ DOL} \times 0.8 \text{ DFL} = 1.04 \text{ DTL}$ ;

Hence,  $\text{DTL} = 1.04 \text{ DTL}$ ;

$\therefore$  Degree of Total leverage will increase by 4% ( $1.04 - 1.00$ ).

- (v) → C : ₹ 40

$$\text{Ex - rights value of a share} = \frac{\text{NP}_0 + S}{N + 1}$$

Where  $N = 4$ ,  $P_0 = ₹ 55$ ,  $S = \text{Subscription Price} = ?$

$$\frac{4 \times 55 + 8}{4 + 1} \geq 52 \rightarrow S \geq 52 \times 5 - 220 \therefore S \geq ₹ 40.$$

- (vi) → A : ₹ 100

$$P = D/(K_e - g) = ₹ 3.00/(0.15 - 0.12) \\ = ₹ 3.00/0.03 = ₹ 100.00$$

- (vii) → C : 4

EBIT = Total assets × Earning power

$$= 2,00,000 \times 0.30 = ₹ 60,000$$

Interest = ₹ 15,000

$$\text{Interest Coverage Ratio} = 60,000 / 15,000 = 4$$

- (b) (i) B  
(iii) B  
(v) A  
(c) (ii) True

\_\_\_\_\_ Space to write important points for revision \_\_\_\_\_

**2010 - June [1] {C}** (a) In each of the cases given below, one out of four answers is correct. Indicate the correct answer (= 1 mark) and give workings/ reasons briefly in support of your answer (= 1 mark):

- (i) LEENZA LTD. currently pays a dividend of ₹ 4 per share that is expected to grow at a rate of 10% for the next year, after which it is expected to grow at a rate of 7% forever. What value would you place on the stock of this company if a 15% rate of return is required? (Rounded off your answer to the nearest integer.) [Given PVIF (15% 1 year) = 0.8696]  
A. ₹ 53.05  
B. ₹ 55.00  
C. ₹ 58.10  
D. None of the above
- (ii) The Degree of Operating Leverage (DOL) and the Degree of Financial Leverage of ALANTA LTD. are 3 and 1.67 respectively. If the management of the company targets to increase the EPS by 10 per cent, by how much percentage should sales volume be increased? (Rounded off your answer to the nearest value.)  
A. 5.00%  
B. 3.00%  
C. 2.00%  
D. Insufficient data
- (iv) The total asset-turnover ratio and total asset to net-worth of ZENITH LTD. are 1.75 and 2 respectively. If the net-profit margin of the company is 8 per cent, what will be its Return on Equity (ROE)?  
A. 28.0%  
B. 25.5%  
C. 20.0%  
D. Insufficient information



- (vii) The dividend payout ratio of ASKITA LTD. is 40%. If the company follows traditional approach to dividend policy with a multiplier of 9, the P/E of ASKITA LTD. will be
- 4.4
  - 6.6
  - 7.1
  - 7.7
- (2 × 4 = 8 marks) [CMAIG - I]**
- (b) Choose the most appropriate one from the stated options and write it down [only indicate A, B, C, D as you think correct]
- (iii) The internal rate of return can be said to be based on the assumption that the intermediate cash flows are
- Perfectly certain
  - Highly variable
  - Re-invested at a rate equal to the internal rate of return of the firm
  - Re-invested at the cost of capital of the firm
- (vi) Which of the following statements about Venture Capital is correct?
- It will not be appropriate to finance a management buy out.
  - It will provide both loan and equity finance to a company.
  - It will provide secured medium term-loan.
  - It will be available to companies listed in stock exchange.
- (1 × 2 = 2 marks) [CMAIG - I]**
- (c) Mention whether the following statements are True (T) or False (F) :
- CVP analysis assumes a linear revenue function and a linear cost function.
  - The key issue of the theory of capital structure is to examine whether a business can change its value and cost of capital by changing its capital structure.
  - In case of projects which are divisible, capital rationing is done by ranking the projects on the basis of Net Present Value(NPV).
- (1 × 3 = 3 marks) [CMAIG - I]**

**Answer :**

- (a) (i) B : ₹ 55. The Present value of dividend stream to an investor is given as :
- $$₹ 4(1.10) \times 0.8696 = ₹ 3.826$$

**10.522****Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)**

$$D_2 = ₹ 4 \times 1.10 \times 1.07 = ₹ 4.708$$

$$\text{Price Share} = \frac{4.708}{0.15 - 0.07} \times 0.8696 + ₹ 3.826$$

$$= ₹ 55.00$$

(ii) C : 2.00%

$$\text{DTL} = \text{DOL} \times \text{DFL} = 3 \times 1.67 = 5.01$$

Therefore, as per the concept of DTL, in order to increase the EPS by 10% the sales volume will be increased by  $10 \div 5.01 = 2\%$

(iv) A : 28%

The Return on Equity (ROE) :

$$\text{PAT/Sales} \times (\text{SALES/TA} \times \text{TA/Net work})$$

$$= 0.08 \times 1.75 \times 2.00 = 28\% (0.28).$$

(vii) B : 6.6 :

According to traditional Approach

$$P = m \frac{(D + E)}{3}$$

Substituting the value, we get.

$$P = 9 \left( 0.40E + \frac{E}{3} \right) = E (3.6 + 3) = 6.6E$$

$$P/E = 6.6$$

(b) (iii) C

(vi) B.

(c) (i) True

(ii) True

(iii) False

\_\_\_\_\_ Space to write important points for revision \_\_\_\_\_

**2010 - Dec [1] {C}** (a) In each of the cases given below, one out of four answers is correct. Indicate the correct answer (=1 mark) and give workings/reasons briefly in support of your answer (=1 mark):

(i) The computed financial leverage based on the given data below

Net worth ₹ 25,00,000

Debt/Equity 3:1

Interest rate 12%

Operating profit ₹ 20,00,000, is

- A. 2.43
  - B. 2.16
  - C. 1.82
  - D. 1.56
- (ii) The following information relates to Suraj Chemicals Ltd.—  
Earnings per share, ₹ 4  
Dividend payout ratio, 45%  
Rate of return required by shareholders, 15%.  
Assuming that the Gordon Valuation model holds, the rate of return that should be earned on investments by Suraj Chemicals to ensure that the market price stays at ₹ 60 is
- A. 15.2%
  - B. 20.89%
  - C. 21.8%
  - D. 23.2%
- (iv) Durga Farm Supplies has an 8 percent return on total assets of ₹ 3,00,000 and a net profit margin of 5 percent. Its sales are then
- A. ₹ 37,50,000
  - B. ₹ 4,80,000
  - C. ₹ 3,00,000
  - D. ₹ 15,00,000
- (v) The face value of a 364-day T-bill is ₹ 100. If the purchase price is ₹ 86, then the yield on such a bill is
- A. 12.45%
  - B. 13.36%
  - C. 16.32%
  - D. 16.56%
- (vi) Zed Ltd. has a Beta of 1.15. Return on market portfolio is 14%. Return on Zed is 15.85%. Risk free rate is 5%.  
The value of Alpha for Zed is, then
- A. -3.48%
  - B. -0.30%
  - C. +0.50%
  - D. +1.22%

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- (vii) If back orders can be taken (at an added cost per item back ordered),  
 A. EOQ will decrease  
 B. EOQ will increase  
 C. Lead time will decrease  
 D. No change will occur. Back orders do not affect the EOQ model.

**(2 × 6 = 12 marks) [CMAIG - I]****(b)** Write if each of the following sentences is T (true) or F (false):

- (iii) Because of tax advantage, the cost of equity capital varies directly with the proportion of debt capital.  
 (iv) While designing the capital structure of a business the earnings capacity becomes a less important factor than the each flow ability.  
 (xi) A management decision may be beneficial for a given project center but not for the entire company. From the overall company view point, this decision leads to sub-optimization.

**(3 marks) [CMAIG - I]****Answer :****(a)** (i) C. Net worth ₹ 25,00,000

Debt/Equity 3 :1

Debt = ₹ 75,00,000

EBIT ₹ 20,00,000

Interest @ 12% ₹ 9,00,000

∴ PBT ₹ 11,00,000

Financial leverage EBIT/PBT = 20,00,000/11,00,000 = 1.82

$$(ii) C. P_0 = \frac{E(1 - b)}{K_e - br} \text{ or } 60 = \frac{4(1 - 0.55)}{0.15 - 0.55 * r}$$

Or r = 21.8%

$$(iv) B. \frac{8\% \text{ on } ₹ 3,00,000}{0.05} = ₹ 4,80,000$$

$$(v) C. \frac{₹ (100 - 86)}{₹ 86} \times \frac{365}{364} \times 100 = 16.32\%$$

$$(vi) C. \text{Actual return - CAPM Return} \\ = 15.85 - \{5 + 1.15(14 - 5)\} = 0.50\%$$

- (vii) B. A back order is a sale made when the item is not in stock. If back order are possible, stock can be maintained at lower levels.

Hence the EOQ model is modified for the cost of back orders.

The new formula is 
$$\left[ \frac{2aD}{k \left\{ \frac{b}{(b+k)} \right\}} \right]^{\frac{1}{2}}$$

Since the denominator decreases in the modified formula, the EOQ will increase.

- (b) (iii) False  
(iv) True  
(xi) True

— Space to write important points for revision —

**2011 - June [1] {C}** (a) In each of the cases given below, one out of four answers is correct. Indicate the correct answer (= 1 mark) and give workings/reasons briefly in support of your answer (= 1mark) :

- (i) A company issues a new 15 percent debentures of ₹ 1,000 face value to be redeemed after 10 years. The debenture is expected to be sold at 5 percent discount. It will involve floatation costs of 2.5 percent of face value. The company's tax rate is 35 percent. The cost of debt using short-cut method would be
- (a) 10.9%;  
(b) 10.21%;  
(c) 10.44%;  
(d) 10.76%. (2 marks)

- (ii) The capital structure of a company is as under :
- 3,00,000 Equity Shares of ₹ 10 each,  
32,000, 12% Preference Shares of ₹ 100 each,  
General Reserve ₹ 15,00,000,  
Securities Premium Account ₹ 5,00,000,  
25,000, 14% Fully Secured Debentures of ₹ 100 each,  
Term Loan of ₹ 13,00,000.
- Based on these, the leverage of the company is
- (a) 60.22%;  
(b) 58.33%;  
(c) 55.21%;  
(d) 62.10%. (2 marks)

- (iii) The standard deviation of Greaves Ltd. stock is 24% and its correlation coefficient with market portfolio is 0.5. The expected return on the market is 16% with the standard deviation of 20%. If the risk-free return is 6%, what will be the required rate of return on Greaves Ltd. script ?  
(a) 12%;  
(b) 11%;  
(c) 13%;  
(d) 11.5%. **(2 marks)**
- (iv) Cactus Limited paid a dividend of ₹ 5 per share for 2009-10. The company follows a fixed dividend payout ratio of 60%. The company earns a return of 20% on its investment. The cost of capital to the company is 14%. What would be the expected market price of its share, using the Walter Model ?  
(a) ₹ 69.69;  
(b) ₹ 50.50;  
(c) ₹ 60.69;  
(d) ₹ 70.10. **(2 marks) [CMAIG - I]**
- (b)** State if each of the following sentences is T (= true) or F (= false) :
- (ii) In the CAPM model 'systematic risk' is the risk that cannot be eliminated by diversification, it being common to all firms. **(1 mark)**
- (iii) An yield gap refers to a situation where yield on shares is lower this year as compared to last year's. **(1 mark)**
- (iv) Profitability Index is the profit expected in capital budgeting. **(1 mark) [CMAIG - I]**
- (d)** Fill in the blank with the appropriate word(s) as given in brackets in each of the following sentences :
- (i) Factoring reduces the working capital \_\_\_\_\_ by slashing receivables (cycle/need).
- (iii) The longer the loan period, the \_\_\_\_\_ should be the interest rate (higher/lower). **(1 × 2 = 2 marks) [CMAIG - I]**

**Answer :****(a) (i) A.**

$$K_d = \frac{\text{₹ } 150(1 - 0.35) + (\text{₹ } 50 + \text{₹ } 25)/10}{(\text{₹ } 925 + \text{₹ } 1,000)/2} = 10.9 \text{ percent}$$

$$\therefore K_d = 10.9\%$$

**(ii) B.**

a. Fixed income funds = ₹ (32,00,000 + 25,00,000 + 13,00,000)

b. Equity funds = ₹ (30,00,000 + 15,00,000 + 5,00,000)

$$\text{Leverage} = \frac{a}{a + b} = \frac{\text{₹ } 70,00,000}{\text{₹ } 1,20,00,000} = 58.33\%$$

**(iii) A.**

From the given,

 $R_f$  (risk-free return) as 6% $R_m$  (market return) as 16% $\sigma_m$  (standard deviation of market return) as 20% $\sigma_g$  (standard deviation of Greaves stock) as 24%

and  $\rho_{gm}$  (correlation coefficient of Greaves with the market) as 0.5,  
we first derive the  $\beta$  (beta of Greaves stock) and then use the  
CAPM formula for the required return on Greaves stock.

$$\begin{aligned} \text{Beta of Greaves stock} &= \frac{\rho_{gm} \times \sigma_g \times \sigma_g}{(\sigma_m)^2} \\ &= \frac{0.5 \times 0.24 \times 0.20}{(0.20)^2} = 0.6 \end{aligned}$$

$$\begin{aligned} \text{The required return} &= R_f + \beta_g (R_m - R_f) \\ &= 6\% + 0.6(16 - 6)\% = 12\% \end{aligned}$$

**(iv) A.**

$$\text{EPS} = \frac{\text{Dividend}}{\text{Payout ratio}} = \frac{\text{₹ } 5}{0.6} = \text{₹ } 8.33$$

$$\text{According to Walter mode, } P = \frac{D + (E - D) \times \frac{r}{k}}{k}$$

$$= \frac{5 + (8.33 - 5) \times \frac{0.20}{0.14}}{0.14}$$

$$= \text{₹ } 69.69$$

- (b) (ii) True  
(iii) False  
(iv) False  
(d) (i) Cycle  
(iii) higher

— Space to write important points for revision —

**2012 - June [1] {C}** (a) In each of the cases given below, one out of four answers is correct. Indicate the correct answer (= 1 mark) and give workings/reasons briefly in support of your answer (= 1 mark):

- (i) The capital of PQR Limited is as follows:

9% preference shares of ₹ 10 each	₹ 3,00,000
Equity shares of ₹ 10 each	₹ 8,00,000

Following further information is available:

Profit after Tax ₹ 2,70,000

Equity Dividend paid 20%

The market price of equity shares ₹ 40 each

Then the EPS and PE ratio are:

- (A) ₹ 3.12 and 10.80  
(B) ₹ 3.33 and 10.34  
(C) ₹ 4.51 and 12.56  
(D) ₹ 3.04 and 13.16
- (ii) A project has an equity beta of 1.2 and is going to be financed by 30% debt and 70% equity. Assume debt beta = 0,  $R_f = 10\%$  and  $R_m = 18\%$ . What is the required rate of return?  
(A) 8.4%  
(B) 18%  
(C) 16.72%  
(D) 10%
- (iii) A Limited is presently selling 1,00,000 units of its products. The selling price per unit is ₹ 25 and variable cost per unit is ₹ 15. The fixed cost is ₹ 5,00,000. The financial breakeven point for the company is ₹ 1,50,000. What will be the percentage change in EBIT required to increase EPS by 20%?



- (A) 10%  
 (B) 12%  
 (C) 14%  
 (D) 20%
- (iv) Zoom Technologies Limited issued 1,00,000, 14% debentures of ₹ 100 each, redeemable after 5 years at ₹ 110 each. The commission payable to under writers and brokers is 10%. The after-tax cost of debt, assuming a tax rate of 45%, will be  
 (A) 15.1%  
 (B) 12.54%  
 (C) 10%  
 (D) 11.7%
- (vi) According to Gordon's dividend capitalisation model, if the share price of a firm is ₹ 43, its dividend pay-out ratio is 60%, cost of equity is 9%, ROI is 12% and the number of shares are 12,000, what will be the net profit of the firm?  
 (A) ₹ 15,480  
 (B) ₹ 23,220  
 (C) ₹ 36,120  
 (D) ₹ 54,180

(2 × 5 = 10 marks) [CMAIG - I]

- (b) State if each of the following sentences is T (= true) or F (= false):
- (ii) Annual capital charge method is used for evaluating projects having different life spans.
- (iii) According to Modigliani and Miller Theory on dividends, dividend pay-out ratio is irrelevant for all firms. (1 × 2 = 2 marks) [CMAIG - I]

**Answer :**

- (a) (i) Eps is Profit after tax and after preference dividend, divided by no. of equity shares. All data is given to compute the eps. P/E ratio is the ratio of market price of share with its eps. It is easy to compute both.

(D) ₹ 3.04 and 13.16

$$\text{EPS} = \frac{\text{PAT} - \text{Preference dividend}}{\text{No. of Equity Shares}}$$

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$$= \frac{2,70,000 - 27,000}{80,000} = ₹ 3.04$$

$$\text{PE Ratio} = \frac{\text{Market Price}}{\text{EPS}} = \frac{40}{3.04} = 13.16$$

- (ii) Required rate of return or expected rate of return is given by a model. What is that model?

Beta of debt and equity and proportion of debt and equity both are given, how will you determine the beta of mix?

When beta of portfolio becomes known, you can find expected return by using CAPM.

(C) – 16.72%

$$\begin{aligned} \text{Beta of portfolio} &= [\beta_{\text{equity}} \times E/(D+E)] + [\beta_{\text{debt}} \times D/(D+E)] \\ &= (1.2 \times 0.70) + (0 \times 0.30) = 0.84 \end{aligned}$$

$$\begin{aligned} \therefore \text{Required Rate of Return} &= R_f + \beta_p (R_m - R_f) \\ &= 10\% + 0.84 (18\% - 10\%) \\ &= 16.72\% \end{aligned}$$

- (iii) The percentage change in EBIT with respect to increase in eps is given by a leverage. What is that leverage called ? What is the formula for that leverage?

EBIT is simple to compute. Can you calculate it to be INR 5,00,000?

Financial leverage = % changes in eps / % change in ebit. Use this formula and solve it.

(C) – 14%

$$\text{Degree of Financial Leverage (DFL)} = \frac{\text{EBIT}}{\text{EBIT} - \left(1 + \frac{D_p}{1 - t}\right)}$$

The Financial Break even point

$$= 1 + \frac{D_p}{1 - t} = 1.50,000 \text{ (given)}$$

$$\text{EBIT} = Q (S - V) - F = 1,00,000 (25 - 15) - 5,00,000 = ₹ 5,00,000$$

$$\text{DFL} = \frac{\text{SL}}{\text{SL} - 1.50\text{L}} = 1.43$$

$$DFL = \frac{\text{Required Change in EPS}}{\text{Change in EBIT}} \text{ or } 1.43 = \frac{20\%}{\text{Change in EBIT}}$$

∴ % Change in EBIT for 20% EPS increase  
 = 20%/1.43 = 13.99% or 14%

(iv)

	INR
Annual interest on debenture :	14.0
Less taxes @ 45%	<u>6.3</u>
Effective annual interest per year	<u>7.7</u>
Premium payable	10.0
Commission payable	10.0
Total amount payable in five years	20.0
Amount payable per year (20.0/5)	4.0
Net amount payable per year per debenture	11.7
Average price of debenture (110 + 90)/2	100.0
After tax cost of debenture (11.7/100)	11.70%

You can also use formula to determine the cost of debenture as follows:

(D) – 11.7%

$$K_d = \frac{I(1-t) + \left(\frac{F-P}{n}\right)}{\left(\frac{F+P}{2}\right)} = \frac{14(1-0.45) + \frac{110 - (110 - 10)}{5}}{\left(\frac{110 + 90}{2}\right)} = 11.7\%$$

(vi) Profit is given by Net profit after tax = eps x number of shares. Number of shares is given as 12,000 but eps is not given. Do you remember Gordon's model for market price of the share? Use Gordon's model to find eps and then compute the net profit of the firm.

(C) – ₹ 36,120 :

Gordon's equity capitalisation model :

$$P = E (1-b)/(K-br) \text{ or } 43 = E (0.6)/\{0.09-(0.4 \times 0.12)\}$$

or E = 3.01.

$$\text{Net Profit} = \text{EPS} \times \text{No. of shares} = 3.01 \times 12,000 = 36,120$$

(b) (ii) **True.** The projects having unequal life spans can be compared by (i) NPV method (ii) Capital charge method (iii) PI method etc.

- (iii) **True.** According to MM approach, the profit depends on the earning capacity and investment policy of the firm and it is irrelevant that how the profit is appropriated, distributed or utilised.

—— Space to write important points for revision ———

**2012 - Dec [1] {C}** (a) In each of the cases given below, one out of four answers is correct. Indicate the correct answer (=1mark) and give workings/reasons briefly in support of your answer (= 1 mark):

- (ii) R Limited requires ₹ 3 Million in cash for meeting its transaction needs over the next 6 months, its planning horizon for liquidity decision. The company currently has the amount in the form of marketable securities. The cash payment will be made evenly over the six month period. R Ltd. earns 12% annual yield on its marketable securities. Conversion of marketable securities into cash entails a fixed cost of ₹ 1,000 per transaction. What will be the optimal conversion size as per Baumol model of cash management?
- (A) ₹ 3,15,628  
(B) ₹ 3,16,228  
(C) ₹ 3,17,678  
(D) ₹ 3,18,428
- (iv) Calculate the future value of ₹ 1,000 invested in State Bank Cash Certificate scheme for 2 years @ 5.5% p.a., compounded semi-annually.
- (A) ₹ 1,114.62  
(B) ₹ 1,104.62  
(C) ₹ 1,401.51  
(D) ₹ 1,141.51
- (v) A firm has sales of ₹ 75,00,000 variable cost of ₹ 42,00,000 and fixed cost of ₹ 6,00,000. It has a debt of ₹ 45,00,000 at 9% interest and equity of ₹ 55,00,000. At what level of sales, the EBIT of the firm will be equal to zero?
- (A) ₹ 28,48,500  
(B) ₹ 28,84,500  
(C) ₹ 22,84,500  
(D) ₹ 26,48,500

(2 × 4 = 8 marks) [CMAIG - I]

(b) State if each of the following sentences is T (= true) or F (= false):

- (i) Corporate tax rate does not affect cost of debt.
- (ii) IRR and NPV always give the same profitability ranking.
- (iii) Retention ratio is the product between growth rate and rate of return on investments.
- (iv) Low financial leverage indicates high financial risk and vice-versa.
- (v) If Profitability Index is 1, cash inflow and cash outflow would be equal.
- (viii) Commercial paper introduced by RBI in early 1990, is 'a secured promissory note' tied to any specific transaction.

(1 × 6 = 6 marks) [CMAIG - I]

(c) Match the assumptions to the different 'Capital Structure theories':

*Assumptions*

- (i) Cost of debt and cost of equity are constant, and overall cost of capital decreases with increase in leverage.
- (ii) Cost of debt and overall cost of capital are constant, and cost of equity will change with the degree of leverage.
- (iii) Value of firm increases with increase in financial leverage upto a certain limit only.
- (iv) Overall cost of capital and the value of firm are independent of the capital structure.

*Capital Structure theories*

- (A) Modigliani—Miller approach
- (B) Traditional approach
- (C) Net Income approach
- (D) Net operating Income approach

(Note: Your answer may be of the form:

Assumption No. \_\_\_\_\_ Capital letter indicating Capital Structure theory)

(½ × 4 = 2 marks) [CMAIG - I]

**Answer:**

(a) (ii) B – ₹ 3,16,228

Optimal Conversion size =  $\sqrt{\frac{2bT}{I}}$ , where, T= Estimated Cash requirement, b= conversion cost and I= Interest rate

$$= \sqrt{\frac{2 \times 1,000 \times 30,00,000}{0.06}} = ₹ 3,16,228$$

(iv) A – ₹ 1,114.62

$$FV_n = PV \left( 1 + \frac{c}{m} \right)^{m \times n}$$

$$= 1,000 \left( 1 + \frac{0.055}{2} \right)^{2 \times 2}$$

$$= 1,000 (1.0275)^4 = ₹ 1,114.62$$

(v) C – ₹ 22,84,500

EBIT to become zero means 100% reduction in EBIT.

$$F. \text{ Leverage} = \frac{EBIT}{EBT} = \frac{27,00,000}{22,95,000} = 1.1764$$

$$O. \text{ Leverage} = \frac{\text{Contribution}}{EBIT} = \frac{33,00,000}{27,00,000} = 1.2222$$

$$\text{Combined Leverage} = 1.1764 \times 1.2222 = 1.438$$

Sales have to drop by  $100 / 1.438 = 69.54\%$

New Sales will be =  $75,00,000 \times (1 - 0.6954) = ₹ 22,84,500$  (approx)

(b) (i) **False:** Debt may be perpetual or redeemable debt, while calculating cost of debt, the corporate tax rate effect the formula as follows—

(a) Perpetual /irredeemable debt:

$$K_d (\text{after tax}) = I / P(1 - t)$$

Where, t = tax rate,

P = net proceeds and  $k_d$  = Cost of debt, I = Interest

(b) Redeemable debt : (after tax)

$$K_d = \frac{I + t/n(P - NP)}{1/2(P + NP)} \times (1 - t)$$

(ii) **False:** When evaluating mutually exclusive projects, the one with the highest IRR may not be the one with best NPV. The conflict between NPV and IRR for evaluation of mutually exclusive projects is due to reinvestment assumption: (a) NPV assumes Cash flows reinvested at the Cost of Capital.

(b) IRR assumes Cash flows reinvested at the internal rate of return.

(iii) **False :** As per Gordon's model, the growth rate is determined by the product of retention ratio and rate of return on investment.

- (iv) **False** : Low financial leverage indicates less risky situation, low operating leverage combined with low financial leverage will constitute an ideal situation.
  - (v) **True**: We know that Profitability Index(PI) = PV of Cash Inflow/ PV of Cash Outflow. So, if P1 is 1, then cash inflow and cash outflow would be equal.
  - (viii) **False**: Commercial Paper (CP) is an unsecured promissory note issued by a firm to raise funds for a short period, generally varying from a few days to a few months.
- (c) (i) C  
(ii) D  
(iii) B  
(iv) A

———— Space to write important points for revision —————

**2013 - June [1] {C}** (a) In each of the cases given below, one out of four answers is correct. Indicate the correct answer (= 1 mark) and give workings/reasons briefly in support of your answer (= 1 mark):

- (i) What is the opportunity cost of not taking a discount, when the credit terms are 2/20 net 45?  
Assume 1 year = 360 days
  - (a) 24.9%
  - (b) 29.4%
  - (c) 22.9%
  - (d) 29.2%
- (ii) E Limited has earnings before interest and taxes (EBIT) of ₹ 10 million. The company has outstanding debt of ₹ 20 million at a cost of 7%. Cost of equity is 12.5%. Ignore taxes. What is the overall cost of capital?
  - (a) 11.26%
  - (b) 11.62%
  - (c) 16.12%
  - (d) 12.61%

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- (iii) S Limited earns ₹ 6 per share, has capitalisation rate of 10% and has a return on investment at the rate of 20%. According to Walter's model, what should be the price per share at 30% dividend payout ratio?
- (a) ₹ 120
  - (b) ₹ 102
  - (c) ₹ 112
  - (d) ₹ 106
- (iv) On January 1, 2012, X Limited's beginning inventory was ₹ 4,00,000. During 2012, X Ltd. purchased ₹ 19,00,000 of additional inventory. On December 31, 2012, X Ltd.'s ending inventory was ₹ 5,00,000. What is X Ltd.'s operating cycle in 2012, if it is assumed that the average collection period is 42 days?  
(1 year = 365 days).
- (a) 123.3 days
  - (b) 132.3 days
  - (c) 126.3 days
  - (d) 133.3 days
- (v) From the following, what is the amount of sales of A Ltd.? Financial Leverage — 3 : 1; Interest — ₹ 200; Operating Leverage — 4 : 1; Variable Cost as a % of sales — 66.67%.
- (a) ₹ 3,600
  - (b) ₹ 6,300
  - (c) ₹ 6,030
  - (d) ₹ 3,060

**(2 x 5 = 10 marks) [CMAIG - I]**

**(b) State if each of the following sentences is T (= true) or F (= false):**

- (v) The ROE of an unlevered firm is higher than the ROE of a levered firm, when the ROI is lower than the cost of debt.
- (vi) If IRR is less than the firm's cost of capital, the project should be rejected.
- (vii) There is no need for calculating separate cost for retained earnings, when cost of equity capital is calculated on the basis of the market value of equity shares.
- (viii) In CAPM, systematic risk is the risk that can not be eliminated by diversification, it being common to all firms.

**(1 x 4 = 4 marks) [CMAIG - I]**



(c) Match the descriptions to the 'Four kinds of Float' with reference to management of cash:

*Descriptions:*

- (i) The time when a cheque is being processed by post office, Messenger service or other means of delivery.
- (ii) The time required to sort, record and deposit the cheque after it has been received by the company.
- (iii) The time from the deposit of cheque to the crediting of funds in the seller's account.
- (iv) The time between the sale and the mailing of the invoice.

Four kinds of Float - Management of cash:

- (a) Billing Float
- (b) Banking processing Float
- (c) Cheque processing Float
- (d) Mailing Float

*Note:* Your answer may be of the form:

*Description No.* \_\_\_\_\_ *Capital letter of the alternative indicating kind of float.* (½ x 4 = 2 marks) [CMAIG - I]

**Answer:**

(a) (i) Opportunity cost =  $\frac{\text{discount\%}}{100 - \text{discount\%}} \times \frac{360}{N} = \frac{2}{98} \times \frac{360}{25} = 29.4\%$

Answer- (b) = 29.4%

(ii) Market Value of equity (S) =  $\frac{\text{EBIT} - I}{K_e} = \frac{1,00,00,000 - 14,00,000}{0.125} = ₹ 6,88,00,000$

Total value of firm (V) = S + D = ₹ 6,88,00,000 + ₹ 2,00,00,000 = ₹ 8,88,00,000

∴ Overall cost of capacity (K<sub>0</sub>) =  $\frac{\text{EBIT}}{V} = \frac{1,00,00,000}{8,88,00,000} = 11.26\%$

Answer -(a) = 11.26%

(iii) Market Value of share (P)

$$= \frac{D + \frac{r}{K_e} [E - D]}{k_e} = \frac{1.80 + \frac{0.20}{0.10} (6 - 1.80)}{0.10} = 102$$

Answer – (b) = ₹ 102

- (iv) Cost of goods sold = ₹(4,00,000 + 19,00,000 – 5,00,000)  
= ₹ 18,00,000

$$\text{Inventory turnover} = \frac{18,00,000}{4,50,000} = 4$$

$$\text{Average age of inventory} = \frac{365}{4} = 91.3 \text{ days}$$

Operating cycle = Average age of inventory + average collection period

$$= 91.3 + 42 = 133.3 \text{ days}$$

Answer – (d) = 133.3

(v) Financial Leverage =  $\frac{\text{EBIT}}{\text{EBT}} = \frac{3}{1}$

$$3\text{EBT} = \text{EBIT}$$

$$\text{EBT} = \text{EBIT} - 200$$

$$\text{EBIT} = 3(\text{EBIT} - 200)$$

$$\therefore \text{EBIT} = ₹ 300$$

$$\text{Operating leverage} = \frac{\text{Sales} - \text{variable cost}}{\text{EBIT}} = \frac{4}{1}$$

$$\text{Sales} - \text{variable cost} = 4 \text{ EBIT} = 4 \times 300 = 1200$$

$$(1 - 0.6667) \text{ sales} = 1200$$

$$\therefore \text{sales} = 1200 / 0.333 = ₹ 3600 \text{ Hence, Answer – (a) = ₹ 3600}$$

(b) (v) True

(vi) True

(vii) True

(viii) True

(c) (i) D = Mailing Float

(ii) C = Cheque Processing Float

(iii) B = Banking Processing Float

(iv) A = Billing Float

\_\_\_\_\_ Space to write important points for revision \_\_\_\_\_

**2013 - Dec [6] {C}** Answer the following, showing the workings for each:

- (i) ₹ 25,000 is being invested at the beginning of every year. We are now at the end of year II. Considering a 10% interest rate, what is today's value of the annual investments from year I till and including that of year V?

(Take 10% discount factors as:

10.909, 0.826, 0.751, 0.683, 0.621, 0.564 for year-end 0, 1, 2, 3, 4, 5, 6)

**(2 marks)**

- (ii) Perpetual 15% debentures of ₹ 1,000 are sold at a premium of 10% with no floatation costs. Taking corporate tax rate at 35%, the after-tax cost of capital will be

(A) 6.88%

(B) 7.88%

(C) 8.86%

(D) 10.73%

**(2 marks)**

- (iii) In 2011-12, XYZ Pharma Ltd. had a profit margin of 20% and asset turnover of 3 times. At the end of year 2012-13, the profit margin decreases by 5% and asset turnover increased to 4 times. The return on investment for 2012-13 will be

(A) 80%

(B) 60%

(C) 50%

(D) 70%

**(2 marks)**

- (iv) Given that Sales = ₹ 50,000, Variable Cost = 60%, Fixed Cost = ₹ 12,000, the operating leverage will be

(A) 2.2

(B) 2.0

(C) 5.2

(D) 2.5

**(2 marks) [CMAIG - I]**

10.540

■ Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)

**Answer:**(i) **Calculation of Present value of annual investment**

End of year	0	1	2	3	4	5
Now at end of year 2	$(1.1)^2$	$(1.1)^1$	1	$\frac{1}{(1.1)}$	$\frac{1}{(1.1^2)}$	-
	1.21	1.1	1	0.909	0.826	
<b>= 25,000 × 5 = 1,25,000</b>						

(ii) **(C) = 8.86%**

After tax,

$$\begin{aligned} \text{Cost of capital (Kd)} &= \frac{\text{Interest payment (1 - t)}}{\text{Sale price of debenture}} \times 100 \\ &= \frac{150 \times (1 - 0.35)}{(1,000 + 100)} \times 100 = 8.86\%. \end{aligned}$$

(iii) **(B) = 60%**Revised Net Profit Ratio =  $20 - 5 = 15\%$ ; and

Revised assets turnover Ratio = 4 times.

Hence, ROI =  $15\% \times 4 = 60\%$ .(iv) **(D) = 2.50**Contribution = Sales - Variable cost =  $50,000 - 30,000 = 20,000$ ;

So, operating profit = ₹ 8,000.

$$\text{Hence, Operating leverage} = \frac{\text{Contribution}}{\text{Operating Profit}} = \frac{20,000}{8,000} = 2.50.$$

— Space to write important points for revision —

**2016 - June [1] {C} (II) State whether the following are true or false:**

- (viii) Companies P and Q are competitors for product PQ. P has a higher degree of operating leverage than Q. If demand for PQ decreases, profits of Q will decrease at a slower rate than P. **(1 mark)**
- (ix) The Internal Rate of Return (IRR) assumes that cash flows are reinvested at the firm's cost of capital. **(1 mark) [CMAIG - I]**

**Answer:**

(viii) **True.** (A higher leverage means faster increase in both profits and losses. Hence P's losses will increase faster, or profits will decrease faster.)

(ix) **False.** (The IRR assumes that Cash Flows are reinvested at the IRR)

— Space to write important points for revision —

**2016 - June [1] {C} (III) Fill in the blanks :**

(xiv) In India, commercial papers can be issued in multiples of ₹ \_\_\_\_\_  
(1 mark)

**Answer:**

(xiv) 5 lakhs

— Space to write important points for revision —

**2016 - Dec [1] {C} (II) State whether the following are True or False (Write only the question Roman Numeral and whether True or False):**

(ix) If dividends grow at 'g'% p.a. and cost of equity is  $k_e$ , the current market price of a share is determined by a geometric progression with common ratio  $(1+g)/(1 + k_e)$ .

(x) The MM Hypothesis assumes that the overall cost of capital is independent of the capital structure. **(1 × 2 = 2 marks) [CMAIG - I]**

**Answer:**

(ix) True

(x) True

— Space to write important points for revision —

**2016 - Dec [1] {C} (III) Fill in the blanks (Write only the Roman Numeral and the content filling the blank):**

(xiv) The ratio of % change in one variable to the % change in some other variable is defined as \_\_\_\_\_ in the context of capital structure and finance.

10.542

■ Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)

- (xv) *E* is an exporter who relinquishes his right to a receivable due at a future date in exchange for immediate cash payment at an agreed discount, passing on all the risks and responsibilities for collecting the debt to *B*. This arrangement is called \_\_\_\_\_.

(1 × 2 = 2 marks) [CMAIG - I]

**Answer:**

(xiv) Leverage

(xv) Forfeiting

\_\_\_\_\_ Space to write important points for revision \_\_\_\_\_

**2017 - June [6]** Answer the following questions:

(a) Choose the correct answer from the given four alternatives:

- (i) Which of the following is the main objective of financial management?
- (a) Revenue Maximisation
  - (b) Profit Maximisation
  - (c) Wealth Maximisation
  - (d) Cost Minimisation
- (ii) Which one of the following activities is outside the purview of financing decision in financial management?
- (a) Identification of the source of funds
  - (b) Measurement of the cost of funds
  - (c) Deciding on the time of raising the funds
  - (d) Deciding on the utilization of the funds
- (iii) A firm has a capital of ₹ 10 lakhs, sales of ₹ 5 lakhs, gross profit of ₹ 2 lakhs and expenses of ₹ 1 lakh. The Net Profit Ratio is:
- (a) 50%
  - (b) 40%
  - (c) 20%
  - (d) 10%

- (iv) Which of the following forms of equity financing is especially designed for funding High Risk & High Reward projects?
- ADR
  - GDR
  - FCCB
  - Venture Capital
- (v) A process through which loans and other receivables are underwritten and sold in a form of asset is known as:
- Factoring
  - Forfeiting
  - Securitisation
  - Bill Discounting
- (vi) In Net Profit Ratio, the denominator is:
- Credit Sales
  - Net Sales
  - Cost of Sales
  - Cost of Goods Sold

(1 × 6 = 6 marks)

(b) Match Column 'A' with Column 'B'.

Column 'A'		Column 'B'	
1.	Leverage	(A)	Control Limits
2.	Stochastic Model	(B)	Influence of one force over another
3.	Commercial Paper	(C)	Sold at Discount
4.	Factoring	(D)	Raise Short Term Finance through Receivables

(1 × 4 = 4 marks)

(c) State whether the following statements are True or False:

- In case of mutually exclusive capital budgeting decision, all the feasible proposals may be accepted.
- As per the Gordon Model,  $K_e = D_1/P_0 + g$ , where  $K_e$  = Cost of Equity,  $D_1$  = Dividend,  $P_0$  = Current market price of share and  $g$  = growth rate.

**10.544****Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)**

- (iii) Gross Working Capital is the difference between total current assets and total current liabilities.
- (iv) Working Capital Turnover Ratio may be classified under Activity Ratio. **(1 × 4 = 4 marks)**

**Answer:**

- (a) (i) (c) Wealth Maximisation  
(ii) (d) Deciding on the utilization of the funds  
(iii) (c) 20%  
(iv) (d) Venture Capital  
(v) (c) Securitisation  
(vi) (b) Net Sales

(b)

Column 'A'		Column 'B'	
1.	Leverage	(B)	Influence of one force over another
2.	Stochastic Model	(A)	Control Limits
3.	Commercial Paper	(C)	Sold at Discount
4.	Factoring	(D)	Raise Short Term Finance through Receivables

- (c) (i) False  
(ii) True  
(iii) False  
(iv) True

\_\_\_\_\_ Space to write important points for revision \_\_\_\_\_

**2017 - Dec [6] Answer the following questions:**

- (a) Choose the correct answer from the given four alternatives.
- (i) ROI (Return on Investment) can be decomposed into the following ratios:
- (a) Overall Turnover Ratio and Current Ratio  
(b) Net Profit Ratio and Fixed Assets Turnover  
(c) Working Capital Turnover Ratio and Net Profit Ratio  
(d) Net Profit Ratio and Overall Turnover Ratio



- (ii) Which one of the following activities is outside the purview of dividend decision in financial management?
- (a) Identification of the profit after taxes
  - (b) Measurement of the cost of funds
  - (c) Deciding on the pay-out ratio
  - (d) Considering issue of bonus shares to equity shareholders
- (iii) Which of the following does not help to increase Current Ratio?
- (a) Issue of Debentures to buy Stock
  - (b) Issue of Debentures to pay Creditors
  - (c) Sale of Investment to pay Creditors
  - (d) Avail Bank Overdraft to buy Machine
- (iv) Which of the following statements is correct?
- (a) A higher Receivable Turnover is not desirable.
  - (b) Interest Coverage Ratio depends upon Tax Rate.
  - (c) Increase in Net Profit Ratio means increase in Sales.
  - (d) Lower Debt-Equity Ratio means lower Financial Risk.
- (v) "Shareholders' wealth" in a firm is reflected by:
- (a) the number of people employed in the firm.
  - (b) the book value of the firm's assets less the book value of its liabilities.
  - (c) the amount of salary paid to its employees.
  - (d) the market price per share of the firm.
- (vi) The excess of Current Assets over Current Liabilities is called:
- (a) Net Current Assets
  - (b) Net Working Capital
  - (c) Working Capital
  - (d) All of the above
- (1 × 6 = 6 marks)**

**(b)** Match the statement in Column I with the most appropriate statement in Column II.

Column I		Column II	
1.	Dividend policy has no effect on its value of assets	(A)	Myron Gordon

**10.546****■ Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)**

2.	Value of share is worth the present value of its future dividend rather than its earnings	(B)	Graham & Dodd
3.	Dividend policy has an impact on share valuations	(C)	John Burr Williams
4.	Market Price of share will increase when company declares dividend rather than when it does not	(D)	Modigliani & Miller

**(1 × 4 = 4 marks)****(c)** State whether the following statements are *True* or *False*:

- (i) Treasury Bills are short term instruments issued by the Reserve Bank of India to address short term liquidity shortfalls.
- (ii) While calculating cost of redeemable debt, it is necessary to consider the repayment of the principal, but the interest can be ignored.
- (iii) A Depository Receipt in the US market is called American Depository Receipt (ADR).
- (iv) Net Present Value method cannot serve as the best decision criteria for selection of projects when they are mutually exclusive.

**(1 × 4 = 4 marks)****Answer:****(a)** (i) (d) Net Profit Ratio and Overall Turnover Ratio

(ii) (b) Graham &amp; Dodd

(iii) (d) Modigliani &amp; Miller

(iv) (d) Lower Debt-Equity Ratio means Lower Financial Risk.

(v) (d) The Market Price per Share of the firm.

(vi) (d) Modigliani &amp; Miller

**(b)** 1. (D) Modigliani & Miller

2. (C) John Burr Williams

3. (A) Myron Gordon

4. (B) Graham &amp; Dodd.

- (c) (i) True  
(ii) False.  
(iii) True  
(iv) False.

—— Space to write important points for revision ———

**2018 - June [6]** (a) Choose the correct answer from the given four alternatives (You may write only the Roman numeral and alphabet chosen for your answer):

- (i) Which of the following is a Profitability Ratio?
  - (a) Proprietary Ratio
  - (b) Debt-Equity Ratio
  - (c) Price-Earning Ratio
  - (d) Fixed Assets Ratio
- (ii) Which of the following is not a source of fund?
  - (a) Issue of Capital
  - (b) Issue of Debenture
  - (c) Decrease in Working Capital
  - (d) Increase in Working Capital
- (iii)  $\beta$  (Beta) of a security measures its
  - (a) Divisible Risk
  - (b) Financial Risk
  - (c) Market Risk
  - (d) None of the above
- (iv) The following is not a Discounted Cash Flow Technique:
  - (a) NPV
  - (b) PI
  - (c) Accounting of Average Rate of Return
  - (d) IRR
- (v) The 'Dividends-Payout Ratio' is equal to
  - (a) The Dividends yield plus the Capital gains yield
  - (b) Dividends per Share divided by Earning per Equity Share

**10.548****Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)**

- (c) Dividends per Share divided by Par Value per Share  
(d) Dividends per Share divided by Current Price per Share
- (vi) If EBIT = ₹ 1,00,000, Fixed Assets = ₹ 2,00,000, Sales = ₹ 10,00,000 and Variable Cost = ₹ 7,00,000, Then, the Operating Leverage will be
- (a) 2  
(b) 3  
(c) 6  
(d) 4

**(1×6 = 6 marks)**

- (b)** Match the Statement under Column I with the most appropriate Statement under Column II:

Column I		Column II	
1.	Dividend Models	(a)	Modigliani and Miller Hypothesis
2.	Theory of Capital Structure	(b)	Fund Based Financial Service
3.	Factoring	(c)	Indicator of Short-term solvency of a company
4.	Liquid Ratio	(d)	Gorden Model

**(1×4 = 4 marks)**

- (c)** State whether the following statement are **True or False**: (You may write only the Roman numeral and whether True or False without copying the statements into answer the books.)
- (i) Debt Service Coverage Ratio indicates the liquidity of a firm in relation to its ability to meet projected daily expenditure from operations.  
(ii) Bill Discounting is defined as the relationship between the seller of goods and financial firms, called the Factor.  
(iii) Finance is called the “Chemistry of money”  
(iv) Capital Budgetary Forecasts Returns on proposed long-term investments and compares profitability of different Investments and their cost of capital.

**(1×4 = 4 marks)**

**Answer:**

- (a) (i) (c)  
(ii) (d)  
(iii) (c)  
(iv) (c)  
(v) (b)  
(vi) (b)
- (b) 1. (d)  
2. (a)  
3. (b)  
4. (c)
- (c) (i) False  
(ii) False  
(iii) False  
(iv) True

\_\_\_\_\_ Space to write important points for revision \_\_\_\_\_

**2018 - Dec [6]** (a) Choose the correct answer from the given four alternatives (You may write only the Roman numeral and the alphabet chosen for your answer):

- (i) Which of the following does not help to increase Current Ratio?
- (a) Issue of Debentures to buy Stock
  - (b) Issue of Debentures to pay Creditors
  - (c) Sale of Investment to pay Creditors
  - (d) Avail Bank Overdraft to buy Machine
- (ii) Which of the following is not considered while preparing cash budget?
- (a) Accrual Principal.
  - (b) Difference in Capital and Revenue items.
  - (c) Conservation Principle.
  - (d) All of the above.
- (iii) Cost of capital may be defined as:
- (a) Weighted Average cost of all debts.
  - (b) Rate of Return expected by Equity Shareholders.

**10.550****■ Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)**

- (c) Average IRR of the Projects of the firm.
- (d) Minimum Rate of Return that the firm should earn.
- (iv) At Indifference level of EBIT, different capitals have:
  - (a) same EBIT.
  - (b) same EPS.
  - (c) same PAT.
  - (d) same PBT.
- (v) ABC Analysis is used in
  - (a) Inventory Management.
  - (b) Receivables Management.
  - (c) Accounting Policies.
  - (d) Corporate Governance.
- (vi) Which of the following is not incorporated in Capital Budgeting?
  - (a) Tax-Effect.
  - (b) Time Value of Money.
  - (c) Required Rate of Return.
  - (d) Rate of Cash Discount.

**(1×6=6 marks)**

**2018 - Dec [6]** (b) Match the statement under Column I with the most appropriate statement in Column II off to (You may opt to write only the numeral and matched alphabet instead of copying contents into the answer book):

Column I		Column II	
(1)	Gordon's Model	(A)	Activity Ratio
(2)	Discounted Cash Flow	(B)	Inventory Management
(3)	Carrying Cost	(C)	Internal Rate of Return
(4)	Working Capital Turnover Ratio	(D)	Relevance of Dividends on share value

**(1×4=4 marks)**

**2018 - Dec [6]** (c) State whether the following statements are True or False (You may write only the Roman numeral and whether True or False without copying the statements into the answer book.)

- (i) In mutually exclusive capital budgeting decisions, the firm can accept all feasible proposals.
  - (ii) Weighted Average Cost of Capital is always calculated with reference to book value of different sources of funds.
  - (iii) Debt-Equity Ratio is a measure of long-term solvency of a firm.
  - (iv) Capital Rationing is a situation when the Government has imposed a ceiling on investment by a firm.
- (1×4=4 marks)**

<b>Table Showing Marks of Compulsory Questions</b>										
<b>Year</b>	<b>14 J</b>	<b>14 D</b>	<b>15 J</b>	<b>15 D</b>	<b>16 J</b>	<b>16 D</b>	<b>17 J</b>	<b>17 D</b>	<b>18 J</b>	<b>18 D</b>
<b>Objective</b>					3	4				
<b>Total</b>					3	4				

**June 2018**  
**CMA Gr. II**  
**Paper-10 (New Syllabus)**  
**Cost & Management Accounting and Financial Management**  
**Part-A**  
**(Cost and Management Accounting)**  
**Section-1**

Answer the following questions.

1. (a) Choose the correct answer from the given four alternatives (You may write only the Roman numeral and alphabet chosen for your answers):
  - (i) Decision-making concerns with:
    - (a) Past
    - (b) Future
    - (c) Past and Future both
    - (d) None of the above
  - (ii) A large Margin of Safety indicates
    - (a) Over-Capitalization
    - (b) The soundness of business
    - (c) Over Production
    - (d) None of the above
  - (iii) Revision of budgets is
    - (a) Unnecessary
    - (b) Cannot determine
    - (c) Necessary
    - (d) Inadequate data
  - (iv) like to see decreasing over time?
    - (a) Merchandise Inventory Turn-over
    - (b) Total quality Cost
    - (c) % of on-time deliveries
    - (d) Finished Goods Inventory Turn-Over



- (v) Which of the following departments is most likely responsible for a Price Variance in Direct Materials?
- Warehousing
  - Receiving
  - Purchasing
  - Production
- (vi) Another name for the 'Learning Curves' is
- Exponential Curve
  - Growth Curve
  - Production cure
  - Experience Curve
- (1×6=6 marks)
- (b) Match the statement under Column I with the most appropriate statement under Column II: (You may opt to write only the numeral and the matched the alphabet instead of copying contents into the answer books.):

Column I		Column II	
1	Distinctive feature of Learning curve	(a)	On the principle of exception
2	Standard Costing works	(b)	Is designed to fix responsibilities on executives, through the preparation of budgets.
3	Budgetary Control System	(c)	Is that notional value at which goods and services are transferred between divisions in a decentralized organization.
4	Transfer Price	(d)	Person engaged in repetitive task will improve his performance over time.

(1×4=4 marks)

**10.554****■ Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)**

- (c) State whether the following statements are True or False: (You may write only the Roman numeral and whether True or False without Coping the Statement into the answer books):

(1×4=4 marks)

- (i) Management Accounting is largely based on estimates and as such total accuracy is not ensured under the Management Accountancy.
- (ii) The main objective of Budgetary control is to co-ordinate the different departments.
- (iii) Standard Costing are applicable in Banking Industry.
- (iv) Learning Curve is a Cost Reduction technique. (1×4=4 marks)

**Section II**

Answer any *three* questions from Question Nos. 2, 3, 4 and 5 Each question carries 12 Marks.

2. (a) QUALITY PRODUCTS LTD, manufactures and markets a single product. The following data are available.

	₹/ Unit
Materials	16
Conversion Costs (Variable)	12
Dealer's Margin (10% of sales) Selling Price	4
Fixed Cost: ₹ 5 Lakhs	40
Present Sales: 90,000 units	
Capacity Utilization: 60%	

There are acute competition. Extra efforts are necessary to sell. Suggestions have been made for increasing sale:

- (a) By reducing Selling Price by 5%
- (b) By increasing dealer's margin by 25% over the existing rate

Required:

- (i) Which of these two suggestion you would recommend, if the company desires to maintain the present profit?
  - (ii) Give reasons: (4+2=6 marks)
- (b) XYZ Co. purchases 40,000 glass cases per annum from an outside supplier at ₹ 5 each. The production manger feels that these should be manufactured and not purchased. A machine costing ₹ 1,00,000 (no salvage value) will be required to manufacture the item within the factory. The machine has an annual capacity of 60,000 units and life of 5 years. The costs required for manufacture of each glass case is as follows:

Direct Material      ₹ 2.00

Direct Labour      ₹1.00

Variable overheads 100% of Labour Cost

Required:

- (i) Should the company continue to purchase the glass cases from outside supplier or should it make them in the factory?
  - (ii) Should the company accept an order to supply 10000 glass cases to the market at a selling price of ₹ 4.50 per unit? (3×2=6)
3. (a) The Standard Material cost to produce a tonne of prefabricated building material of AJNATA LTD. is:
- 300 kgs. of material X @ ₹ 10 per kg.
  - 400 kgs. of material Y @ ₹ 5 per kg.
  - 500 kgs. of material Z @ ₹ 6 per kg.
- During December 2017, 100 tonnes of mixture prefabricated building material were produced from the uses of:
- 35 tonnes of material X at a Cost of ₹ 9,000 per tonne
  - 42 tonnes of material Y at a cost of ₹ 6,000 per tonne
  - 53 tonne of material Z at a cost of ₹ 7,000 per tonne

**10.556****■ Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)**

Required:

Calculate the following variances:

- (i) Total material cost variance
  - (ii) Total and individual material price variances
  - (iii) Total and individual material usage variances (2×3=6 marks)
- (b) The followings details are available for ABC LTD. A manufacturing company:

	Budgeted Expenses, units and hours.	Actual Expense, units and hours.
Variable Overheads (₹)	5,00,000	5,20,000
Output in units	50,000	40,000
Working hours	2,50,000	2,20,000

**You are Required to** Calculate the following variances:

- (i) Variable Overhead Expenditure variance
  - (ii) Variable Overhead Efficiency Variance
  - (iii) Total Variable overhead Variance. (2×3=6 marks)
4. (a) PENTAX LTD., has prepared its Expense Budget for 20,000 units in its factory for a year as detailed below:

Particulars	₹/ unit
Direct Material	50
Direct Labour	20
Variable Overhead	15
Direct Expenses	6
Selling Expenses (20% Fixed)	15
Factory Expenses (100% Fixed)	7

Administrative Expenses (100% Fixed)	4
Distribution Expense (85% Variable)	12
Total (₹)	129

Required:

Prepare an Expenditure Budget for the Production of 15,000 units and 18,000 units. (6 marks)

- (b) JANAK LTD. received an order to make and supply sixteen unit of standard product which involves intricate labour operations. The first unit was made in 8 hours. It is understood that this type of operations is subject to 90% learning rate. The workers are getting a wage rate of ₹ 15 per hour.

**Required:**

What is the total time and labour cost required to execute the above order? (6 marks)

5. Write short notes on any three out of the following.
- Concept of Management Accounting
  - Performance Budgeting
  - Transfer Pricing
  - Difference between Standard Costing and Budgetary Control, (any four)

### Part-B (FINANCIAL MANAGEMENT)

#### Section III

**Answer of the following questions:**

6. (a) Choose the correct answer from the given four alternatives (You may write only the Roman numeral and alphabet chosen for your answer):
- Which of the following is a Profitability Ratio?
    - Proprietary Ratio
    - Debt-Equity Ratio

- (c) Price-Earning Ratio
- (d) Fixed Assets Ratio
- (ii) Which of the following is not a source of fund?
  - (a) Issue of Capital
  - (b) Issue of Debenture
  - (c) Decrease in Working Capital
  - (d) Increase in Working Capital
- (iii)  $\beta$  (Beta) of a security measures its
  - (a) Divisible Risk
  - (b) Financial Risk
  - (c) Market Risk
  - (d) None of the above
- (iv) The following is not a Discounted Cash Flow Technique:
  - (a) NPV
  - (b) PI
  - (c) Accounting of Average Rate of Return
  - (d) IRR
- (v) The 'Dividends-payout Ratio' is equal to
  - (a) The Dividends yield plus the capital gains yield
  - (b) Dividends per share divided by Earning per Equity Share
  - (c) Dividends per share divided by par value per share
  - (d) Dividends per share divided by current price per share
- (vi) If EBIT = ₹ 1,00,000, Fixed Assets = ₹ 2,00,000, Sales = ₹ 10,00,000 and variable Cost = ₹ 7,00,000, Then, Operating Leverage will be
  - (a) 2
  - (b) 3
  - (c) 6
  - (d) 4

(1×6=6 marks)

(b) Match the statement under Column I with the most appropriate statement under Column II:

Column I		Column II	
1.	Dividend Models	(a)	Modigliani and Miller Hypothesis
2.	Theory of Capital Structure	(b)	Fund Based Financial service
3.	Factoring	(c)	Indicator of Short-term solvency of a company
4.	Liquid Ratio	(d)	Gorden Model

(1×4=4 marks)

6. (c) **State whether the following statement are True or False:** (You may write only the Roman numeral and whether True or False without copying the statements into answer the books.)
- (i) Debt Service Coverage Ratio indicates the liquidity of a firm in relation to its ability to meet projected daily expenditure from operations.
  - (ii) Bill Discounting is defined as the relationship between the seller of goods and financial firms, called the Factor.
  - (iii) Finance is called the “Chemistry of money”
  - (iv) Capital Budgetary Forecasts Returns on proposed long-term investments and compares profitability of different Investment and their cost of capital.

(1×4=4 marks)

#### Section IV

Answer any *three* questions from question nos, 7,8,9 and 10,  
Each question carries 12 marks.

7. (a) The following is the summary of Financial Ratios and form of a TEXTILE COMPANY having a sale of ₹ 32 lakh.

Sales to net worth (times)	2.3
Current debt to net worth (%)	42
Total debt to net worth (%)	75

10.560

## ■ Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)

Current ratio (times)	2.9
Net sales to inventory (times)	4.7
Fixed assets to net worth (%)	53.2

## Proforma Balance Sheet

Net worth	.....	Fixed assets	
Long-term debt		Cash	
Current debt		Stoke	
		Sundry debtors	<u>568889</u>

You are required to complete the Proforma Balance sheet(6 mark)

- (b) INDOGROWTH LTD provides the followings data:  
Comparative trial balance.

	<b>March 31,2018</b>	<b>March 31, 2017</b>	<b>Increase (decrease)</b>
<b>Debit Balance</b>			
Working capital	₹ 2,00,000	₹1,00,000	₹ 1,00,000
Investments	1,00,000	1,50,000	(50,000)
Building and equipment	5,00,000	4,00,000	1,00,000
Land	40,000	50,000	(10,000)
	<u>8,40,000</u>	<u>7,00,000</u>	<u>1,40,000</u>
<b>Credit Balance</b>			
Accumulated depreciation	2,00,000	1,60,000	40,000
Bonds	1,00,000	50,000	50,000



Reserves	3,40,000	3,40,000	-
Equity shares	2,00,000	1,50,000	50,000
	8,40,000	7,00,000	1,40,000

#### Income statement for the period ending March 31, 2018

Sales		₹ 10,00,000
Cost of goods sold		<u>5,00,000</u>
		5,00,00
Selling expenses	₹ 50,000	
Administrative expenses	50,000	<u>1,00,000</u>
Operating income		4,00,000
Other charges and credit:		
Gain on sale of building and equipment	₹ 5,000	
Loss on sale of investments	(10,000)	
Interest	(6,000)	
Taxes	(1,89,000)	<u>(2,00,000)</u>
		2,00,000

Net income after taxes

Note: (i) The depreciation charged for the year ended March's, 2018 was ₹ 60,000.

(ii) The book value of the building and equipment disposed off was ₹ 10,000

(iii) Land was sold at no profit no loss basis.

Required:

Prepare a Funds Flow Statement for the period ending March 31, 2018.

8. (a) The management of CAMELLIA LTD has called for a statement showing the working capital needed to finance a level of activity of 3,00,000 units of output for the year ended March 31, 2018, The cost structure for the company's product, for the above mentioned activity level, is detailed below:

	Cost per unit
Raw materials	₹ 20
Direct labour	5
Overheads	<u>15</u>
Total Cost	40
Profit	<u>10</u>
Selling price	50

Past trends indicate that the raw materials are held in stock, on an average, for two months. Work-in-process (50 per cent complete) will approximate to  $\frac{1}{2}$  month's production. Finished goods remain in warehouse, on an average, for 1 month Suppliers of materials extend 1 month's credit. Two month's credit is normally allowed to debtors. A minimum cash balance of ₹ 25,000 is expected to maintained. The production pattern is assumed to be even during the year. (12 months)

Required:

Prepare a statement of Working Capital determination (7 marks)

- (b) The following information is available for AVANTI CORPORATION:

Earning per share	₹ 6
Rate of Return on Investment	20%
Rate of Return by share holder	16%

Required:

What should be the approximate dividend pay-out ratio so as keep the share price at ₹ 44 by using Walter Model? (5 marks)

9. (a) The CMD Ltd. has the following specific cost of capital along with the indicated book and market value weights:

Type of Capital	Cost	Book value weights	Market value weights
Equity	0.18	0.50	0.58
Preference shares	0.15	0.20	0.17
Long-term debt	0.07	<u>0.30</u>	<u>0.25</u>
		1.00	1.00

Required:1

- (i) Calculate the weighted cost of capital, using book and market value weights.
- (ii) Calculate the weighted average cost of capital, using marginal weights, if the company intends to raise the needed funds using 50 per cent long-term debt, 35 per cent preference shares and 15 per cent retained earnings.

Note: Ignore Taxation

(6 marks)

- (b) ANURAG MILLS LTD. has number of machines that were used to make a product that the firm has phased out its operations. An existing machine was originally purchased six years ago for ₹ 5,00,000 and is being depreciated by the straight line method: its remaining useful life is 4 years. No salvage value is expected at the end of the useful life. It can currently be sold for ₹ 1,50,000. The machine can also be modified to produce another product at a cost of ₹ 2,00,000. The modifications would not affect the useful life, or salvage value and would be depreciated using the straight line method.

If the firm does not modify the existing machine, it will have to by a new machine at a cost of ₹ 4,40,000 (no salvage value) and the new machine would the depreciated over 4 years. The engineers estimate that the cash operating costs with the new machine would be ₹ 25,000 per year less than with the existing machine. Cost of capital is 15 per cent and corporate tax rate is 35 per cent.

10.564

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**Advice** The company whether the new machine should be bought, or the old equipment modified. Assume straight line method of depreciation for tax purposes and loss on sale of existing machine can be claimed as short-term capital loss in the current year itself.

[Given : PVIFA (15% 4 year) = 2.855] (6 marks)

10. Write short notes on any *three* out of the following:

- (a) Debtors Turnover Ratio
- (b) Determinants of Working Capital
- (c) Advantages of Ratio Analysis (any four)
- (d) Differences between Funds Flow Statement and Cash Flow Statement (4×3=12 marks)

**December - 2018**

**CMA Inter Group II Paper - 10**

**Cost and Management Accounting and Financial Management**

**Part – A**

**(Cost and Management Accounting)**

**(50 Marks)**

**Section – I**

Answer the following questions.

1. (a) Choose the correct answer from the given four alternatives (You may write only the Roman numeral and alphabet chosen for your answer):
  - (i) The well-known basic function of management is
    - (a) Motivating
    - (b) Leadership
    - (c) Decision-making
    - (d) Communicating
  - (ii) Contribution margin is equal to
    - (a) Sales – Fixed Cost – Profit
    - (b) Profit + Variable Cost

- (c) Fixed Cost – Loss  
(d) None of the above
- (iii) In a system whereby all activities are revaluated each time a budget is formulated and starts with the assumption that requirement of funds does not exist is called  
(a) Performance Budgeting  
(b) Programme Budgeting  
(c) Flexible Budgeting  
(d) Zero-based Budgeting
- (iv) The management's time is saved by reporting only the deviations from the predetermined standards is called  
(a) Management by objectives  
(b) Budgetary Control  
(c) Standard Costing  
(d) Management by Exception
- (v) Marginal Costing is also known as  
(a) Direct Costing  
(b) Absorption Costing  
(c) Variable Cost  
(d) Variable Costing
- (vi) Another name for 'Contribution' is  
(a) Marginal Income  
(b) Gross Profit  
(c) Net Income  
(d) None of the above
- (1 × 6 = 6 marks)
- (b) Match the statement under Column I with the most appropriate statement under Column II (You may opt to write only the numeral and the matched alphabet instead of copying the contents into the answer book):

Column I		Column II	
1	Learning Curve	(A)	Theodore P. Wright
2	Transfer Price	(B)	Cumulative Average Time

**10.566****■ Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)**

3	Experience Curve	(C)	Notional Value
4	Factors affecting the cost of Airlines	(D)	Boston Consulting Group

(1 × 4 = 4 marks)

- (c) State whether the following statements are **True** or **False** (You may write only the Roman numeral and whether True or False without Copying the Statement into the answer book):

- (i) Standard Costing may not be suitable for small concerns.
- (ii) Production Budget is prepared before Sales Budget.
- (iii) Budgets are always prepared for one year.
- (iv) At Break Even Point, the Margin of Safety is nil.

(1 × 4 = 4 marks)

### **Section II**

Answer any **three** questions from Question Nos. **2, 3, 4** and **5**.

Each question carries 12 Marks.

2. (a) CADINI LTD., a factory engaged in manufacturing Plastic Buckets is working to 40% capacity and produces 10,000 Buckets per annum. The present cost break-up for one Bucket is:

Material – ₹ 10

Labour – ₹ 3 and

Over head – ₹ 5 (out of which 60% is fixed)

The Selling Price is ₹ 20 per Bucket.

If it is decided to work the factory at 50% capacity, the Selling Price falls by 3%.

**Calculate:**

- (i) The profit at 50% capacity,
  - (ii) Break Even Quantity in units. (4+2 = 6 marks)
- (b) XER Co. manufactures an electronic product and puts a price tag of ₹ 190.00 as wholesale price. The company has a production and storage facility with a 100,000 unit monthly output capacity based on running an 8 hours shift each workday.
- Estimated Costs are given below:

Monthly Fixed Costs	(₹)	Per Unit Costs	(₹)
Building Depreciation	2,50,000	Production Labour	45.00
Project Management	1,75,000	Supervisors Charges	5.00
Advertising Costs	3,00,000	Material Handling	8.00
Network Administration	75,000	Sales Commission	12.00
Office Expenses	1,50,000	Materials	70.00
Equipment (Depreciation)	2,00,000	Electricity Costs	3.00

**Required:**

- (i) Based on the information provided, what quantity must this firm produce in order to be at breakeven?
  - (ii) If the firm produces at the plant's capacity, what is the minimum price at which the firm can sell the product and still breakeven?
  - (iii) Suppose the firm seeks to target profit of ₹ 30,00,000 from this product based on the input costs and wholesale price noted in the problem. How many units would the firm need to produce to generate the required profit? (6 marks)
3. (a) The following information is available from the records of REEDYAAH LTD. a manufacturing company using Standard Costing System for the week ended April 30, 2018:

	Standard		Actual	
	Qty.	Unit Price	Qty.	Unit Price
Material 'A'	60%	₹ 20	44kg	₹ 25
Material 'B'	40%	₹ 10	66 kg	₹ 5
Processing loss	10%	—	—	—
			Actual output 90 kg.	

**Required:**

Calculate from the information stated Supra:

- (i) Material Cost Variance
- (ii) Material Price Variance
- (iii) Material Usage Variance
- (iv) Material Mix Variance
- (v) Material Yield Variance (6 marks)

- (b) The following information has been obtained from the records of PURNOMINA LTD., a manufacturing organization using the Standard Costing System for the month ended March 31, 2018:

	Budget	Actual
Production (Units)	4000	3800
Working days	20	21
Fixed overhead (₹)	40,000	39,000

**You are required** to calculate the following overhead cost variances:

- (i) Fixed overhead expenditure variance;
- (ii) Fixed overhead volume variance;
- (iii) Fixed overhead efficiency variance;
- (iv) Fixed overhead calendar variance;
- (v) Fixed overhead cost variance; (6 marks)

4. (a) You are given the following particulars concerning MINTEX LTD, a manufacturing organisation:

	At 80% capacity (₹)
<i>Variable Overheads.</i>	
Indirect Labour	12,000
Stores (including Spares)	4,000
<i>Semi-Variable Overheads:</i>	
Power (30% Fixed)	20,000
Repairs & Maintenance (60% Fixed)	2,000



<i>Fixed Overheads:</i>	
Depreciation	11,000
Insurance	3,000
Salaries	10,000
Total Overheads	62,000
Estimated Directed Labour Hours	1,24,000 Hours.

**You are required to:**

- (i) Draw a Flexible Budget for Overhead expenses on the basis of the above data at 80% and 90% Plant Capacity.
  - (ii) Determine the Overhead Rates at 80% and 90% Plant Capacity. **(4+2 = 6 marks)**
- (b) RADIANCE ENGINES LTD. manufacture engines mounting for Akash airline. They have been asked to bid on a prospective contract for 30 engines mounting for the Jet aircraft. They have just completed and initial run of 10 of these mounting at the following costs:

Particulars	Amount in (₹)
Direct materials	7,000
Direct labour (2000 hours @ ₹ 4)	8,000
Variable overhead (₹ 0.50 per labour hour)	1,000
Fixed overhead (₹ 1 per labour hour)	2,000
	18,000

An 80% learning curve is thought to be pertinent in this case. Marketing Director believes that the quotation is unlikely to be accepted if it exceeds ₹ 38,000 and as the company are short of work, he believes the contract to be vital.

**You are required to comment** whether it is worth accepting at ₹ 38,000. **(6 marks)**

5. Write short notes on **any three** out of the following:
- (i) Application of Marginal Costing in Decision Making
  - (ii) Advantages of Standard Costing
  - (iii) Distinctive Features of Learning Curve Theory
  - (iv) Difference between Fixed and Flexible Budget (Any four points)
- (4 × 3 = 12 marks)

**Part – B**  
**(FINANCIAL MANAGEMENT)**  
**(50 Marks)**

**Section – III**

**Answer the following questions.**

6. (a) Choose the correct answer from the given four alternatives (You may write only the Roman numeral and the alphabet chosen for your answer):
- (i) Which of the following does not help to increase Current Ratio?
    - (a) Issue of Debentures to buy Stock
    - (b) Issue of Debentures to pay Creditors
    - (c) Sale of Investment to pay Creditors
    - (d) Avail Bank Overdraft to buy Machine
  - (ii) Which of the following is not considered while preparing cash budget?
    - (a) Accrual Principal.
    - (b) Difference in Capital and Revenue items.
    - (c) Conservation Principle.
    - (d) All of the above.
  - (iii) Cost of capital may be defined as:
    - (a) Weighted Average cost of all debts.
    - (b) Rate of Return expected by Equity Shareholders.
    - (c) Average IRR of the Projects of the firm.
    - (d) Minimum Rate of Return that the firm should earn.
  - (iv) At Indifference level of EBIT, different capitals have:
    - (a) same EBIT.
    - (b) same EPS.

- (c) same PAT.
  - (d) same PBT.
  - (v) ABC Analysis is used in
    - (a) Inventory Management.
    - (b) Receivables Management.
    - (c) Accounting Policies.
    - (d) Corporate Governance.
  - (vi) Which of the following is not incorporated in Capital Budgeting?
    - (a) Tax-Effect.
    - (b) Time Value of Money.
    - (c) Required Rate of Return.
    - (d) Rate of Cash Discount.
- (1×6=6 marks)**
- (b) Match the statement under Column I with the most appropriate statement in Column II off to (You may opt to write only the numeral and matched alphabet instead of copying contents into the answer book):

Column I		Column II	
(1)	Gordon's Model	(A)	Activity Ratio
(2)	Discounted Cash Flow	(B)	Inventory Management
(3)	Carrying Cost	(C)	Internal Rate of Return
(4)	Working Capital Turnover Ratio	(D)	Relevance of Dividends on share value

**(1×4=4 marks)**

- (c) State whether the following statements are True or False (You may write only the Roman numeral and whether True or False without copying the statements into the answer book.)
- (i) In mutually exclusive capital budgeting decisions, the firm can accept all feasible proposals.
  - (ii) Weighted Average Cost of Capital is always calculated with reference to book value of different sources of funds.

**10.572****Scanner CMA Inter Gr. II Paper 10 B (2016 Syllabus)**

- (iii) Debt-Equity Ratio is a measure of long-term solvency of a firm.
- (iv) Capital Rationing as a situation when the Government has imposed a ceiling on investment by a firm. (1×4=4 marks)

**Section IV**

Answer any three questions from question nos. 7, 8, 9, and 10.

Each question carries 12 Marks.

7. (a) Complete the Balance Sheet in the table below for TANISH Ltd. using the following financial data:
- (i) Total Debt to Net Worth = 1 : 2
  - (ii) Total Assets Turnover = 2
  - (iii) Gross Profit on Sales = 30%
  - (iv) Average Collection Period (Assume 360 days in a year) = 40 days
  - (v) Inventory Turnover Ratio on Cost of Goods Sold and year-end inventory = 3
  - (vi) Acid Test Ratio = 0.75

<b>Balance Sheet as on 31<sup>st</sup> March, 2018</b>			
<b>Liabilities</b>	<b>₹</b>	<b>Assets</b>	<b>₹</b>
Equity Share Capital	4,00,000	Plant & Machinery & Other Fixed Assets	—
Reserves and Surplus	6,00,000		
Total Debt:		Current Assets:	
Current Liabilities	—	Inventory	—
		Debtors	—
		Cash	—
Total	—	Total	—

Assume that there is no Bank OD in this Balance Sheet Format.

**(6 marks)**

- (b) VEDIKA LTD. gives you the following information for the year ended 31<sup>st</sup> March, 2018:
- (i) Sales for the year totalled ₹ 96,00,000. The company sells goods for cash only.

- (ii) Cost of goods sold was 60% of sales. Closing inventory was higher than opening inventory by ₹ 20,000.
- (iii) Tax paid amounted to ₹ 7,00,000. Other expenses totalled ₹ 21,45,000. Outstanding expenses on 31<sup>st</sup> March, 2017 and 31<sup>st</sup> March, 2018 totalled ₹ 82,000 and ₹ 91,000 respectively.
- (iv) New machinery and furniture costing ₹ 10,50,000 in all were purchased. One equipment was sold for ₹ 20,000.
- (v) A right issue was made of 50,000 shares of ₹ 10 each at a premium of ₹ 3 per share. The entire money was received with application.
- (vi) Dividends totalling ₹ 4,00,000 were distributed among the shareholders.
- (vii) Cash in hand and at Bank as at 31<sup>st</sup> March, 2017 and 31<sup>st</sup> March, 2018 totalled ₹ 2,10,000 and ₹ 4,14,000 respectively.  
You are required to prepare cash flow statement as per CAS-3 for the year ended 31<sup>st</sup> March, 2018 using the Direct method.

(6 marks)

8. (a) GOLDEN GARMENT LTD. manufactures readymade garments and sells them on credit basis through a network of dealers. It present sale is ₹ 60 lakh per annum with 20 days credit period. The company is contemplating an increase in the credit period with a view to increasing sales. Present variable costs are 70 per cent of sales and the total fixed costs ₹ 8 lakh per annum. The company expects pre-tax return on investment @ 25 per cent. Some other details are given as under:

Proposed credit policy	Average collection period (days)	Expected annual sales (Amount in ₹ lakh)
I	30	65
II	40	70
III	50	74

**Required:**

Which credit policy should the company adopt?

Present your answer in a tabular form. Assume 360-day a year. Calculations should be made up to two digits after decimal. Ignore taxation. (7 marks)

- (b) Jai & Karti Ltd. sells 10,00,000 bottles of Soda in a year. Each bottle produced has a variable cost of ₹ 5 and sells for ₹ 10. Fixed operating costs are ₹ 10,00,000. The company has debt of ₹ 12,00,000 at 10% rate of interest.

As a Cost and Management Accountant you are required to **calculate:**

- (i) The Degree of Operating Leverage,
- (ii) The Degree of Financial Leverage, and
- (iii) The Degree of Total Leverage. (5 marks)

9. (a) You have been provided the following particulars pertaining to the three companies A LTD., B LTD. and D LTD. operating identical business:

Company	A LTD	B LTD	D LTD
EBIT (₹)	15,00,000	15,00,000	15,00,000
No. of Shares	3,00,000	2,50,000	2,00,000
12% debentures (₹)		9,00,000	10,00,000

Every company expects 12% Return on investment (ROI).

**Required:**

Find out the value of the Companies A LTD., B LTD. and D LTD. and value of their equity shares as per the Modigliani-Miller (MM) approach. (5 marks)

- (b) ZENITH LTD. is faced with the problem of choosing between two mutually exclusive projects A and B. Project A requires a cash outlay of ₹ 10,00,000 and cash running expenses of ₹ 3,50,000 per year. On the other hand, Project B will cost ₹ 15,00,000 and require cash running expenses of ₹ 2,00,000 per year. Both the projects have an eight-year life. Project A has a salvage value of ₹ 40,000 and Project B has a salvage value 1,40,000. The company's tax rate is 50% and it has a 10% required rate of return.

**Required:**

Assuming depreciation on straight line basis and that there is no funds constraint for the company, Ascertain which project should be accepted.

[Given: PVIFA (10%, 8 years) = 5.335 and PVIF (10%, 8 years) = 0.467]

**Note:** Solve the problem by an incremental cash flow approach.

(7 marks)

10. Write short notes on *any three* out of the following:

- (i) Defensive-Interval Ratio (DIR)
- (ii) Venture Capital
- (iii) Advantages of Ratio Analysis
- (iv) Danger of inadequate amount of working capital

(4 × 3 = 12 marks)





# S

## FOR NOTES

[illegible]