COMPILATION
OF
SUGGESTED ANSWERS

TO

QUESTIONS

SET AT THE

INSTITUTE'S EXAMINATIONS

MAY, 2004 – NOVEMBER, 2014

INTERMEDIATE (IPC) COURSE

PAPER – 3: (PART – II) FINANCIAL MANAGEMENT

BOARD OF STUDIES
THE INSTITUTE OF CHARTERED ACCOUNTANTS OF INDIA
(Set up by an Act of Parliament)
New Delhi

The Suggested Answers published in this volume do not constitute the basis for evaluation of the students' answers in the examinations. The answers are prepared with a view to assist the students in their education. While due care is taken in preparation of the answers, if any errors or omissions are noticed, the same may be brought to the attention of the Director of Studies. The Council of the Institute is not responsible in any way for the correctness or otherwise of the answers published therein.

Revised Edition	:	July, 2015
Website	:	www.icai.org
Department/Committee	:	Board of Studies
E-mail	:	bosnoida@icai.in
ISBN No.	:	978-81-8441-534-6
Price	:	₹
Published by	:	The Publication Department on behalf of The Institute of Chartered Accountants of India, ICAI Bhawan, Post Box No. 7100, Indraprastha Marg, New Delhi- 110 002, India Typeset and designed at Board of Studies.
Printed by	:	Sahitya Bhawan Publications, Hospital Road, Agra-282 003 July/2015/P1768(Revised)

PAPER – 3 COST ACCOUNTING AND FINANCIAL MANAGEMENT

Statement showing topic-wise distribution of Examination Questions

Topics		May 2004	Nov. 2004	May 2005	Nov. 2005	May 2006	Nov. 2006	May 2007	Nov. 2007	May 2008	Nov. 2008	May 2009	Nov. 2009	May 2010	Nov. 2010	May 2011	Nov. 2011	May 2012	Nov. 2012	May 2013	Nov. 2013	May 2014	Nov. 2014
PART-II : FINANCIAL MANAGEMENT																							
Chapter-1	**Scope and Objectives of Financial Management**	7(b)				6(b)	6(b)	8(iii)	8(ii)			5(iv)	5(iv) 8(i)	8(ii)	5(b)(i)		7(a)	7(a)	7(a)			5(c)	7(a)
Chapter-2	**Time Value of Money**			8(a)				5(vi)		5(i)	8(i)			5(v)			7(b)		1(c)				
Chapter-3	**Financial Analysis and Planning**																						
Unit I	Application of Ratio Analysis for Performance Evaluation, Financial Health and Decision Making		7(c) 9(a)	9(b)	7	7	8(a)	5(ii) 5(iv) 8(ii)			5(v) 5(vi) 8(iii)	5(iii) 8(iv)	5(i) 5(vi)	6(a)	1(c)	7(b)	2(b)	7(b)	2(b)	1(d)	2(b)	1(c), 7(d)	3(b)
Unit II	Cash Flow and Funds Flow Analysis	9(e)		8(c)	6		9(b)	6	6	6	6	6	6	8(iii)	4(a)	4		2(b)	3(a)	2(a)	4(b)	4(b)	2(b)
Chapter-4	**Financing Decisions**																						
Unit I	Cost of Capital	7(a)	7(a)	6(b) 7(b)		8(b)	9(a)		8(iv)	7(a)		7(a)	5(v) 8(iii)	8(i)	1(d)		1(d)	1(c)		1(c)		1(d)	1(d)
Unit II	Capital Structure Decisions	6(c)			9(a)	8(a)		5(v)	5(iii) 8(i)	5(vi)	5(iii)	5(v)	8(iv)	5(i)	7(d)	6(b)		5(d)	5(d)		1(d) 5(d) 7(d)	2(b)	1(c), 4(b)
Unit III	Business Risk and Financial Risk	8(b)	8(a)				7(a)	7(a) 8(i)	5(iv)	5(iii)	8(ii)		5(ii) 7(a)		3(b)(i)	1(a)	3(b)	6(b)	1(a) 7(c)	3(b) 7(c)	1(c) 7(e)(i)		7(b)

Chapter-5	**Types of Financing**	9(a) 9(b) 9(c)	8(b) 9(c)	8(b) 9(a)		9(b)		5(iii) 8(iv)	5(i) 5(ii) 5(vi) 8(iii)	5(ii) 5(iv) 5(v) 8(i) 8(iii)	5(i) 5(ii) 5(iv)	5(ii) 5(vi)	5(iii) 8(ii)(a)	5(iii)	5(b)(ii)	1(d) 5(b)	5(iii) 7(e)(i)	5(c) 7(c)(i)	7(e)	5(c) 5(d) 7(d)		5(d), 7(e)(i)	5(d)
Chapter-6	**Investment Decisions**	6(b) 8(a)	6	7(a)	8	6(a)	7(b) 8(b)	5(i)	7(b)	7(b)	7(b) 8(iv)	7(b) 8(iii)	7(b) 8(ii)(b)	7(a)	6(a)		5(iv) 6(a)	4(b)	4(b)	6(b)	3(b)	3(b)	7(c)
Chapter-7	**Management of Working Capital**																						
Unit I	Meaning, Concept and Policies of Working Capital	6(a)		6(a)			6(a)		7(a)		7(a)			6(b)	3(b)(ii) 7(c)	3	4(a)	3(b)		4(b)		5(b)	
Unit II	Treasury and Cash Management	9(d)			9(b)					8(ii)		5(i) 8(i)		7(b)		7(d)				7(e)	5(c) 7(c)	7(c)(ii)	5(c)
Unit III	Management of Inventory								5(v)														
Unit IV	Management of Receivables		7(b) 9(b)			9(a)		7(b)		8(iv)		8(ii)		5(ii)	2(b)	2(b)	1(c)	1(d)			6(b)		6(a)
Unit V	Management of Payables																						
Unit VI	Financing of Working Capital													5(iv)					7(d)			7(c)(i)	7(d)

CONTENTS

CHAPTER – 1	Scope and Objectives of Financial Management	1.1 – 1.5
CHAPTER – 2	Time Value of Money	2.1 – 2.4
CHAPTER – 3	Financial Analysis and Planning	3.1 – 3.82
CHAPTER – 4	Financing Decisions	4.1 – 4.59
CHAPTER – 5	Types of Financing	5.1 – 5.15
CHAPTER – 6	Investment Decisions	6.1 – 6.39
CHAPTER – 7	Management of Working Capital	7.1 – 7.49
	APPENDIX	1 – 8
	Question Papers	9 – 96

1

Scope and Objectives of Financial Management

Question 1

Discuss the functions of a Chief Financial Officer. ***(3 Marks, May, 2004)***

Answer

Functions of a Chief Financial Officer

The twin aspects viz procurement and effective utilization of funds are the crucial tasks, which the CFO faces. The Chief Finance Officer is required to look into financial implications of any decision in the firm. Thus all decisions involving management of funds comes under the purview of finance manager. These are namely:

- Estimating requirement of funds
- Decision regarding capital structure
- Investment decisions
- Dividend decision
- Cash management
- Evaluating financial performance
- Financial negotiation
- Keeping touch with stock exchange quotations and behaviour of share prices.

Question 2

What are the main responsibilities of a Chief Financial Officer of an organisation?

(3 Marks; 4 Marks, May, 2007; May, 2010 & November, 2011)

Answer

Responsibilities of Chief Financial Officer (CFO): The chief financial officer of an organisation plays an important role in the company's goals, policies, and financial success. His main responsibilities include:

(a) *Financial analysis and planning:* Determining the proper amount of funds to be employed in the firm.

(b) *Investment decisions:* Efficient allocation of funds to specific assets.

(c) *Financial and capital structure decisions*: Raising of funds on favourable terms as possible, i.e., determining the composition of liabilities.

(d) Management of financial resources (such as working capital).

(e) *Risk Management:* Protecting assets.

Question 3

Explain the limitations of profit maximization objective of Financial Management.

(3 Marks, November, 2007)

Answer

Limitations of Profit Maximisation Objective of Financial Management

(a) Time factor is ignored.

(b) It is vague because it is not clear whether the term relates to economic profit, accounting profit, profit after tax or before tax.

(c) The term maximization is also ambiguous.

(d) It ignores the risk factor.

Question 4

Discuss conflict in profit versus wealth maximization objective.

(2 Marks; 4 Marks, June 2009; November, 2010 & November, 2012)

Answer

Conflict in Profit versus Wealth Maximization Objective: Profit maximisation is a short–term objective and cannot be the sole objective of a company. It is at best a limited objective. If profit is given undue importance, a number of problems can arise like the term profit is vague, profit maximisation has to be attempted with a realisation of risks involved, it does not take into account the time pattern of returns and as an objective it is too narrow.

Whereas, on the other hand, wealth maximisation, is a long-term objective and means that the company is using its resources in a good manner. If the share value is to stay high, the company has to reduce its costs and use the resources properly. If the company follows the goal of wealth maximisation, it means that the company will promote only those policies that will lead to an efficient allocation of resources.

Question 5

Differentiate between Financial Management and Financial Accounting.

(2 Marks, November, 2009)

Answer

Differentiation between Financial Management and Financial Accounting: Though financial management and financial accounting are closely related, still they differ in the treatment of funds and also with regards to decision - making.

Treatment of Funds: In accounting, the measurement of funds is based on the accrual principle. The accrual based accounting data do not reflect fully the financial conditions of the organisation. An organisation which has earned profit (sales less expenses) may said to be profitable in the accounting sense but it may not be able to meet its current obligations due to shortage of liquidity as a result of say, uncollectible receivables. Whereas, the treatment of funds, in financial management is based on cash flows. The revenues are recognised only when cash is actually received (i.e. cash inflow) and expenses are recognised on actual payment (i.e. cash outflow). Thus, cash flow based returns help financial managers to avoid insolvency and achieve desired financial goals.

Decision-making: The chief focus of an accountant is to collect data and present the data while the financial manager's primary responsibility relates to financial planning, controlling and decision-making. Thus, in a way it can be stated that financial management begins where financial accounting ends.

Question 6

Explain the two basic functions of Financial Management. ***(2 Marks, November, 2009)***

Answer

Two Basic Functions of Financial Management

Procurement of Funds: Funds can be obtained from different sources having different characteristics in terms of risk, cost and control. The funds raised from the issue of equity shares are the best from the risk point of view since repayment is required only at the time of liquidation. However, it is also the most costly source of finance due to dividend expectations of shareholders. On the other hand, debentures are cheaper than equity shares due to their tax advantage. However, they are usually riskier than equity shares. There are thus risk, cost and control considerations which a finance manager must consider while procuring funds. The cost of funds should be at the minimum level for that a proper balancing of risk and control factors must be carried out.

Effective Utilization of Funds: The Finance Manager has to ensure that funds are not kept idle or there is no improper use of funds. The funds are to be invested in a manner such that they

generate returns higher than the cost of capital to the firm. Besides this, decisions to invest in fixed assets are to be taken only after sound analysis using capital budgeting techniques. Similarly, adequate working capital should be maintained so as to avoid the risk of insolvency.

Question 7

"The profit maximization is not an operationally feasible criterion." Comment on it.

(4 Marks, May, 2012)

Answer

"The profit maximisation is not an operationally feasible criterion." This statement is true because Profit maximisation can be a short-term objective for any organisation and cannot be its sole objective. Profit maximization fails to serve as an operational criterion for maximizing the owner's economic welfare. It fails to provide an operationally feasible measure for ranking alternative courses of action in terms of their economic efficiency. It suffers from the following limitations:

(i) Vague term: The definition of the term profit is ambiguous. Does it mean short term or long term profit? Does it refer to profit before or after tax? Total profit or profit per share?

(ii) Timing of Return: The profit maximization objective does not make distinction between returns received in different time periods. It gives no consideration to the time value of money, and values benefits received today and benefits received after a period as the same.

(iii) It ignores the risk factor.

(iv) The term maximization is also vague.

Question 8

Discuss emerging issues affecting the future role of Chief Financial Officer (CFO).

(4 Marks, May, 2014)

Answer

Emerging Issues/Priorities Affecting the Future Role of Chief Financial Officer (CFO)

(i) **Regulation:** Regulation requirements are increasing and CFOs have an increasingly personal stake in regulatory adherence.

(ii) **Globalisation:** The challenges of globalisation are creating a need for finance leaders to develop a finance function that works effectively on the global stage and that embraces diversity.

(iii) **Technology:** Technology is evolving very quickly, providing the potential for CFOs to reconfigure finance processes and drive business insight through 'big data' and analytics.

(iv) **Risk:** The nature of the risks that organisations face is changing, requiring more effective risk management approaches and increasingly CFOs have a role to play in ensuring an appropriate corporate ethos.

(v) **Transformation:** There will be more pressure on CFOs to transform their finance functions to drive a better service to the business at zero cost impact.

(vi) **Stakeholder Management**: Stakeholder management and relationships will become important as increasingly CFOs become the face of the corporate brand.

(vii) **Strategy:** There will be a greater role to play in strategy validation and execution, because the environment is more complex and quick changing, calling on the analytical skills CFOs can bring.

(viii) **Reporting:** Reporting requirements will broaden and continue to be burdensome for CFOs.

(ix) **Talent and Capability**: A brighter spotlight will shine on talent, capability and behaviours in the top finance role.

(**Note:** Students may answer any four of the above issues)

2
Time Value of Money

Question 1

Explain the relevance of time value of money in financial decisions.

(2 Marks; 4 Marks May, 2008; May, 2011)

Answer

Time value of money means that worth of a rupee received today is different from the worth of a rupee to be received in future. The preference of money now as compared to future money is known as time preference for money.

A rupee today is more valuable than rupee after a year due to several reasons:

- Risk – there is uncertainty about the receipt of money in future.
- Preference for present consumption – Most of the persons and companies in general, prefer current consumption over future consumption.
- Inflation – In an inflationary period a rupee today represents a greater real purchasing power than a rupee a year hence.
- Investment opportunities – Most of the persons and companies have a preference for present money because of availabilities of opportunities of investment for earning additional cash flow.

Many financial problems involve cash flow accruing at different points of time for evaluating such cash flow an explicit consideration of time value of money is required.

Question 2

A person is required to pay four equal annual payments of ₹ 4,000 each in his Deposit account that pays 10 per cent interest per year. Find out the future value of annuity at the end of 4 years. ***(2 Marks, May, 2007)***

Answer

$$FVA = A\left(\frac{(1+i)^n - 1}{i}\right)$$

$$4{,}000\left(\frac{(1+.10)^4-1}{.10}\right)$$

$4{,}000 \times 4.641 = ₹\ 18{,}564$

Future Value of Annuity at the end of 4 years = ₹ 18,564

Question 3

A company offers a Fixed deposit scheme whereby ₹ 10,000 matures to ₹ 12,625 after 2 years, on a half-yearly compounding basis. If the company wishes to amend the scheme by compounding interest every quarter, what will be the revised maturity value?

(3 Marks, November, 2008)

Answer

Computation of Rate of Interest and Revised Maturity Value

Principal = ₹ 10,000

Amount = ₹ 12,625

$$10{,}000 = \frac{12{,}625}{(1+i)^4}$$

$P_n = A \times (PVF_{n,i})$

$10{,}000 = 12{,}625\ (PVF_{4,i})$

$0.7921 = (PVF_{4,i})$

According to the Table on Present Value Factor ($PVF_{4,i}$) of a lump sum of ₹ 1, a PVF of 0.7921 for half year at interest (i) = 6 percent. Therefore, the annual interest rate is $2 \times 0.06 = 12$ percent.

i = 6% for half year

i = 12% for full year.

Therefore, Rate of Interest = 12% per annum

$$\text{Revised Maturity Value} = 10{,}000\left(1+\frac{12}{100}\times\frac{1}{4}\right)^{2\times4}$$

$$= 10{,}000\left(1+\frac{3}{100}\right)^8$$

$$= 10{,}000\ (1.03)^8$$

$= 10{,}000 \times 1.267$ [Considering $(CVF_{8,3}) = 1.267$]

Revised Maturity Value = 12,670.

Question 4

Ascertain the compound value and compound interest of an amount of ₹ 75,000 at 8 percent compounded semiannually for 5 years. ***(2 Marks, May, 2010)***

Answer

Computation of Compound Value and Compound Interest

Semiannual Rate of Interest (i) = 8/2 = 4 %

n = 5 x 2 = 10, P = ₹ 75,000

Compound Value = P (1+i)n = 75,000 (1+4 %)10 = 75,000 x 1.4802 = ₹ 1,11,015

Compound Interest = ₹ 1,11,015 – ₹ 75,000 = ₹ 36,015

Question 5

X is invested ₹ 2,40,000 at annual rate of interest of 10 percent. What is the amount after 3 years if the compounding is done?

(i) Annually

(ii) Semi-annually. ***(5 Marks, November, 2012)***

Answer

Computation of Future Value

Principal (P) = ₹ 2,40,000

Rate of Interest (ï) = 10% p.a.

Time period (n)= 3 years

Amount if compounding is done:

(i) Annually

Future Value = P (1 + ï)n

$= 2,40,000 \left(1 + \left(1+\frac{10}{100}\right)^{3}\right.$

$= 2,40,000 (1 + 0.1)^{3}$

= 2,40,000 x 1.331 = ₹ 3,19,440

(ii) Semi-Annually

$$\text{Future Value} = 2,40,000\left(1+\frac{10}{100x2}\right)^{3x2}$$

$= 2,40,000\ (1 + 0.05)^{6}$

$= 2,40,000 \times (1.05)^{6}$

$= 2,40,000 \times 1.3401$

$= ₹\ 3,21,624$

Question 6

Why money in the future is worth less than similar money today? Give the reasons and explain. ***(4 Marks, November, 2014)***

Answer

Money in the Future is worth less than the Similar Money Today due to several reasons:

- **Risk** – There is uncertainty about the receipt of money in future.
- **Preference For Present Consumption** – Most of the persons and companies in general, prefer current consumption over future consumption.
- **Inflation** – In an inflationary period a rupee today represents a greater real purchasing power than a rupee a year hence.
- **Investment Opportunities** – Most of the persons and companies have a preference for present money because of availabilities of opportunities of investment for earning additional cash flow.

3

Financial Analysis and Planning

UNIT – I : APPLICATION OF RATIO ANALYSIS FOR PERFORMANCE EVALUATION, FINANCIAL HEALTH AND DECISION MAKING

Question 1

Discuss any three ratios computed for investment analysis. ***(3 Marks, November, 2004)***

Answer

Three ratios computed for investment analysis are as follows;

(i) Earnings per share $= \frac{\text{Profit after tax}}{\text{Number of equity shares outstanding}}$

(ii) Dividend yield ratio $= \frac{\text{Equity dividend per share} \times 100}{\text{Market price per share}}$

(iii) Return on capital employed $= \frac{\text{Net profit before interest and tax} \times 100}{\text{Capital employed}}$

Question 2

Discuss the financial ratios for evaluating company performance on operating efficiency and liquidity position aspects. ***(4 Marks, November, 2006)***

Answer

Financial ratios for evaluating performance on operational efficiency and liquidity position aspects are discussed as:

Operating Efficiency: Ratio analysis throws light on the degree of efficiency in the management and utilization of its assets. The various activity ratios (such as turnover ratios) measure this kind of operational efficiency. These ratios are employed to evaluate the efficiency with which the firm manages and utilises its assets. These ratios usually indicate the frequency of sales with respect to its assets. These assets may be capital assets or working capital or average inventory. In fact, the solvency of a firm is, in the ultimate analysis, dependent upon the sales revenues generated by use of its assets – total as well as its components.

Liquidity Position: With the help of ratio analysis, one can draw conclusions regarding liquidity position of a firm. The liquidity position of a firm would be satisfactory, if it is able to meet its current obligations when they become due. Inability to pay-off short-term liabilities affects its credibility as well as its credit rating. Continuous default on the part of the business leads to commercial bankruptcy. Eventually such commercial bankruptcy may lead to its sickness and dissolution. Liquidity ratios are current ratio, liquid ratio and cash to current liability ratio. These ratios are particularly useful in credit analysis by banks and other suppliers of short-term loans.

Question 3

Explain the need of debt-service coverage ratio. ***(2 Marks, May, 2007)***

Answer

Debt Service Coverage Ratio: Lenders are interested in this ratio to judge the firm's ability to pay off current interest and installments.

$$\text{Debt service coverage ratio} = \frac{\text{Earnings available for debt service}}{\text{Interest} + \text{Instalment}}$$

Where,

Earning for debt service = Net profit

+ Non-cash operating expenses like depreciation and other amortizations

+ Non-operating adjustments like loss on sale of

+ Fixed assets + Interest on Debt Fund.

Question 4

Diagrammatically present the DU PONT CHART to calculate return on equity.

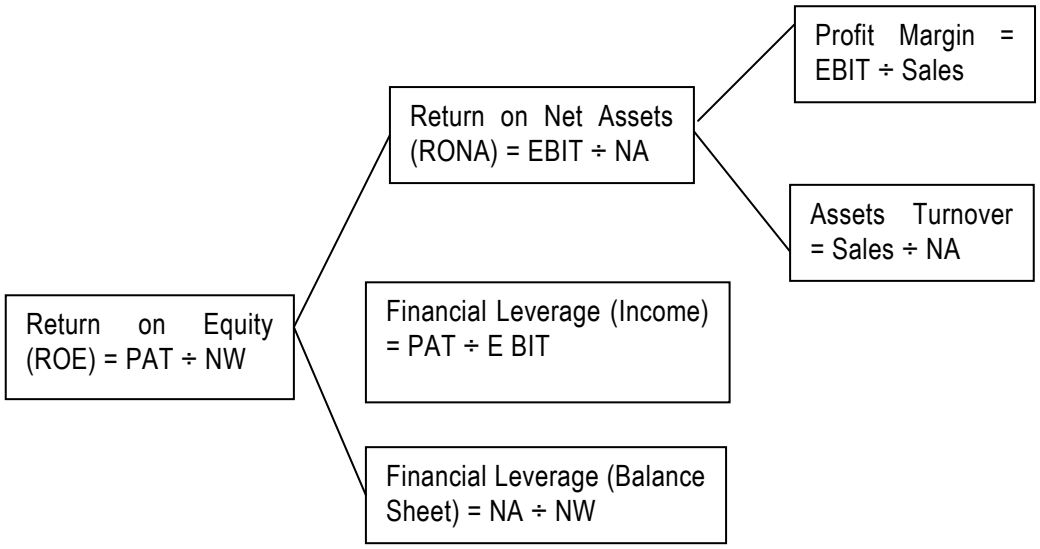
(3 Marks, May, 2007)

Answer

Du Pont Chart

There are three components in the calculation of return on equity using the traditional DuPont model- the net profit margin, asset turnover, and the equity multiplier. By examining each input individually, the sources of a company's return on equity can be discovered and compared to its competitors.

Return on Equity = (Net Profit Margin) (Asset Turnover) (Equity Multiplier)



Du Pont Chart

Question 5

How return on capital employed is calculated? What is its significance?

(2 Marks, November, 2008)

Answer

Return on Capital Employed (ROCE): It is the most important ratio of all. It is the percentage of return on funds invested in the business by its owners. In short, it indicates what returns management has made on the resources made available to them before making any distribution of those returns.

$$\text{Return on Capital Employed} = \frac{\text{EBIT}}{\text{Capital Employed}} \times 100$$

Where,

Capital Employed = Equity Share Capital
+ Reserve and Surplus
+ Pref. Share Capital
+ Debentures and other long term loan
– Misc. expenditure and losses
– Non-trade Investments.

Intangible assets (assets which have no physical existence like goodwill, patents and trademarks) should be included in the capital employed. But no fictitious asset should be included within capital employed.

Question 6

What is quick ratio? What does it signify? ***(2 Marks, November, 2008)***

Answer

Quick Ratio: It is a much more exacting measure than the current ratio. It adjusts the current ratio to eliminate all assets that are not already in cash (or near cash form). A ratio less than one indicates low liquidity and hence is a danger sign.

$$\text{Quick Ratio} = \frac{\text{Quick Assets}}{\text{Current Liabilities}}$$

Where,

Quick Assets = Current Assets – Inventory

Question 7

What do you mean by Stock Turnover ratio and Gearing ratio? ***(3 Marks, November, 2008)***

Answer

Stock Turnover Ratio and Gearing Ratio

Stock Turnover Ratio helps to find out if there is too much inventory build-up. An increasing stock turnover figure or one which is much larger than the "average" for an industry may indicate poor stock management. The formula for the Stock Turnover Ratio is as follows:

$$\text{Stock Turnover ratio} = \frac{\text{Cost of Sales}}{\text{Average inventory}} \text{ or } \frac{\text{Turnover}}{\text{Average inventory}}$$

Gearing Ratio indicates how much of the business is funded by borrowing. In theory, the higher the level of borrowing (gearing), the higher are the risks to a business, since the payment of interest and repayment of debts are not "optional" in the same way as dividends. However, gearing can be a financially sound part of a business's capital structure particularly if the business has strong, predictable cash flows. The formula for the Gearing Ratio is as follows:

$$\text{Gearing Ratio} = \frac{\text{Borrowings (all long term debts including normal overdraft)}}{\text{Net Assets or Shareholders' funds}}$$

Question 8

How is Debt service coverage ratio calculated? What is its significance? ***(2 Marks, June, 2009)***

Answer

Calculation of Debt Service Coverage Ratio (DSCR) and its Significance

The debt service coverage ratio can be calculated as under:

$$\text{Debt Service Coverage Ratio} = \frac{\text{Earnings available for debt service}}{\text{Interest} + \text{Installments}}$$

$$\text{Or, Debt Service Coverage Ratio} = \frac{\text{EBITDA}}{\text{Interest} + \frac{\text{Principal Repayment Due}}{1 - \text{Tc}}}$$

Debt service coverage ratio indicates the capacity of a firm to service a particular level of debt i.e. repayment of principal and interest. High credit rating firms target DSCR to be greater than 2 in its entire loan life. High DSCR facilitates the firm to borrow at the most competitive rates.

Question 9

Discuss the composition of Return on Equity (ROE) using the DuPont model.

(3 Marks, June, 2009)

Answer

Composition of Return on Equity using the DuPont Model

There are three components in the calculation of return on equity using the traditional DuPont model- the net profit margin, asset turnover, and the equity multiplier. By examining each input individually, the sources of a company's return on equity can be discovered and compared to its competitors.

(a) *Net Profit Margin:* The net profit margin is simply the after-tax profit a company generates for each rupee of revenue.

Net profit margin = Net Income ÷ Revenue

Net profit margin is a safety cushion; the lower the margin, lesser the room for error.

(b) *Asset Turnover:* The asset turnover ratio is a measure of how effectively a company converts its assets into sales. It is calculated as follows:

Asset Turnover = Revenue ÷ Assets

The asset turnover ratio tends to be inversely related to the net profit margin; i.e., the higher the net profit margin, the lower the asset turnover.

(c) *Equity Multiplier:* It is possible for a company with terrible sales and margins to take on excessive debt and artificially increase its return on equity. The equity multiplier, a

measure of financial leverage, allows the investor to see what portion of the return on equity is the result of debt. The equity multiplier is calculated as follows:

Equity Multiplier = Assets ÷ Shareholders' Equity.

Calculation of Return on Equity

To calculate the return on equity using the DuPont model, simply multiply the three components (net profit margin, asset turnover, and equity multiplier.)

Return on Equity = Net profit margin× Asset turnover × Equity multiplier

Question 10

Explain briefly the limitations of Financial ratios. ***(2 Marks, November, 2009)***

Answer

Limitations of Financial Ratios

The limitations of financial ratios are listed below:

(a) *Diversified product lines*: Many businesses operate a large number of divisions in quite different industries. In such cases, ratios calculated on the basis of aggregate data cannot be used for inter-firm comparisons.

(b) *Financial data are badly distorted by inflation*: Historical cost values may be substantially different from true values. Such distortions of financial data are also carried in the financial ratios.

(c) Seasonal factors may also influence financial data.

(d) *To give a good shape to the popularly used financial ratios (like current ratio, debt- equity ratios, etc.)*: The business may make some year-end adjustments. Such window dressing can change the character of financial ratios which would be different had there been no such change.

(e) *Differences in accounting policies and accounting period*: It can make the accounting data of two firms non-comparable as also the accounting ratios.

(f) There is no standard set of ratios against which a firm's ratios can be compared: Sometimes a firm's ratios are compared with the industry average. But if a firm desires to be above the average, then industry average becomes a low standard. On the other hand, for a below average firm, industry averages become too high a standard to achieve.

(*Note*: *Students to write any four limitations*)

Question 11

Explain the following ratios:

(i) Operating ratio

(ii) Price earnings ratio ***(4 Marks, May, 2011)***

Answer

(i) Concept of Operating Ratio

$$\text{Operating ratio} = \frac{\text{Cost of goods sold} + \text{operating expenses}}{\text{Net sales}} \times 100$$

This is the test of the operational efficiency with which the business is being carried; the operating ratio should be low enough to leave a portion of sales to give a fair return to the investors.

(ii) Concept of Price-Earnings ratio

$$\text{Price Earnings Ratio} = \frac{\text{Market price per equity share}}{\text{Earning per share}}$$

This ratio indicates the number of times the earnings per share is covered by its market price. It indicates the expectation of equity investors about the earnings of the firm.

Question 12

Explain the important ratios that would be used in each of the following situations:

(i) A bank is approached by a company for a loan of ₹ 50 lakhs for working capital purposes.

(ii) A long term creditor interested in determining whether his claim is adequately secured.

(iii) A shareholder who is examining his portfolio and who is to decide whether he should hold or sell his holding in the company.

(iv) A finance manager interested to know the effectiveness with which a firm uses its available resources. ***(4 Marks, May, 2012)***

Answer

Important Ratios used in different situations

(i) Liquidity Ratios- Here Liquidity or short-term solvency ratios would be used by the bank to check the ability of the company to pay its short-term liabilities. A bank may use Current ratio and Quick ratio to judge short terms solvency of the firm.

(ii) Capital Structure/Leverage Ratios- Here the long-term creditor would use the capital structure/leverage ratios to ensure the long term stability and structure of the firm. A long term creditors interested in the determining whether his claim is adequately secured may

use Debt-service coverage and interest coverage ratio.

(iii) Profitability Ratios- The shareholder would use the profitability ratios to measure the profitability or the operational efficiency of the firm to see the final results of business operations. A shareholder may use return on equity, earning per share and dividend per share.

(iv) *Activity Ratios*- The finance manager would use these ratios to evaluate the efficiency with which the firm manages and utilises its assets. Some important ratios are (a) Capital turnover ratio (b) Current and fixed assets turnover ratio (c) Stock, Debtors and Creditors turnover ratio.

Question 13

With the help of the following information complete the Balance Sheet of MNOP Ltd.:

Equity share capital	*₹ 1,00,000*
The relevant ratios of the company are as follows:	
Current debt to total debt	*.40*
Total debt to owner's equity	*.60*
Fixed assets to owner's equity	*.60*
Total assets turnover	*2 Times*
Inventory turnover	*8 Times*

(7 Marks, May 2005)

Answer

MNOP Ltd

Balance Sheet

Liabilities	₹	*Assets*	₹
Owner equity	1,00,000	Fixed assets	60,000
Current debt	24,000	Cash	60,000
Long term debt	36,000	Inventory	40,000
	1,60,000		1,60,000

Working Notes:

1. Total debt = 0.60 × Owners equity = 0.60 × ₹₹ 1,00,000 = ₹ 60,000

   Current debt to total debt = 0.40, hence current debt = 0.40 × 60,000 = 24,000

2. Fixed assets = 0.60 × Owners equity = 0.60 × ₹ 1,00,000 = ₹ 60,000

3. Total equity = Total debt + Owners equity = ₹ 60,000 + ₹ 1,00,000 = ₹ 1,60,000

4. Total assets consisting of fixed assets and current assets must be equal to ₹ 1,60,000 (Assets = Liabilities + Owners equity). Since Fixed assets are ₹ 60,000 , hence , current assets should be ₹ 1,00,000
5. Total assets to turnover = 2 Times : Inventory turnover = 8 Times

   Hence, Inventory /Total assets = 2/8=1/4, Total assets = 1,60,000

   Therefore Inventory = 1,60,000/4 = 40,000 Balance on Asset side
6. Cash = 1,00,000 – 40,000 = 60,000

Question 14

Using the following data, complete the Balance Sheet given below:

Gross Profits		*₹ 54,000*	
Shareholders' Funds		*₹ 6,00,000*	
Gross Profit margin		*20%*	
Credit sales to Total sales		*80%*	
Total Assets turnover		*0.3 times*	
Inventory turnover		*4 times*	
Average collection period (a 360 days year)		*20 days*	
Current ratio		*1.8*	
Long-term Debt to Equity		*40%*	

Balance Sheet

Liabilities	*Amount (₹)*	*Assets*	*Amount (₹)*
Creditors	.....	*Cash*	.....
Long-term debt	.....	*Debtors*	.....
Shareholders' funds	.....	*Inventory*	.....
		Fixed assets	.....

(12 Marks, November, 2005)

Answer

Gross Profits ₹ 54,000

Gross Profit Margin 20%

$$\therefore \quad \text{Sales} = \frac{\text{Gross Profits}}{\text{Gross Profit Margin}} = ₹\ 54,000 / 0.20 = ₹\ 2,70,000$$

Credit Sales to Total Sales	= 80%
∴ Credit Sales	= ₹ 2,70,000×0.80 = ₹ 2,16,000
Total Assets Turnover	= 0.3 times
∴ Total Assets	$= \frac{\text{Sales}}{\text{Total Assets Turnover}}$
	$= \frac{₹\ 2,70,000}{0.3}$
	= ₹ 9,00,000
Sales – Gross Profits	= COGS
∴ COGS	= ₹ 2, 70,000 – 54,000
	= ₹ 2, 16,000
Inventory turnover	= 4 times
Inventory	$= \frac{\text{COGS}}{\text{Inventory turnover}} = \frac{2,16,000}{4}$
	= ₹ 54,000
Average Collection Period	= 20 days
∴ Debtors turnover	$= \frac{360}{\text{Average Collection Period}}$
	= 360/20=18
∴ Debtors	$= \frac{\text{Credit Sales}}{\text{Debtors turnover}}$
	$= \frac{₹\ 2,16,000}{18}$
	= ₹12,000
Current ratio	= 1.8
1.8	$= \frac{\text{Debtors} + \text{Inventory} + \text{Cash}}{\text{Creditors}}$
1.8 Creditors	= (₹12,000 + ₹54,000 + Cash)
1.8 Creditors	= ₹66,000 + Cash
Long-term Debt to Equity	= 40%
Shareholders Funds	= ₹6, 00,000

∴ Long-term Debt = ₹6, 00,000×40%
= ₹2, 40,000

Creditors (Balance figure) = 9, 00,000 – (6, 00,000 + 2, 40,000)
= ₹60,000

∴ Cash = (60,000×1.8) – 66,000
= ₹42,000

Balance Sheet (in ₹)

Creditors (Bal. Fig)	60,000	Cash	42,000
		Debtors	12,000
Long- term debt	2,40,000	Inventory	54,000
Shareholders' funds	6,00,000	Fixed Assets (Bal fig.)	7,92,000
	9,00,000		9,00,000

Question 15

JKL Limited has the following Balance Sheets as on March 31, 2006 and March 31, 2005:

Balance Sheet

	₹in lakhs	
	March 31, 2006	*March 31, 2005*
Sources of Funds:		
Shareholders Funds	*2,377*	*1,472*
Loan Funds	*3,570*	*3,083*
	5,947	*4,555*
Applications of Funds:		
Fixed Assets	*3,466*	*2,900*
Cash and bank	*489*	*470*
Debtors	*1,495*	*1,168*
Stock	*2,867*	*2,407*
Other Current Assets	*1,567*	*1,404*
Less: Current Liabilities	*(3,937)*	*(3,794)*
	5,947	*4,555*

The Income Statement of the JKL Ltd. for the year ended is as follows:

	₹in lakhs	
	March 31, 2006	*March 31, 2005*
Sales	*22,165*	*13,882*
Less: Cost of Goods sold	*20,860*	*12,544*
Gross Profit	*1,305*	*1,338*
Less: Selling, General and Administrative expenses	*1,135*	*752*
Earnings before Interest and Tax (EBIT)	*170*	*586*
Interest Expense	*113*	*105*
Profits before Tax	*57*	*481*
Tax	*23*	*192*
Profits after Tax (PAT)	*34*	*289*

Required:

(i) Calculate for the year 2005-06:

(a) Inventory turnover ratio

(b) Financial Leverage

(c) Return on Investment (ROI)

(d) Return on Equity (ROE)

(e) Average Collection period.

(ii) Give a brief comment on the Financial Position of JKL Limited. ***(12 Marks, May, 2006)***

Answer

Ratios for the year 2005-2006

(i) (a) Inventory turnover ratio

$$= \frac{\text{COGS}}{\text{Average Inventory}} = \frac{20,860}{\frac{(2,867 + 2,407)}{2}} = 7.91$$

(b)

Financial leverage	*2005-06*	*2004-05*
$= \frac{\text{EBIT}}{\text{EBIT} - \text{I}}$	$= \frac{170}{57}$	$= \frac{586}{481}$
	= 2.98	= 1.22

(c) ROI

$$= \frac{\text{NOPAT}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Average Capital employed}}$$

$$= \frac{57 \times (1 - .4)}{22,165} \times \frac{22,165}{\frac{(5,947 + 4,555)}{2}}$$

$$= \frac{34.2}{22,165} \times \frac{22,165}{5,251}$$

= 0.65%

(d) ROE

$$= \frac{\text{PAT}}{\text{Average shareholders' funds}}$$

$$= \frac{34}{\frac{(2,377 + 1,472)}{2}}$$

$$= \frac{34}{1,924.5}$$

= 1.77%

(e) Average Collection Period*

$$\text{Average Sales per day} = \frac{22,165}{365} = ₹\ 60.73 \text{ lakhs}$$

$$\text{Average collection period} = \frac{\text{Average Debtors}}{\text{Average sales per day}}$$

$$= \frac{\frac{(1,495 + 1,168)}{2}}{60.73}$$

$$= \frac{1331.5}{60.73}$$

= 22 days

(***Note:** *In the above solution, 1 year = 365 days has been assumed. Alternatively, some candidates may give the solution on the basis 1 year = 360 days.)*

(ii) Brief Comment on the financial position of JKL Ltd.

The profitability of operations of the company are showing sharp decline due to increase in operating expenses. The financial and operating leverages are becoming adverse. The liquidity of the company is under great stress.

Question 16

From the information given below calculate the amount of Fixed assets and Proprietor's fund.

Ratio of fixed assets to proprietors fund = *0.75*

Net Working Capital = *₹ 6,00,000* ***(2 Marks, November, 2009)***

Answer

Calculation of Fixed Assets and Proprietor's Fund

Since Ratio of Fixed Assets to Proprietor's Fund	= 0.75
Therefore, Fixed Assets	= 0.75 Proprietor's Fund
Net Working Capital	= 0.25 Proprietor's Fund
6,00,000	= 0.25 Proprietor's Fund
Therefore, Proprietor's Fund	$= \frac{₹\ 6,00,000}{0.25}$
	= ₹ 24,00,000
Proprietor's Fund	= ₹ 24,00,000
Since, Fixed Assets	= 0.75 Proprietor's Fund
Therefore, Fixed Assets	= 0.75 × 24,00,000
	= ₹ 18,00,000
Fixed Assets	= ₹ 18,00,000

Question 17

ABC Limited has an average cost of debt at 10 per cent and tax rate is 40 per cent. The Financial leverage ratio for the company is 0.60. Calculate Return on Equity (ROE) if its Return on Investment (ROI) is 20 per cent. ***(2 Marks, May, 2007)***

Answer

ROE = [ROI + {(ROI – r) × D/E}] (1 – t)

= [0.20 + {(0.20 – 0.10) × 0.60}] (1 – 0.40)

=[0.20 + 0.06] × 0.60 = 0.1560

ROE = 15.60%

Question 18

The Sales Manager of AB Limited suggests that if credit period is given for 1.5 months then sales may likely to increase by ₹1,20,000 per annum. Cost of sales amounted to 90% of sales. The risk of non-payment is 5%. Income tax rate is 30%. The expected return on investment is ₹3,375 (after tax). Should the company accept the suggestion of Sales Manager?

(2 Marks, May, 2008)

Answer

Profitability on additional sales:

	₹.
Increase in sales	1,20,000
Less: Cost of sales (90% sales)	1,08,000
Less: Bad debt losses (5% of sales)	6,000
Net profit before tax	6,000
Less: Income tax (30%)	1,800
	4,200

Advise: *Net profit after tax ₹4,200 on additional sales is higher than expected return. Hence, proposal should be accepted.*

Question 19

MNP Limited has made plans for the next year 2010 -11. It is estimated that the company will employ total assets of ₹ 25,00,000; 30% of assets being financed by debt at an interest cost of 9% p.a. The direct costs for the year are estimated at ₹.15,00,000 and all other operating expenses are estimated at ₹ 2,40,000. The sales revenue are estimated at ₹ 22,50,000. Tax rate is assumed to be 40%. Required to calculate:

(i) Net profit margin;

(ii) Return on Assets;

(iii) Asset turnover; and

(iv) Return on Equity. ***(5 Marks, November, 2010)***

Answer

The net profit is calculated as follows:

	₹
Sales Revenue	22,50,000
Less: Direct Costs	15,00,000

Gross Profits	7,50,000
Less: Operating Expense	2,40,000
EBIT	5,10,000
Less: Interest (9% × 7,50,000)	67,500
EBT	4,42,500
Less: Taxes (@ 40%)	1,77,000
PAT	2,65,500

(i) Net Profit Margin

$$\text{Net Profit Margin} = \frac{\text{EBIT (1 - t)}}{\text{Sales}} \times 100 = \frac{5,10,000 \times (1 - 0.4)}{22,50,000} = 13.6\%$$

(ii) Return on Assets (ROA)

ROA = EBIT (1− t) ÷ Total Assets

= 5,10,000 (1− 0.4) ÷ 25,00,000 = 3,06,000 ÷ 25,00,000 = 0.1224 = 12.24%

(iii) Asset Turnover

$$\text{Asset Turnover} = \frac{\text{Sales}}{\text{Assets}} = \frac{22,50,000}{25,00,000} = 0.9$$

Asset Turnover = 0.9

(iv) Return on Equity (ROE)

$$\text{ROE} = \frac{\text{PAT}}{\text{Equity}} = \frac{2,65,500}{17,50,000} = 15.17\%$$

ROE = 15.17%

Question 20

The financial statements of a company contain the following information for the year ending 31st March, 2011:

Particulars	₹
Cash	*1,60,000*
Sundry Debtors	*4,00,000*
Short-term Investment	*3,20,000*
Stock	*21,60,000*
Prepaid Expenses	*10,000*
Total Current Assets	*30,50,000*

Current Liabilities	*10,00,000*
10% Debentures	*16,00,000*
Equity Share Capital	*20,00,000*
Retained Earnings	*8,00,000*
Statement of Profit for the year ended 31st March, 2011	
Sales (20% cash sales)	*40,00,000*
Less: Cost of goods sold	*28,00,000*
Profit before Interest & Tax	*12,00,000*
Less: Interest	*1,60,000*
Profit before tax	*10,40,000*
Less: Tax @ 30%	*3,12,000*
Profit After Tax	*7,28,000*

You are required to calculate:

(i) Quick Ratio

(ii) Debt-equity Ratio

(iii) Return on Capital Employed, and

(iv) Average collection period (Assuming 360 days in a year). ***(8 Marks, November, 2011)***

Answer

(i) Quick Ratio = $\frac{\text{Quick Assets}}{\text{Current Liabilities}}$

Quick Assets = Current Assets – Stock – Prepaid Expenses

= 30,50,000- 21,60,000-10,000

Quick Assets = 8,80,000

Quick Ratio = 8,80,000/10,00,000 = 0.88 : 1

(ii) Debt-Equity Ratio = $\frac{\text{Long term debt}}{\text{Shareholders Funds}}$

= $\frac{16,00,000}{(20,00,000 + 8,00,000)}$ = 0.57:1

(iii) Return on Capital Employed (ROCE)

$$\text{ROCE} = \frac{\text{PBIT}}{\text{Capital Employed}} \times 100 = \frac{12,00,000}{44,00,000} \times 100 = 27.27\%$$

[**Note:** ROCE can be computed alternatively taking Average total assets into consideration (EBIT (1 – T)/Average Total Assets). The value of ROCE would then change accordingly as 15.56%]

(iv) Average Collection Period

$$= \frac{\text{Sundry Debtors}}{\text{Credit Sales}} \times 360$$

$$= \frac{4,00,000}{32,00,000} \times 360 = 45 \text{ days}$$

Question 21

The following accounting information and financial ratios of M Limited relate to the year ended 31st March, 2012 :

Inventory Turnover Ratio	*6 Times*
Creditors Turnover Ratio	*10 Times*
Debtors Turnover Ratio	*8 Times*
Current Ratio	2.4
Gross Profit Ratio	*25%*

Total sales ₹ 30,00,000; cash sales 25% of credit sales; cash purchases ₹ 2,30,000; working capital ₹ 2,80,000; closing inventory is ₹ 80,000 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, November, 2012)***

Answer

(i) Computation of Average Inventory

Gross Profit = 25% of 30,00,000

Gross Profit = 7,50,000

Cost of goods sold (COGS) = 30,00,000 – 7,50,000

COGS = 22,50,000

$$\text{Inventory Turnover Ratio} = \frac{\text{COGS}}{\text{Average Inventory}}$$

$$6 = \frac{22,50,000}{\text{Average inventory}}$$

Average inventory = 3,75,000

(ii) Computation of Purchases

Purchases = COGS + Increase in Stock = 22,50,000 + 80,000

Purchases = 23,30,000

(iii) Computation of Average Debtors

Let Credit Sales be ₹ 100

$$\text{Cash sales} = \frac{25}{100} \times 100 = ₹ 25$$

Total Sales = 100 +25= 125

Total sales is ₹ 125 credit sales is ₹ 100

$$\text{If total sales is 30,00,000, then credit sales is} = \frac{30,00,000 \times 100}{125}$$

Credit Sales = 24,00,000

Cash Sales = 6,00,000

$$\text{Debtors Turnover Ratio} = \frac{\text{Net Credit Sales}}{\text{Average debtors}} = 8 = \frac{24,00,000}{\text{Average debtors}} = 8$$

$$\text{Average Debtors} = \frac{24,00,000}{8}$$

Average Debtors = 3,00,000

(iv) Computation of Average Creditors

Credit Purchases = Purchases – Cash Purchases

= 23,30,000 – 2,30,000 = 21,00,000

$$\text{Creditors Turnover Ratio} = \frac{\text{Credit Purchases}}{\text{Average Creditors}}$$

$$10 = \frac{21,00,000}{\text{Average Creditors}}$$

Average Creditors = 2,10,000

(v) Computation of Average Payment Period

$$\text{Average Payment Period} = \frac{\text{Average Creditors}}{\text{Average Daily Credit Purchases}}$$

$$= \frac{2,10,000}{\left(\frac{\text{Credit Purchases}}{365}\right)} = \frac{2,10,000}{\left(\frac{21,00,000}{365}\right)}$$

$$= \frac{2,10,000}{21,00,000} \times 365 = 36.5 \text{ days}$$

OR

Average Payment Period = 365/Creditors Turnover Ratio

$$= \frac{365}{10} = 36.5 \text{ days}$$

(vi) Computation of Average Collection Period

$$\text{Average Collection Period} = \frac{\text{Average Debtors}}{\text{Net Credit Sales}} \times 365$$

$$= \frac{3,00,000}{24,00,000} \times 365 = 45.625 \text{ days}$$

OR

Average collection period = 365/ Debtors Turnover Ratio

$$= \frac{365}{8} = 45.625 \text{ days}$$

(vii) Computation of Current Assets

$$\text{Current Ratio} = \frac{\text{Current Assets (CA)}}{\text{Current Liabilities (CL)}}$$

2.4 Current Liabilities = Current Assets or CL = CA/2.4

Working capital = Current Assets – Current liabilities

2,80,000 = CA-CA/2.4

2,80,000 = 1.4 CA/2.4

CA = 4,80,000

(viii) Computation of Current Liabilities

Current liabilities = $\frac{4,80,000}{2.4}$ = 2,00,000

Question 22

The following information relates to Beta Ltd. for the year ended 31st March 2013:

Net Working Capital	*₹ 12,00,000*
Fixed Assets to Proprietor's Fund Ratio	*0.75*
Working Capital Turnover Ratio	*5 Times*
Return on Equity (ROE)	*15%*

There is no debt capital.

You are required to calculate:

(i) Proprietor's Fund

(ii) Fixed Assets

(iii) Net Profit Ratio. ***(5 Marks, May 2013)***

Answer

(i) Calculation of Proprietor's Fund

Since Ratio of Fixed Assets to Proprietor's Fund = 0.75

Therefore, Fixed Assets = 0.75 Proprietor's Fund

Net Working Capital = 0.25 Proprietor's Fund

12,00,000 = 0.25 Proprietor's Fund

Therefore, Proprietors Fund = $\frac{12,00,000}{0.25}$ = 48,00,000

(ii) Calculation of Fixed Assets

Fixed Assets = 0.75 Proprietor's Fund

= 0.75 x 48,00,000 = 36,00,000

(iii) Calculation of Net Profit Ratio

Net Working Capital = 0.25 x 48,00,000 = 12,00,000

Working Capital Turnover Ratio = $\frac{\text{Sales}}{\text{Working Capital}}$

∴ Sales = 60,00,000

ROE $= \frac{PAT}{Equity}$

0.15 $= \frac{PAT}{48,00,000}$

PAT = 7,20,000

Net Profit Ratio $= \frac{Net\ Profit}{Sales} x100$

$= \frac{7,20,000}{60,00,000} x\ 100$

Net Profit Ratio = 12%

[**Note:** *Fixed Assets may be computed alternatively by (Net Working Capital × Fixed Assets to Proprietor's Fund Ratio) and Proprietor's Fund by (Fixed Assets + Net Working Capital)].*

Question 23

The assets of SONA Ltd. consist of fixed assets and current assets, while its current liabilities comprise bank credit in the ratio of 2 : 1. You are required to prepare the Balance Sheet of the company as on 31st March 2013 with the help of following information:

Share Capital	*₹ 5,75,000*	
Working Capital (CA-CL)	*₹ 1,50,000*	
Gross Margin	*25%*	
Inventory Turnover	*5 times*	
Average Collection Period	*1.5 months*	
Current Ratio	*1.5:1*	
Quick Ratio	*0.8: 1*	
Reserves & Surplus to Bank & Cash	*4 times*	***(8 Marks, November, 2013)***

Answer

Working Notes:

1. Computation of Current Assets (CA) and Current Liabilities (CL)

$\frac{Current\ Assets}{Current\ Liabilities} = Current\ Ratio$

$\frac{CA}{CL} = \frac{1.5}{1}$

$\therefore$ CA = 1.5 CL

CA - CL = 1,50,000

1.5 CL- CL = 1,50,000

0.5 CL = 1,50,000

$$CL = \frac{1,50,000}{0.5} = 3,00,000$$

CA = 1.5 x 3,00,000 = 4,50,000

2. Computation of Bank Credit (BC) and Other Current Liabilities (OCL)

$$\frac{\text{Bank Credit}}{\text{Other CL}} = \frac{2}{1}$$

BC = 2 OCL

BC + OCL = CL

2 OCL + OCL = 3,00,000

3 OCL = 3,00,000

OCL = 1,00,000

Bank Credit = 2 × 1,00,000 = 2,00,000

3. Computation of Inventory

$$\text{Quick Ratio} = \frac{\text{Quick Assets}}{\text{Current Liabilities}}$$

$$= \frac{\text{Current Assets - Inventories}}{\text{Current Liabilities}}$$

$$0.8 = \frac{4,50,000 - \text{Inventories}}{3,00,000}$$

0.8 × 3,00,000 = 4,50,000 – Inventories

Inventories = 4,50,000 – 2,40,000 = 2,10,000

4. Computation of Debtors

Inventory Turnover = 5 times

$$\text{Average Inventory} = \frac{\text{COGS}}{\text{Inventory Turnover}}$$

COGS = 2,10,000 × 5 = 10,50,000

Average Collection Period (ACP) = 1.5 months = 45 days

$$\text{Debtors Turnover} = \frac{360}{\text{ACP}} = \frac{360}{45} = 8$$

$$\frac{\text{Sales - COGS}}{\text{Sales}} \times 100 = 25\%$$

$$\text{Sales - COGS} = \frac{25 \times \text{Sales}}{100}$$

Sales – 0.25 Sales = COGS

0.75 Sales = 10,50,000

$$\text{Sales} = \frac{10,50,000}{0.75} = 14,00,000$$

$$\text{Debtors} = \frac{\text{Sales}}{\text{Debtors Turnover}}$$

$$= \frac{14,00,000}{8} = 1,75,000$$

5. Computation of Bank and Cash

Bank & Cash = CA - (Debtors + Inventory)

= 4,50,000 – (1,75,000 + 2,10,000)= 4,50,000 – 3,85,000 = 65,000

6. Computation of Reserves & Surplus

$$\frac{\text{Reserves \& Surplus}}{\text{Bank \& Cash}} = 4$$

Reserves & Surplus = 4 × 65,000 = 2,60,000

Balance Sheet of SONA Ltd. as on March 31, 2013

Liabilities	₹	Assets	₹
Share Capital	5,75,000	Fixed Assets	6,85,000
Reserves & Surplus	2,60,000	Current Assets:	
Current Liabilities:		Inventories	2,10,000
Bank Credit	2,00,000	Debtors	1,75,000
Other Current Liabilities	1,00,000	Bank & Cash	65,000
	11,35,000		11,35,000

Question 24

NOOR Limited provides the following information for the year ending 31st March, 2014:

Equity Share Capital	*₹ 25,00,000*
Closing Stock	*₹ 6,00,000*
Stock Turnover Ratio	*5 times*
Gross Profit Ratio	*25%*
Net Profit / Sale	*20%*
Net Profit / Capital	$\frac{1}{4}$

You are required to prepare:

Trading and Profit & Loss Account for the year ending 31st March, 2014. ***(4 Marks, May, 2014)***

Answer

Working Notes:

(i) $\frac{\text{Net Profit}}{\text{Capital}} = \frac{1}{4}$

$\frac{\text{Net Profit}}{25,00,000} = \frac{1}{4}$

Net Profit = 6,25,000

(ii) $\frac{\text{Net Profit}}{\text{Sale}} = 20\%$

Sale = $\frac{6,25,000}{0.20} = 31,25,000$

(iii) Gross Profit Ratio = $\frac{\text{Gross Profit}}{\text{Sales}} \times 100$

25 = $\frac{\text{Gross Profit}}{31,25,000} \times 100$

Gross Profit = $\frac{31,25,000 \times 25}{100}$

= 7,81,250

(iv) Stock Turnover = $\frac{\text{COGS}}{\text{Average Stock}}$

$$5 = \left(\frac{31,25,000 - 7,81,250}{\text{Average Stock}}\right)$$

$$\text{Average Stock} = \frac{23,43,750}{5}$$

$$= 4,68,750$$

(v) $$\text{Average Stock} = \frac{\text{Closing Stock} + \text{Opening Stock}}{2}$$

$$4,68,750 = \frac{6,00,000 + \text{Opening Stock}}{2}$$

Opening Stock = 9,37,500 – 6,00,000 = 3,37,500

Trading A/c for the year ending 31st March, 2014

	₹		₹
To Opening Stock	3,37,500	By Sales	31,25,000
To Purchases (Balancing figure)	26,06,250	By Closing Stock	6,00,000
To Gross Profit c/f to P&L A/c	7,81,250		-
	37,25,000		37,25,000

Profit & Loss A/c for the year ending 31st March, 2014

	₹		₹
To Miscellaneous Expenses (balancing figure)	1,56,250	By Gross Profit b/f from Trading A/c	7,81,250
To Net Profit	6,25,000		-
	7,81,250		7,81,250

Question 25

Comment on the Debt Service Coverage Ratio. ***(4 Marks, May, 2014)***

Answer

Comment on Debt Service Coverage Ratio (DSCR)

Debt service coverage ratio indicates the capacity of a firm to service a particular level of debt i.e. repayment of principal and interest. High credit rating firms target DSCR to be greater than 2 in its entire loan life. High DSCR facilitates the firm to borrow at the most competitive rates. Lenders are interested in this ratio to judge the firm's ability to pay off current interest and installments.

The debt service coverage ratio can be calculated as under:

$$\text{Debt Service Coverage Ratio} = \frac{\text{Earnings available for debt service}}{\text{Interest} + \text{Installments}}$$

$$\text{Or, Debt Service Coverage Ratio} = \frac{\text{EBITDA}}{\text{Interest} + \frac{\text{Principal Repayment Due}}{1 - \text{Tc}}}$$

Question 26

From the following information, prepare Balance Sheet of a firm:

Stock Turnover Ratio (based on cost of goods sold)	-	*7 times*
Rate of Gross Profit to Sales	-	*25%*
Sales to Fixed Assets	-	*2 times*
Average debt collection period	-	*1.5 months*
Current Ratio	-	*2*
Liquidity Ratio	-	*1.25*
Net Working Capital	-	*₹ 8,00,000*
Net Worth to Fixed Assets	-	*0.9 times*
Reserve and Surplus to Capital	-	*0.25 times*
Long Term Debts	-	*Nil*

All Sales are on credit basis. ***(8 Marks, November, 2014)***

Answer

Working Notes;

1. Net Working Capital = Current Assets – Current Liabilities

$$= 2 - 1 = 1$$

$$\text{Current Assets} = \frac{\text{Net Working Capital} \times 2}{1}$$

$$= \frac{8,00,000 \times 2}{1}$$

Current Assets =16,00,000

Current Liabilities = 16,00,000 – 8,00,000 = 8,00,000

2. $$\text{Liquid Ratio} = \frac{\text{Liquid Assets}}{\text{Current Liabilities}}$$

$$1.25 = \frac{\text{Current Assets - Stock}}{\text{Current Liabilities}}$$

$$1.25 = \frac{16,00,000 - \text{Stock}}{8,00,000}$$

1.25 x 8,00,000 = 16,00,000 – Stock

10,00,000 = 16,00,000 – Stock

Stock = 6,00,000

Liquid Assets = 1.25 x 8,00,000 = 10,00,000

3. Stock Turnover Ratio $= \frac{COGS}{Stock}$

$$7 = \frac{COGS}{6,00,000}$$

COGS = 42,00,000

4. Sales – Gross Profit = COGS

$$\frac{\text{Gross Profit}}{\text{Sales}} = 25\%$$

Gross Profit = 25% Sales

Sales – 25% Sales = COGS

$$\text{Sales} = \frac{42,00,000}{0.75} = 56,00,000$$

5. Debtors turnover Ratio $= \frac{12}{1.5} = 8$

$$\text{Debtors} = \frac{\text{Credit Sales}}{\text{Debtors Turnover}}$$

$$= \frac{56,00,000}{8} = 7,00,000$$

6. $\frac{\text{Sales}}{\text{Fixed Assets}} = 2$

$$\text{Fixed Assets} = \frac{56,00,000}{2} = 28,00,000$$

7. Net worth = Fixed Assets + Current Assets – Long-term Debt – Current Liabilities
= 28,00,000 + 16,00,000 – 0 – 8,00,000
= 36,00,000

8. $\frac{\text{Reserves \& Surplus}}{\text{Capital}} = 0.25$

Net worth = Reserves and Surplus + Capital

Capital = $\frac{36,00,000}{1.25} = 28,80,000$

Reserves and Surplus = 0.25 x 28,80,000
= 7,20,000

9. Cash = Liquid Assets – Debtors
= 10,00,000 – 7,00,000 = 3,00,000

10. Long Term Debts = Nil

Draft Balance Sheet

Liabilities	₹	Assets	₹
Share Capital	28,80,000	Fixed Assets	28,00,000
Reserves and Surplus	7,20,000	Current Assets:	
Long Term Debts	-	Stock	6,00,000
Current Liabilities	8,00,000	Debtors	7,00,000
	-	Cash	3,00,000
	44,00,000		44,00,000

(Note: *The above solution has been worked out by ignoring the Net worth to Fixed assets ratio given in the question in order to match the total of assets and liabilities in the Balance Sheet*).

UNIT – II : CASH FLOW AND FUNDS FLOW ANALYSIS

Question 1

Distinguish between Funds Flow Statement and Cash Flow Statement.

(3 Marks, May 2004; May 2010)

Answer

Differentiation between Funds Flow Statement and Cash Flow Statement

(a) Funds flow statement is based on the accrual accounting system. In case of preparation of cash flow statement all transactions affecting the cash equivalents only are taken into consideration.

(b) Funds flow statement analyses the sources and applications of funds which are long-term in nature and the net increase in long-term funds will be reflected on the working capital of the firm. The Cash flow statement will only consider the increase or decrease in current assets and current liabilities in calculating the cash flow of funds from operations.

(c) Funds flow analysis is more useful for long-range financial planning. Cash flow analysis is more useful for identifying and correcting the current liquidity problems of the firm.

(d) Funds flow statement tallies the funds generated from various sources with various uses to which they are put. Cash flow statement tallies difference between opening balance of cash and closing balance of cash by proceeding through sources and uses.

Question 2

The following is the income statement XYZ Company for the year 2004:

			(₹)
Sales			*1,62,700*
Add.: Equity In ABC Company's earning			*6,000*
			1,68,700
Expenses		₹	
Cost of goods sold		*89,300*	
Salaries		*34,400*	
Depreciation		*7,450*	
Insurance		*500*	
Research and development		*1,250*	

Patent amortisation		*900*	
Interest		*10,650*	
Bad debts		*2,050*	
Income tax:			
Current	*6,600*		
Deferred	*1,550*	*8,150*	
Total expenses			*1,54,650*
Net income			*14,050*

Additional information's are:

(i) 70% of gross revenue from sales were on credit.

(ii) Merchandise purchases amounting to ₹ 92,000 were on credit.

(iii) Salaries payable totaled ₹ 1,600 at the end of the year.

(iv) Amortisation of premium on bonds payable was ₹1,350.

(v) No dividends were received from the other company.

(vi) XYZ Company declared cash dividend of ₹4,000.

(vii) Changes in Current Assets and Current Liabilities were as follows:

	Increase/(Decrease) ₹
Cash	*500*
Marketable securities	*1,600*
Accounts receivable	*(7,150)*
Allowance for bad debt	*(1,900)*
Inventory	*2,700*
Prepaid insurance	*700*
Accounts payable (for merchandise)	*5,650*
Salaries payable	*(2,050)*
Dividends payable	*(3,000)*

Prepare a statement showing the amount of cash flow from operations. ***(7 Marks, May, 2005)***

Answer

Statement showing cash flow from Operations

	₹	₹
Cash flow from operations		
Cash sales (30% × 1,62,700)	48,810	
Collection from debtors	1,20,890	
Total cash from operations		1,69,700
Uses of cash from operations		
Payment to suppliers	86,350	
Salaries expense	36,450	
Payment for insurance	1,200	
Research and development	1,250	
Interest payment	12,000	
Income tax payment	6,600	
Total operating cash payment		1,43,850
Net cash flow from operations		25,850

Notes

(1)

Collection from debtors	₹
Credit sales (70% × 1,62,700)	1,13,890
Less : Bad debts (2,050 less 1,900)	150
	1,13,740
Add : decrease in accounts receivables	7,150
Collection from debtors on credit sales	1,20,890

(2) Dividends earned ₹ 6,000 on equity of ABC Company has not been considered as it has not been received in cash.

(3) Payment to suppliers

Cost of goods sold	₹ 89,300
Add: Increase in inventory	2,700
Purchases	92,000
Less: increase in accounts payable	5,650

	Payment to suppliers	86,350
(4)	Calculation of salaries payment	
	Salary expense	₹ 34,400
	Add : decrease in salary payable	2,050
	Payment of salaries	₹ 36,450
(5)	Insurance payments	
	Insurance	₹ 500
	Add : increase in prepaid insurance	700
	Payment for insurance	₹ 1,200
(6)	Interest payment	
	Interest expenses	₹ 10,650
	Add : Amortisation of bond premium	1,350
	Interest payments	₹ 12,000
(7)	Income tax payments	
	Income tax expense	₹ 8,150
	Less: deferred tax	1,550
		₹ 6,600
	Changes in current tax payable	Nil
	Income tax payments	₹ 6,600

Question 3

From the information contained in Income Statement and Balance Sheet of 'A' Ltd., prepare Cash Flow Statement:

Income Statement for the year ended March 31, 2006

		₹.
Net Sales	*(A)*	*2,52,00,000*
Less:		
Cash Cost of Sales		*1,98,00,000*
Depreciation		*6,00,000*
Salaries and Wages		*24,00,000*
Operating Expenses		*8,00,000*

Provision for Taxation		*8,80,000*
	(B)	*2,44,80,000*
Net Operating Profit (A – B)		*7,20,000*
Non-recurring Income – Profits on sale of equipment		*1,20,000*
		8,40,000
Retained earnings and profits brought forward		*15,18,000*
		23,58,000
Dividends declared and paid during the year		*7,20,000*
Profit and Loss Account balance as on March 31, 2006		*16,38,000*

Balance Sheet as on

Assets	*March 31, 2005*	*March 31, 2006*
	(₹.)	*(₹.)*
Fixed Assets:		
Land	*4,80,000*	*9,60,000*
Buildings and Equipment	*36,00,000*	*57,60,000*
Current Assets:		
Cash	*6,00,000*	*7,20,000*
Debtors	*16,80,000*	*18,60,000*
Stock	*26,40,000*	*9,60,000*
Advances	*78,000*	*90,000*
	90,78,000	*1,03,50,000*

Balance Sheet as on

Liabilities and Equity	*March 31, 2005*	*March 31, 2006*
	(₹)	*(₹)*
Share Capital	*36,00,000*	*44,40,000*
Surplus in Profit and Loss Account	*15,18,000*	*16,38,000*
Sundry Creditors	*24,00,000*	*23,40,000*
Outstanding Expenses	*2,40,000*	*4,80,000*
Income-tax payable	*1,20,000*	*1,32,000*
Accumulated Depreciation on Buildings and Equipment	*12,00,000*	*13,20,000*
	90,78,000	*1,03,50,000*

The original cost of equipment sold during the year 2005-06 was ₹ 7,20,000.

(10 Marks, November, 2006)

Answer

Cash Flow Statement of Company A Ltd.

for the year ending March 31, 2006

Cash flows from Operating Activities

	₹.
Net Profits before Tax and Extra-ordinary Item	16,00,000
Add: Depreciation	6,00,000
Operating Profits before Working Capital Changes	22,00,000
Increase in Debtors	(1,80,000)
Decrease in Stock	16,80,000
Increase in Advances	(12,000)
Decrease in Sundry Creditors	(60,000)
Increase in Outstanding Expenses	2,40,000
Cash Generated from Operations	38,68,000
Income tax Paid	8,68,000
Net Cash from Operations	30,00,000

Cash flows from Investment Activities

	₹.
Purchase of Land	(4,80,000)
Purchase of Buildings and Equipment	(28,80,000)
Sale of Equipment	3,60,000
Net Cash used in Investment Activities	(30,00,000)

Cash flows from Financing Activities

		₹.
Issue of Share Capital	8,40,000	
Dividends Paid	(7,20,000)	
Net Cash from Financing Activities		1,20,000
Net increase in Cash and Cash Equivalents		1,20,000
Cash and Cash Equivalents at the beginning		6,00,000
Cash and Cash Equivalents at the end		7,20,000

Buildings and Equipment Account

	₹		₹
Balance b/d	36,00,000	Sale of Asset	7,20,000
Cash/Bank (purchase) (Balancing figure)	28,80,000	Balance c/d	57,60,000
	64,80,000		64,80,000

Accumulated Depreciation on Buildings and Equipment Account

	₹		₹
Sale of Asset (Accumulated depreciation)	4,80,000	Balance b/d	12,00,000
		Profit and Loss (Provisional)	6,00,000
Balance c/d	13,20,000		
	18,00,000		18,00,000

Sale of Asset Account

	₹
Original Cost	7,20,000
Less: Accumulated Depreciation	4,80,000
Net Cost	2,40,000
Profit on Sale of Asset	1,20,000
Sale Proceeds from Asset Sales	3,60,000

Income Tax Payable Account

	₹		₹
Bank A/c (b/f)	8,68,000	Balance b/d	1,20,000
Balance c/d	1,32,000	Provision for Tax A/c	8,80,000
	10,00,000		10,00,000

Question 4

The Balance Sheet of JK Limited as on 31st March, 2005 and 31st March, 2006 are given below:

Balance Sheet as on *(₹'000)*

Liabilities	*31.03.05*	*31.03.06*	*Assets*	*31.03.05*	*31.03.06*
Share Capital	*1,440*	*1,920*	*Fixed Assets*	*3,840*	*4,560*
Capital Reserve	*–*	*48*	*Less: Depreciation*	*1,104*	*1,392*
General Reserve	*816*	*960*		*2,736*	*3,168*
Profit and Loss Account	*288*	*360*	*Investment*	*480*	*384*
9% Debenture	*960*	*672*	*Cash*	*210*	*312*
Current Liabilities	*576*	*624*	*Other Current Assets*		
Proposed Dividend	*144*	*174*	*(including Stock)*	*1,134*	*1,272*
Provision for Tax	*432*	*408*	*Preliminary Expenses*	*96*	*48*
Unpaid Dividend	*-*	*18*			
	4,656	*5,184*		*4,656*	*5,184*

Additional Information:

(i) During the year 2005-2006, Fixed Assets with a book value of ₹2,40,000 (accumulated depreciation ₹84,000) was sold for ₹1,20,000.

(ii) Provided ₹4,20,000 as depreciation.

(iii) Some investments are sold at a profit of ₹48,000 and Profit was credited to Capital Reserve.

(iv) It decided that stocks be valued at cost, whereas previously the practice was to value stock at cost less 10 per cent. The stock was ₹2,59,200 as on 31.03.05. The stock as on 31.03.06 was correctly valued at ₹3,60,000.

(v) It decided to write off Fixed Assets costing ₹60,000 on which depreciation amounting to ₹48,000 has been provided.

(vi) Debentures are redeemed at ₹105.

Required:

Prepare a Cash Flow Statement. ***(15 Marks, May, 2007)***

Answer

Cash flow Statement (31st March, 2006)

(A) Cashflows from Operating Activities

Profit and Loss A/c (3,60,000 – (2,88,000 + 28,800)		43,200
Adjustments:		
Increase in General Reserve	1,44,000	
Depreciation	4,20,000	
Provision for Tax	4,08,000	
Loss on Sale of Machine	36,000	
Premium on Redemption of Debenture	14,400	
Proposed Dividend	1,74,000	
Preliminary Exp. w/o	48,000	
Fixed Assets w/o	12,000	12,56,400
Funds from Operation		12,99,600
Increase in Sundry Current Liabilities		48,000
Increase in Current Assets		
12,72,000 – (11,34,000 + 28,800)		(1,09,200)
Cash before Tax		12,38,400
Tax paid		4,32,000
Cash from Operating Activities		8,06,400

(B) Cash from Investing Activities

Purchases of fixed assets	(10,20,000)	
Sale of Investment	1,44,000	
Sale of Fixed Assets	1,20,000	(7,56,000)

(C) Cash from Financing Activities

Issue of Share Capital		4,80,000	
Redemption of Debenture		(3,02,400)	
Dividend paid		(1,26,000)	51,600

Net increase in Cash and Cash equivalents			1,02,000
Opening Cash and Cash equivalents			2,10,000
Closing Cash			3,12,000

Fixed Assets Account

	Particulars	₹.		*Particulars*	₹.
To	Balance b/d	27,36,000	By	Cash	1,20,000
To	Purchases (Balance)	10,20,000	By	Loss on sales	36,000
			By	Depreciation	4,20,000
			By	Assets w/o	12,000
		_____	By	Balance	31,68,000
		37,56,000			37,56,000

Depreciation Account

	Particulars	₹.		*Particulars*	₹.
To	Fixed Assets (on sales)	84,000	By	Balance b/d	11,04,000
To	Fixed Assets w/o	48,000	By	Profit and Loss a/c	4,20,000
To	Balance	13,92,000			_____
		15,24,000			15,24,000

Question 5

The Balance Sheet of X Ltd. as on 31st March, 2007 is as follows:

Liabilities	₹('000)	Assets		₹('000)
Equity share capital	6,000	Fixed Assets (at cost)	16,250	
8% Preference share capital	3,250	Less: Depreciation written off	5,200	11,050
Reserves and Surplus	1,400	Stock		1,950
10% Debentures	1,950	Sundry debtors		2,600
Sundry Creditors	3,250	Cash		250
Total	15,850			15,850

The following additional information is available:

(i) The stock turnover ratio based on cost of goods sold would be 6 times.

(ii) The cost of fixed assets to sales ratio would be 1.4.

(iii) Fixed assets costing ₹30,00,000 to be installed on 1st April, 2007, payment would be made on March 31, 2008.

(iv) In March, 2008, a dividend of 7 per cent on equity capital would be paid.

(v) ₹5,50,000, 11% Debentures would be issued on 1st April, 2007.

(vi) ₹30,00,000, Equity shares would be issued on 31st March, 2008.

(vii) Creditors would be 25% of materials consumed.

(viii) Debtors would be 10% of sales.

(ix) The cost of goods sold would be 90 per cent of sales including material 40 per cent and depreciation 5 per cent of sales.

(x) The profit is subject to debenture interest and taxation @ 30 per cent.

Required:

(i) Prepare the projected Balance Sheet as on 31st March, 2008.

(ii) Prepare projected Cash Flow Statement in accordance with AS-3.

(15 Marks, November, 2007)

Answer

(i) Calculation of Sales

Fixed assets ₹(1,62,50,000 + 30,00,000) = 1,92,50,000

$$\text{Sales} = \frac{1,92,50,000}{1.4} = 1,37,50,000$$

Cost of goods sold	= 1,37,50,000 × .90	=	1,23,75,000
Material	= 1,37,50,000 × .40	=	55,00,000
Depreciation	= 1,37,50,000 × .05	=	6,87,500
Net profit	= 1,37,50,000 × .10	=	13,75,000

Calculation of Net Fixed Assets

		₹.
Opening balance		1,62,50,000
Add: Purchases		30,00,000
		1,92,50,000
Less: Accumulated Depreciation	52,00,000	
Additional Depreciation	6,87,500	58,87,500
Closing balance of fixed assets		1,33,62,500

Calculation of Closing Stock

$$\text{Average stock} = \frac{\text{Cost of goods sold}}{\text{Stock turnover ratio}}$$

$$= \frac{1,23,75,000}{6} = 20,62,500$$

$$\text{Average stock} = \frac{(\text{Opening stock} + \text{Closing stock})}{2}$$

$$20,62,500 = \frac{(19,50,000 + \text{Closing stock})}{2}$$

Closing stock = 41,25,000 – 19,50,000 = 21,75,000

Calculation of Debtors = 1,37,50,000 × .10 = 13,75,000

Calculation of Creditors = 55,00,000 × .25 = 13,75,000

Calculation of Interest and Provision for Taxation

Net profit	13,75,000
Less: Interest (19,50,000 × 10%)	2,55,500
(5,50,000 × 11%)	11,19,500
Less: Taxes	3,35,850
Net profit available for dividend	7,83,650
Less: Preference share dividend	2,60,000
Less: Equity dividend @ 7%	4,20,000
Transfer to reserves and surplus	1,03,650

Reserves and Surplus

Opening balance	14,00,000

Add: Current balance	1,03,650
	15,03,650

(ii) Projected Cash Flow Statement

(a) **Cash flow from Operating Activities**

Profit after taxation		7,83,650
Depreciation added back		6,87,500
		14,71,150
Add: Increase in current liabilities and decrease in current assets		
Provision for taxation		3,35,850
Debtors (26,00,000 – 13,75,000)		12,25,000
Less: Increase in current assets and decrease in current liabilities		
Stock (21,75,000 – 19,50,000)	(2,25,000)	
Creditors (13,75,000 – 32,50,000)	(18,75,000)	(21,00,000)
Net Cash from Operating Activities		9,32,000

(b) **Cash flow from Investing Activities**

Purchase of Fixed Assets	(30,00,000)

(c) **Cash flow from Financing Activities**

Issue of Debenture	5,50,000	
Issue of equity share capital	30,00,000	
Dividend paid	(6,80,000)	28,70,000
Net increase in cash		8,02,000
Opening balance of cash		2,50,000
Closing balance		10,52,000

Projected Balance Sheet as on 31st March, 2008

Liabilities	*₹ ('000)*	*Assets*		*₹ ('000)*
Equity share capital	9,000	Fixed Assets (at cost)	19,250	
8% Preference share capital	3,250	Less: Depreciation written off	5,887.5	13,362.5

Reserves & Surplus	1,503.65	Stock		2,175
10% & 11% Debentures	2,500	Sundry debtors		1,375
Sundry Creditors	1,375	Cash		1,052
Provision for taxation	335.85			
Total	17,964.5	Total		17,964.5

Question 6

The Balance Sheets of a Company as on 31st March, 2008 and 2009 are given below:

Liabilities	*31.3.08* ₹	*31.3.09* ₹	*Assets*	*31.3.08* ₹	*31.3.09* ₹
Equity share capital	*14,40,000*	*19,20,000*	*Fixed assets*	*38,40,000*	*45,60,000*
Capital reserve	*-*	*48,000*	*Less: depreciation*	*11,04,000*	*13,92,000*
General reserve	*8,16,000*	*9,60,000*		*27,36,000*	*31,68,000*
Profit & Loss A/c	*2,88,000*	*3,60,000*	*Investment*	*4,80,000*	*3,84,000*
9% debentures	*9,60,000*	*6,72,000*	*Sundry debtors*	*12,00,000*	*14,00,000*
Sundry creditors	*5,50,000*	*5,90,000*	*Stock*	*1,40,000*	*1,84,000*
Bills payables	*26,000*	*34,000*	*Cash in hand*	*4,000*	*-*
Proposed dividend	*1,44,000*	*1,72,800*	*Preliminary Expenses*	*96,000*	*48,000*
Provision for tax	*4,32,000*	*4,08,000*			
Unpaid dividend	*-*	*19,200*			
	46,56,000	*51,84,000*		*46,56,000*	*51,84,000*

Additional information:

During the year ended 31st March, 2009 the company:

(i) Sold a machine for ₹.1,20,000; the cost of machine was ₹ 2,40,000 and depreciation provided on it was ₹ 84,000.

(ii) Provided ₹ 4,20,000 as depreciation on fixed assets.

(iii) Sold some investment and profit credited to capital reserve.

(iv) Redeemed 30% of the debentures @ 105.

(v) Decided to write off fixed assets costing ₹ 60,000 on which depreciation amounting to ₹ 48,000 has been provided.

You are required to prepare Cash Flow Statement as per AS 3. ***(15 Marks, November, 2009)***

Answer

Cash Flow Statement for the year ending 31st March, 2009

(A) Cash Flows from Operating Activities

			₹
Profit and Loss A/c			
(3,60,000 – 2,88,000)			72,000
Adjustments:			
Increase in General Reserve	1,44,000		
Depreciation	4,20,000		
Provision for Tax	4,08,000		
Loss on Sale of Machine	36,000		
Premium on Redemption of Debentures	14,400		
Proposed Dividend	1,72,800		
Preliminary Expenses written off	48,000		
Fixed Assets written off	12,000		
Interest on Debentures*	60,480		13,15,680
Funds from Operations			13,87,680
Increase in Sundry Creditors	40,000		
Increase in Bills Payable	8,000		
	48,000		
Increase in Sundry Debtors	(2,00,000)		
Increase in Stock	(44,000)		(1,96,000)
Cash before Tax			11,91,680
Less: Tax paid			4,32,000
Cash flows from Operating Activities			7,59,680

(B) Cash Flows from Investing Activities

Purchase of Fixed Assets		(10,20,000)	

Sale of Investment		1,44,000	
Sale of Fixed Assets		1,20,000	(7,56,000)

(C) Cash Flows from Financing Activities

Issue of Share Capital		4,80,000	
Redemption of Debentures		(3,02,400)	
Dividend Paid (1,44,000 – 19,200)		(1,24,800)	
Interest on Debentures		(60,480)	(7,680)
Net increase in Cash and Cash Equivalents			(4,000)
Cash and Cash Equivalents at the beginning of the year			4,000
Cash and Cash Equivalents at the end of the year			NIL

** It is assumed that the 30 percent debentures have been redeemed at the beginning of the year.*

Fixed Assets Account

Particulars		*₹*	*Particulars*		*₹*
To	Balance b/d	27,36,000	By	Cash	1,20,000
To	Purchases (Balance)	10,20,000	By	Loss on Sales	36,000
			By	Depreciation	4,20,000
			By	Assets written off	12,000
			By	Balance c/d	31,68,000
		37,56,000			37,56,000

Question 7

The summarized Balance Sheets of XYZ Limited as at 31st March, 2010 and 2011 are given below:

Liabilities	*2010 (₹)*	*2011 (₹)*	*Assets*	*2010 (₹)*	*2011 (₹)*
Preference share capital	*4,00,000*	*2,00,000*	*Plant and Machinery*	*7,00,000*	*8,20,000*
Equity share capital	*4,00,000*	*6,60,000*	*Long term investment*	*3,20,000*	*4,00,000*

Share premium A/c	*40,000*	*30,000*	*Goodwill*	*-*	*30,000*
Capital redemption reserve	*-*	*1,00,000*	*Current Assets*	*9,10,000*	*11,41,000*
General reserve	*2,00,000*	*1,20,000*	*Short term investment (less than 2 months)*	*50,000*	*84,000*
P & L A/c	*1,30,000*	*1,75,000*	*Cash and Bank*	*1,00,000*	*80,000*
Current liabilities	*6,40,000*	*9,00,000*	*Preliminary expenses*	*40,000*	*20,000*
Proposed dividend	*1,60,000*	*2,10,000*			
Provision for tax	*1,50,000*	*1,80,000*			
	21,20,000	*25,75,000*		*21,20,000*	*25,75,000*

Additional information:

During the year 2011 the company:

(i) Preference share capital was redeemed at a premium of 10% partly out of proceeds issue of 10,000 equity shares of ₹ 10 each issued at 10% premium and partly out of profits otherwise available for dividends.

(ii) The company purchased plant and machinery for ₹ 95,000. It also acquired another company stock ₹ 25,000 and plant and machinery ₹ 1,05,000 and paid ₹ 1,60,000 in Equity share capital for the acquisition.

(iii) Foreign exchange loss of ₹ 1,600 represents loss in value of short-term investment.

(iv) The company paid tax of ₹ 1,40,000.

You are required to prepare cash flow statement. ***(16 Marks, May, 2011)***

Answer

Preparation of Statement of Cash Flow for XYZ Limited

Cash flow statement as per AS 3 for the year ending 31st March, 2011

(a)	**Cash flow from Operating Activities**	₹	₹
	Profit before tax (2,75,000 + 1,70,000)	4,45,000	
	Add: Depreciation on machinery	80,000	
	Foreign exchange loss	1,600	
	Preliminary expenses written off	20,000	
	Cash flow before working capital adjustment	5,46,600	

	Add: Stock obtained on acquire	25,000	
	Increase in Current Liabilities	2,60,000	
	Less: Increase in current assets	(2,31,000)	
	Cash flow before tax paid	6,00,600	
	Less: Tax paid	(1,40,000)	
	Cash flow from operating activities		4,60,600
(b)	**Cash flow from Investing Activities**		
	Purchase of Machinery	(95,000)	
	Purchase of investment	(80,000)	(1,75,000)
(c)	**Cash flow from Financing Activities**		
	Issue of shares at premium	1,10,000	
	Payment of dividend	(1,60,000)	
	Redemption of preference shares at premium	(2,20,000)	(2,70,000)
	Net increase/decrease in cash and cash equivalent (a+b+c)		15,600
	Cash and cash equivalent at the beginning of the year		1,50,000
	Cash and cash equivalent at the end of the year		1,65,600

Working Notes:

1. **Plant and Machinery Account**

	₹		₹
To balance b/d	7,00,000	By depreciation	80,000
To bank	95,000		
To acquired from other	1,05,000	By balance c/f	8,20,000
	9,00,000		9,00,000

2. **Provision for Tax Account**

	₹		₹
To bank	1,40,000	By balance b/d	1,50,000
To balance c/f	1,80,000	By P & L	1,70,000
	3,20,000		3,20,000

3. **Profit for the year 2011**

	₹
P&L Account (1,75,000-1,30,000)	45,000
Transfer to general reserve (1,20,000+1,00,000 for redemption-opening 2,00,000)	20,000
Proposed dividend	2,10,000
Net Profit	2,75,000

4. **Cash and Cash Equivalent**

Opening balance + short term investment =1,00,000 + 50,000 = ₹ 1,50,000

Closing balance = Closing cash + short term investment + foreign exchange loss

= 80,000+84,000+1,600=₹ 1,65,600

Question 8

The Balance Sheet of X Ltd. as on 31-3-2011 and 31-3-2012 are as under:

Liabilities	*2011*	*2012*	*Assets*	*2011*	*2012*
Equity Share capital (₹ 10 each)	*18,00,000*	*22,00,000*	*Fixed Assets (Including machine)*	*20,50,000*	*18,75,000*
General Reserve	*7,50,000*	*6,00,000*	*Stock*	*7,10,000*	*8,95,000*
Security premium	*50,000*	*45,000*	*Debtors*	*7,25,000*	*9,80,000*
Profit & Loss A/c	*4,50,000*	*5,30,000*	*Cash Balance*	*1,25,000*	*1,80,000*
7% Debentures	*3,00,000*	*2,00,000*	*Preliminary Expense*	*35,000*	*25,000*
Creditors	*1,50,000*	*2,15,000*			
Provision for tax	*1,45,000*	*1,65,000*			
	36,45,000	*39,55,000*		*36,45,000*	*39,55,000*

Additional Information:

(i) Depreciation charged on fixed assets during the year was ₹ 2,05,000. An old machine costing ₹ 2,00,000 (WDV ₹ 80,000) was sold for ₹ 65,000 during the year.

(ii) Provisions for tax made during the year for ₹ 1,78,000.

(iii) On 1-4-2011 company redeemed debentures of ₹ 1,00,000 at a premium of 5%.

(iv) Company has issued fully paid bonus shares of ₹ 2,00,000 by capitalization of profit.

Prepare Cash Flow Statement. ***(8 Marks, May, 2012)***

Answer

Cash flow Statement of X Ltd. for the year ending 31.03.2012

(A)	Cash flow from Operating Activities :	(₹)	(₹)
	Net Profit before Tax (80,000 + 50,000 + 1,78,000)	3,08,000	
	Add : Depreciation	2,05,000	
	Loss on Sale of Machine	15,000	
	Interest Paid on Debentures	14,000	
	Preliminary Expenses written off	10,000	
	Cash flow before working capital adjustments	5,52,000	
	(–) Increase in Stock	(1,85,000)	
	(–) Increase in Debtors	(2,55,000)	
	(+) Increase in Creditors	65,000	
	Cash flow from Operating Activities	1,77,000	
	Less : Tax paid	(1,58,000)	19,000
(B)	Cash flow from Investing Activities		
	Sale of Machine	65,000	
	Purchase of Fixed Assets	(1,10,000)	
	Net cash used in Investing activities		(45,000)
(C)	Cash flow from Financing activities		
	Issue of Equity Shares	2,00,000	
	Redemption of Debentures	(1,05,000)	
	Interest paid on Debentures	(14,000)	
	Net cash used in Financing Activities		81,000
	Net Increase in Cash and Cash Equivalent during year		55,000
	Add : Opening Balance of Cash		1,25,000
	Closing Balance of Cash		1,80,000

Working Notes:

Fixed Assets Account

To Balance b/d	20,50,000	By Bank	65,000

To Bank	1,10,000	By P&L a/c	15,000
		By Depreciation a/c	2,05,000
		By Balance c/d	18,75,000
	21,60,000		21,60,000

Provision for Tax

To Balance b/d	1,58,000	By balance c/d	1,45,000
To Bank	1,65,000	By P & L a/c	1,78,000
	3,23,000		3,23,000

General Reserve A/c

To Equity share capital a/c	2,00,000	By Balance b/d	7,50,000
To Balance c/d	6,00,000	By P & L a/c	50,000
	8,00,000		8,00,000

Question 9

The summarized Balances Sheets of MPS Limited as on 31-3-2012 and 31-3-2013 are as under:

Liabilities	*31-3-2012*	*31-3-2013*	*Assets*	*31-3-2012*	*31-3-2013*
	₹			*₹*	*₹*
Equity share capital	*40.00*	*50.00*	*Land & Building*	*27.00*	*25.00*
Securities Premium Account	*-*	*1.00*	*Plant & Machinery*	*25.00*	*34.00*
General Reserve	*8.00*	*11.00*	*Investments (Long Term)*	*3.00*	*8.00*
Profit & Loss Account	*10.30*	*12.70*	*Stock*	*7.50*	*9.80*
10% Debentures	*5.00*	*3.00*	*Debtors*	*9.25*	*11.15*
Sundry Creditors	*4.90*	*6.20*	*Bills Receivable*	*1.77*	*1.65*
Provision for Tax	*5.00*	*7.00*	*Cash & Bank Balance*	*4.50*	*7.70*
Proposed Dividend	*4.80*	*6.00*	*Preliminary Expenses*	*0.80*	*0.62*
Corporate Dividend Tax	*0.82*	*1.02*			
	78.82	*97.92*		*78.82*	*97.92*

Additional Information:

(i) On 1.4.2012, the company redeemed debentures of ₹ 2,00,000 at par.

(ii) During 2012-13 the company has issued equity shares for cash at a premium of 10%.

(iii) Provision for tax made during the year 2012-13 for ₹ 6,80,000.

(iv) Dividend received on investment ₹ 50,000 in July 2012.

(v) A machine costing ₹ 8,00,000 (WDV ₹ 1,20,000) was sold for ₹ 50,000 during the year 2012-13.

(vi) Depreciation for 2012-13 charged on plant & machinery ₹ 3,30,000 and ₹ 2,00,000 on land and building.

(vii) Proposed Dividend and Corporate Dividend Tax of 2011-12 paid during the year 2012-13.

Prepare a Cash Flow Statement as per Accounting Standard (AS)-3. ***(10 Marks, May, 2013)***

Answer

Cash Flow Statement

		(₹ in lakhs)	(₹ in lakhs)
(A)	Cash Flow from Operating Activities		
	Profit and Loss A/c (12.70 – 10.30)	2.40	
	Add: General Reserves (11.00 – 8.00)	3.00	
		5.40	
	Add: Provision for tax	6.8	
		12.20	
	Add: Proposed dividend	6.00	
	Corporate dividend tax	1.02	
	Profit before tax	19.22	
	Add: Interest on debentures	0.30	
	Loss on Sale of Machinery	0.70	
	Depreciation on Plant & Machinery	3.30	
	Depreciation on Land & Building	2.00	
	Preliminary Expenses written off	0.18	
		25.70	
	Less: Dividend received on Investment	(0.50)	

	Cash flow before W/C adjustments	25.20	
	Less: Increase in Current Assets		
	Stock	(2.30)	
	Debtors	(1.90)	
		21.00	
	Add: Decrease in Current Assets		
	Bills receivables	0.12	
	Add: Increase in Current Liabilities		
	Sundry Creditors	1.30	
	Cash Generated from Operations	22.42	
	Less: Income tax paid		
	[(5.00+6.80) – 7.00]	(4.80)	
	Cash Flow from Operating Activities		17.62
(B)	Cash Flow from Investing Activities		
	Sale of Plant & Machinery	0.50	
	Purchase of Plant & Machinery	(13.50)	
	Purchase of Investment	(5.00)	
	Dividend Received on Investment	0.50	
	Cash Flow from Investing Activities		(17.50)
(C)	Cash Flow from Financing Activities		
	Issue of Share Capital	10.00	
	Securities Premium	1.00	
	Redemption of Debentures	(2.00)	
	Interest on debentures	(0.30)	
	Proposed Dividend	(4.80)	
	Corporate dividend tax	(0.82)	
	Cash flow from Financing Activities		3.08
	Net increase in Cash and Cash Equivalent (A+B+C)		3.20
	Cash and Cash equivalent at beginning of year		4.50
	Cash and Cash Equivalent at end of year		7.70

Working Notes:

Provision for Tax A/c

Particulars	Amount (₹)	Particulars	Amount (₹)
To Cash b/f	4.80	By Bal. b/d	5.00
To Balance c/d	7.00	By P/L	6.80
	11.80		11.80

Land & Building A/c

Particulars	Amount (₹)	Particulars	Amount (₹)
To Bal. b/d	27.00	By Depreciation	2.00
		By Balance c/d	25.00
	27.00		27.00

Plant & Machinery A/c

Particulars	Amount (₹)	Particulars	Amount (₹)
To Balance b/d	25.00	By Bank	0.50
To Bank b/f	13.50	By P/L	0.70
		By Depreciation	3.30
		By Balance c/d	34.00
	38.50		38.50

Question 10

The following are the Balance Sheets of Gama Limited for the year ending March 31, 2004 and March 31, 2005:

Balance Sheet

as on March, 31

		2004	*2005*
		₹	*₹*
Capital and Liabilities			
Share Capital		*6,75,000*	*7,87,500*
General Reserves		*2,25,000*	*2,81,250*
Capital Reserve (Profit on Sale of investment)		*-*	*11,250*
Profit & Loss Account		*1,12,500*	*2,25,000*

15% Debentures		*3,37,500*	*2,25,000*
Accrued Expenses		*11,250*	*13,500*
Creditors		*1,80,000*	*2,81,250*
Provision for Dividends		*33,750*	*38,250*
Provision for Taxation		*78,750*	*85,500*
	Total	*16,53,750*	*19,48,500*
Assets			
Fixed Assets		*11,25,000*	*13,50,000*
Less: Accumulated depreciation		*2,25,000*	*2,81,250*
Net Fixed Assets		*9,00,000*	*10,68,750*
Long-term Investments (at cost)		*2,02,500*	*2,02,500*
Stock (at cost)		*2,25,000*	*3,03,750*
Debtors (net of provision for doubtful debts of ₹45,000 and ₹56,250 respectively for 2004 and 2005 respectively)		*2,53,125*	*2,75,625*
Bills receivables		*45,000*	*73,125*
Prepaid Expenses		*11,250*	*13,500*
Miscellaneous Expenditure		*16,875*	*11,250*
		16,53,750	*19,48,500*

Additional Information:

(i) During the year 2004-05, fixed assets with a net book value of ₹11,250 (accumulated depreciation, ₹33,750) was sold for ₹9,000.

(ii) During the year 2004-05, Investments costing ₹90,000 were sold, and also Investments costing ₹90,000 were purchased.

(iii) Debentures were retired at a Premium of 10%.

(iv) Tax of ₹61,875 was paid for 2003-04.

(v) During the year 2004-05, bad debts of ₹15,750 were written off against the provision for Doubtful Debt account.

(vi) The proposed dividend for 2003-04 was paid in 2004-05.

Required:

Prepare a Funds Flow Statement (Statement of changes in Financial Position on working capital basis) for the year ended March 31, 2005. ***(16 Marks, November, 2005)***

Answer

Computation of Funds from Operation

Profit and loss balance on March 31, 2005	₹2,25,000
Add: Depreciation	90,000
Loss on Sale of Asset	2,250
Misc. Expenditure written off	5,625
Transfer to Reserves	56,250
Premium on Redemption of debentures	11,250
Provision for Dividend	38,250
Provision for Taxation	68,625
	4,97,250
Less: P/L balance on March 31, 2004	1,12,500
Funds from operations	3,84,750

Accumulated Depreciation A/c

To Fixed Asset A/c	33,750	By Bal. b/d	2,25,000
		By P/L A/c	90,000
To Bal. c/d	2,81,250	(Pro (Prov. for dep.) (Bal. Fig.)	
	3,15,000		3,15,000

Fixed Assets A/c

To Bal. b/d	11,25,000	By Accumulated Depreciation A/c	33,750
		By Cash	9,000
To Bank (Purchase of Fixed Asset) (Bal. fig.)	2,70,000	By P/L (Loss on sale)	2,250
		By Bal. c/d	13,50,000
	13,95,000		13,95,000

Provision for Tax A/c

To Cash (tax paid)	61,875	By Bal. b/d	78,750
		By P/L A/c (Prov.)	
To Bal. c/d	85,500	(Bal. fig.)	68,625
	1,47,375		1,47,375

Statement of Changes in Working Capital

	March 31, 2004	*March 31, 2005*	*Change in W/C*	
Current Assets				
Stock	2,25,000	3,03,750	78,750	
Debtors	2,53,125	2,75,625	22,500	
Bills Receivables	45,000	73,125	28,125	
Prepaid Expenses	11,250	13,500	2,250	
	5,34,375	6,66,000	1,31,625	-
Less: Current liabilities				
Accrued Expenses	11,250	13,500	-	2,250
Creditors	1,80,000	2,81,250	-	1,01,250
	1,91,250	2,94,750	1,31,625	1,03,500
Working Capital	3,43,125	3,71,250	-	-
Increase in Working Capital	28,125	-		28,125
	3,71,250	3,71,250	1,31,625	1,31,625

Funds Flow Statement for the year ended March 31, 2005

Sources		***₹***
	Working Capital from Operations	3,84,750
	Sale of Fixed Assets	9,000
	Sale of Investments	1,01,250
	Share Capital Issued	1,12,500
	Total Funds Provided (A)	₹6,07,500
Uses		***₹***
	Purchase of Fixed Assets	2,70,000
	Purchase of Investments	90,000
	Payment of Debentures (at a premium of 10%)	1,23,750
	Payment of Dividends	33,750
	Payment of Taxes	61,875
	Total Funds Applied (B)	5,79,375
	Increase in Working Capital (A-B)	₹28,125

Question 11

The financial statement and operating results of PQR revealed the following position as on 31st March, 2006:

— *Equity share capital (₹10 fully paid share)* *₹20,00,000*

— *Working capital* *₹ 6,00,000*

— *Bank overdraft* *₹ 1,00,000*

— *Current ratio*	*2.5 : 1*
— *Liquidity ratio*	*1.5 : 1*
— *Proprietary ratio (Net fixed assets/Proprietary fund)*	*.75 : 1*
— *Cost of sales*	*₹14,40,000*
— *Debtors velocity*	*2 months*
— *Stock turnover based on cost of sales*	*4 times*
— *Gross profit ratio*	*20% of sales*
— *Net profit ratio*	*15% of sales*

Closing stock was 25% higher than the opening stock. There were also free reserves brought forward from earlier years. Current assets include stock, debtors and cash only. The current liabilities expect bank overdraft treated as creditors.

Expenses include depreciation of ₹90,000.

The following information was collected from the records for the year ended 31st March, 2007:

- *Total sales for the year were 20% higher as compared to previous year.*
- *Balances as on 31st March, 2007 were : Stock ₹5,20,000, Creditors ₹4,15,000, Debtors ₹4,95,000 and Cash balance ₹3,10,000.*
- *Percentage of Gross profit on turnover has gone up from 20% to 25% and ratio of net profit to sales from 15% to 16%.*
- *A portions of Fixed assets was very old (book values ₹1,80,000) disposed for ₹90,000. (No depreciations to be provided on this item).*
- *Long-term investments were purchased for ₹2,96,600.*
- *Bank overdraft fully discharged.*
- *Percentage of depreciation to Fixed assets to be provided at the rate in the previous year.*

Required:

(i) Prepare Balance Sheet as on 31st March, 2006 and 31st March, 2007.

(ii) Prepare the fund flow statement for the year ended 31st March, 2007.

(15 Marks, May, 2008)

Answer

Balance Sheets

Liabilities	₹		*Assets*	₹	
	31 March 2006	*31 March 2007*		*31 March 2006*	*31 March 2007*
Equity share capital (₹10 each fully paid)	20,00,000	20,00,000	Fixed Assets (₹.18,90,000– ₹.90,000)	18,00,000	15,39,000
Reserve and Surplus (balancing)	1,30,000	1,30,000	Long term investment	–	2,96,600
Profit & Loss A/c (15% of sales)	2,70,000	6,15,600	**Current Assets** (₹10,00,000)		
Current Liabilities			Stock	4,00,000	5,20,000
Bank Overdraft	1,00,000	–	Sundry Debtors	3,00,000	4,95,000
Creditors	3,00,000	4,15,000	Cash at Bank (Balancing)	3,00,000	3,10,000
Total	**28,00,000**	**31,60,600**	**Total**	**28,00,000**	**31,60,600**

Calculation for 31 March, 2006

(i) Calculation of Current Liabilities

Suppose that Current Liabilities = x, then current assets will be 2.5 x

Working capital = Current Assets – Current Liabilities

6,00,000 = 2.5x – x

x = 6,00,000 / 1.5 = ₹4,00,000 (C.L.)

Other Current Liabilities = Current Liabilities – Bank Overdraft

(Creditors) 4,00,000 – 1,00,000 = ₹3,00,000

Current Assets = 2.5 x 4,00,000 = ₹10,00,000

(ii) Liquid Ratio = Liquid Assets / Current Liabilities or 1.5 = Liquid Assets / 4,00,000 = ₹.6,00,000

Liquid assets = Current Assets – Stock

6,00,000 = 10,00,000 – Stock

So, Stock = ₹4,00,000

(iii) Calculation of fixed assets: Fixed assets to proprietary fund is 0.75, working capital is therefore 0.25 of proprietary fund. So,

6,00,000 / 0.25 x 0.75 = ₹18,00,000

(iv) Debtors = 2 / × 12 Sales

2 / 12 × 18,00,000 = ₹3,00,000

(v) Sales = (14,40,000 / 80) × 100 = ₹18,00,000

(vi) Net profit = 15% of ₹.18,00,000 = ₹2,70,000

Calculation for the year 31st March, 2007

(vii) Sales = 18,00,000 + (18,00,000 × 0.2) = 21,60,000

(viii) Calculation of fixed assets

	₹		₹
To Opening balance	18,00,000	By Banks (Sale)	90,000
		By Loss on sales of Fixed asset	90,000
		By P & L (Dep) (5% as in previous year)	81,000
		By Balance b/d	15,39,000
Total	18,00,000		18,00,000

(ix) Net profit for the year 2007, 16% × 21,60,000 = ₹3,45,600

Total Profit = 2,70,000 + 3,45,600 = ₹ 6,15,600

Calculation of fund from operation:

Net profit for the year 2007			= ₹3,45,600
Add:	Depreciation	₹81,000	
	Loss on sale of assets	₹90,000	= ₹1,71,000
Total			= ₹ 5,16,600

Fund Flow Statement

	₹		₹
Fund from operation	5,16,600	Increase in WC	3,10,000
Sales of fixed assets	90,000	Pur. of investment	2,96,600
	6,06,600		6,06,600

Schedule of changing working capital

	31 March 2006	*31 March 2007*	***Increase*** *(+)*	***Decrease*** *(–)*
	₹	₹	₹	₹
A. Current Assets				
Stock	4,00,000	5,20,000	1,20,000	
Sundry debtors	3,00,000	4,95,000	1,95,000	
Cash at bank	3,00,000	3,10,000	10,000	
	10,00,000	13,25,000		
B. Current Liabilities				
Bank overdraft	1,00,000	–	1,00,000	
Sundry creditors	3,00,000	4,15,000		1,15,000
	4,00,000	4,15,000		
Working capital	6,00,000	9,10,000	–	
Increase in working capital	3,10,000			3,10,000
	9,10,000	9,10,000	4,25,000	4,25,000

Question 12

Balance Sheets of a company as on 31st March, 2007 and 2008 were as follows:

Liabilities	*31.3.07*	*31.3.08*	*Assets*	*31.3.07*	*31.3.08*
	₹	₹		₹	₹
Equity Share Capital	*10,00,000*	*10,00,000*	*Goodwill*	*1,00,000*	*80,000*
8% P.S. Capital	*2,00,000*	*3,00,000*	*Land and Building*	*7,00,000*	*6,50,000*
General Reserve	*1,20,000*	*1,45,000*	*Plant and Machinery*	*6,00,000*	*6,60,000*
Securities Premium	–	*25,000*			
Profit and Loss A/c	*2,10,000*	*3,00,000*	*Investments*		
11% Debentures	*5,00,000*	*3,00,000*	*(non-trading)*	*2,40,000*	*2,20,000*
Creditors	*1,85,000*	*2,15,000*	*Stock*	*4,00,000*	*3,85,000*
Provision for tax	*80,000*	*1,05,000*	*Debtors*	*2,88,000*	*4,15,000*
Proposed Dividend	*1,36,000*	*1,44,000*	*Cash and Bank*	*88,000*	*93,000*

			Prepaid Expenses	*15,000*	*11,000*
			Premium on Redemption of Debentures	*–*	*20,000*
	24,31,000	*25,34,000*		*24,31,000*	*25,34,000*

Additional Information:

1. *Investments were sold during the year at a profit of ₹15,000.*
2. *During the year an old machine costing ₹80,000 was sold for ₹36,000. Its written down value was ₹45,000.*
3. *Depreciation charged on Plants and Machinery @ 20 per cent on the opening balance.*
4. *There was no purchase or sale of Land and Building.*
5. *Provision for tax made during the year was ₹96,000.*
6. *Preference shares were issued for consideration of cash during the year.*

You are required to prepare:

(i) Cash flow statement as per AS-3.

(ii) Schedule of Changes in Working Capital. ***(15 Marks, November, 2008)***

Answer

(i) Cash Flow Statement

for the year ending 31st Mach, 2008

			₹	₹
A.	**Cash flow from Operating Activities**			
	Profit and Loss A/c as on 31.3.2008			3,00,000
	Less: Profit and Loss A/c as on 31.3.2007			2,10,000
				90,000
	Add:	Transfer to General Reserve	25,000	
		Provision for Tax	96,000	
		Proposed Dividend	1,44,000	2,65,000
		Profit before Tax		3,55,000

	Adjustment for Depreciation:		
	Land and Building	50,000	
	Plant and Machinery	1,20,000	1,70,000
	Profit on Sale of Investments		(15,000)
	Loss on Sale of Plant and Machinery		9,000
	Goodwill written off		20,000
	Interest Expenses		33,000
	Operating Profit before Working Capital Changes		5,72,000
	Adjustment for Working Capital Changes:		
	Decrease in Prepaid Expenses		4,000
	Decrease in Stock		15,000
	Increase in Debtors		(1,27,000)
	Increase in Creditors		30,000
	Cash generated from Operations		4,94,000
	Income tax paid		(71,000)
	Net Cash Inflow from Operating Activities (a)		4,23,000
B.	**Cash flow from Investing Activities**		
	Sale of Investment		35,000
	Sale of Plant and Machinery		36,000
	Purchase of Plant and Machinery		(2,25,000)
	Net Cash Outflow from Investing Activities (b)		(1,54,000)
C.	**Cash Flow from Financing Activities**		
	Issue of Preference Shares		1,00,000
	Premium received on Issue of Securities		25,000
	Redemption of Debentures at premium		(2,20,000)
	Dividend paid		(1,36,000)
	Interest paid to Debenture holders		(33,000)
	Net Cash Outflow from Financing Activities (c)		(2,64,000)
	Net increase in Cash and Cash Equivalents during the year **(a + b + c)**		5,000
	Cash and Cash Equivalents at the beginning of the year		88,000
	Cash and Cash Equivalents at the end of the year		93,000

Working Notes:

1. ***Provision for the Tax Account***

	₹.		₹.
To Bank (paid)	71,000	By Balance b/d	80,000
To Balance c/d	1,05,000	By Profit and Loss a/c	96,000
	1,76,000		1,76,000

2. ***Investment Account***

	₹		₹
To Balance b/d	2,40,000	By Bank a/c (b/f)	35,000
To Profit and Loss (profit on sale)	15,000	By Balance c/d	2,20,000
	2,55,000		2,55,000

3. ***Plant and Machinery Account***

	₹		₹
To Balance b/d	6,00,000	By Bank (sale)	36,000
To Bank a/c (Purchase b/f)	2,25,000	By Profit and Loss a/c (Loss on sale)	9,000
		By Depreciation	1,20,000
	_____	By Balance c/d	6,60,000
	8,25,000		8,25,000

(**Note:** *Since the date of redemption of debentures is not mentioned in the question, therefore, it is assumed that the debentures are redeemed at the beginning of the year.)*

(ii) Schedule of Changes in Working Capital

Particulars	***31st March***		***Change in Working Capital***	
	2007	***2008***	***Increase***	***Decrease***
	₹	₹	₹	₹
Current Assets				
Stock	4,00,000	3,85,000	–	15,000
Debtors	2,88,000	4,15,000	1,27,000	–
Prepaid Expenses	15,000	11,000	–	4,000

Cash and Bank	88,000	93,000	5,000	–
Total (A)	7,91,000	9,04,000		
Current Liabilities				
Creditors	1,85,000	2,15,000	–	30,000
Total (B)	1,85,000	2,15,000		
Working Capital **(A – B)**	6,06,000	6,89,000		
Increase in Working Capital	83,000	—	—	83,000
	6,89,000	6,89,000	1,32,000	1,32,000

Question 13

Balance Sheets of RST Limited as on March 31, 2008 and March 31, 2009 are as under:

Liabilities	*31.3.2008* ₹	*31.3.2009* ₹	*Assets*	*31.3.2008* ₹	*31.3.2009* ₹
Equity Share Capital (₹10 face value per share)	*10,00,000*	*12,00,000*	*Land & Building*	*6,00,000*	*7,00,000*
General Reserve	*3,50,000*	*2,00,000*	*Plant & Machinery*	*9,00,000*	*11,00,000*
9% Preference Share Capital	*3,00,000*	*5,00,000*	*Investments (Long-term)*	*2,50,000*	*2,50,000*
Share Premium A/c	*25,000*	*4,000*	*Stock*	*3,60,000*	*3,50,000*
Profit & Loss A/c	*2,00,000*	*3,00,000*	*Debtors*	*3,00,000*	*3,90,000*
8% Debentures	*3,00,000*	*1,00,000*	*Cash & Bank*	*1,00,000*	*95,000*
Creditors	*2,05,000*	*3,00,000*	*Prepaid Expenses*	*15,000*	*20,000*
Bills Payable	*45,000*	*81,000*	*Advance Tax Payment*	*80,000*	*1,05,000*
Provision for Tax	*70,000*	*1,00,000*	*Preliminary Expenses*	*40,000*	*35,000*
Proposed Dividend	*1,50,000*	*2,60,000*			
	26,45,000	*30,45,000*		*26,45,000*	*30,45,000*

Additional information:

(i) *Depreciation charged on building and plant and machinery during the year 2008-09 were ₹50,000 and ₹1,20,000 respectively.*

(ii) *During the year an old machine costing ₹1,50,000 was sold for ₹32,000. Its written down value was ₹40,000 on date of sale.*

(iii) *During the year, income tax for the year 2007-08 was assessed at ₹76,000. A cheque of ₹ 4,000 was received along with the assessment order towards refund of income tax paid in excess, by way of advance tax in earlier years.*

(iv) *Proposed dividend for 2007-08 was paid during the year 2008-09.*

(v) *9% Preference shares of ₹3,00,000, which were due for redemption, were redeemed during the year 2008-09 at a premium of 5%, out of the proceeds of fresh issue of 9% Preference shares.*

(vi) *Bonus shares were issued to the existing equity shareholders at the rate of one share for every five shares held on 31.3.2008 out of general reserves.*

(vii) *Debentures were redeemed at the beginning of the year at a premium of 3%.*

(viii) *Interim dividend paid during the year 2008-09 was ₹50,000.*

Required:

(a) *Schedule of Changes in Working Capital; and*

(b) *Fund Flow Statement for the year ended March 31, 2009.* ***(15 Marks, June, 2009)***

Answer

(a) Schedule of Changes in Working Capital

Particulars	*31.3.08*	*31.3.09*	*Effect on Working Capital*	
			Increase	*Decrease*
	₹	₹	₹	₹
Current Assets:				
Stock	3,60,000	3,50,000	-	10,000
Debtors	3,00,000	3,90,000	90,000	-
Cash and Bank	1,00,000	95,000	-	5,000
Prepaid Expenses	15,000	20,000	5,000	-
Total (A)	7,75,000	8,55,000		

Current Liabilities:				
Creditors	2,05,000	3,00,000	-	95,000
Bills Payable	45,000	81,000	-	36,000
Total (B)	2,50,000	3,81,000		
Net Working Capital (A-B)	5,25,000	4,74,000	-	
Net Decrease in Working Capital	-	51,000	51,000	-
	5,25,000	5,25,000	1,46,000	1,46,000

(b) Funds Flow Statement for the year ended 31st March, 2009

Sources of Fund	₹
Funds from Operation	7,49,000
Issue of 9% Preference Shares	5,00,000
Sales of Plant & Machinery	32,000
Refund of Income Tax	4,000
Financial Resources Provided (A)	12,85,000
Applications of Fund	₹.
Purchase of Land and Building	1,50,000
Purchase of Plant and Machinery	3,60,000
Redemption of Debentures	2,06,000
Redemption of Preference Shares	3,15,000
Payment of Tax	1,05,000
Payment of Interim Dividend	50,000
Payment of Dividend (2007-08)	1,50,000
Financial Resources Applied (B)	13,36,000
Net Decrease in Working Capital (A - B)	51,000

Working Notes:

Estimation of Funds from Operation		₹
Profit and Loss A/c Balance on 31.3.2009		3,00,000
Add: Depreciation on Land and Building	50,000	

Depreciation on Plant and Machinery	1,20,000	
Loss on Sale of Plant and Machinery (40,000 – 32,000)	8,000	
Preliminary Expenses written off (40,000 – 35,000)	5,000	
Transfer to General Reserve	50,000	
Proposed Dividend	2,60,000	
Provision for Taxation	1,06,000	
Interim Dividend paid	50,000	
		6,49,000
		9,49,000
Less: Profit and Loss A/c balance on 31.3.08		2,00,000
Funds from Operation		7,49,000

Plant & Machinery A/c

	₹		₹
To Balance b/d	9,00,000	By Depreciation	1,20,000
To Bank (Purchase (Bal. Fig.)	3,60,000	By Bank (Sale)	32,000
		By P/L A/c (Loss on Sale)	8,000
	_____	By Balance c/d	11,00,000
	12,60,000		12,60,000

Provision for Taxation A/c

	₹		₹
To Advance tax payment A/c	76,000	By Balance b/d	70,000
To Balance c/d	1,00,000	By P/L A/c (additional provision for 2007-08)	6,000
		By P/L A/c (Provision for 08-09)	1,00,000
	1,76,000		1,76,000

Advance Tax Payment A/c

	₹		₹
To Balance b/d	80,000	By Provision for taxation A/c	76,000
To Bank (paid for 08-09)	1,05,000	By Bank (Refund of tax)	4,000

	_____	By Balance c/d	1,05,000
	1,85000		1,85,000

8% Debentures A/c

	₹		₹
To Bank (2,00,000 x 103%) (redemption)	2,06,000	By Balance b/d	3,00,000
To Balance c/d	1,00,000	By Premium on redemption of Debentures A/c	6,000
	3,06,000		3,06,000

9% Preference Share Capital A/c

	₹		₹
To Bank A/c (3,00,000 x 105%) (redemption)	3,15,000	By Balance b/d	3,00,000
To Balance c/d	5,00,000	By Premium on redemption of Preference shares A/c	15,000
	_____	By Bank (Issue)	5,00,000
	8,15,000		8,15,000

Securities Premium A/c

	₹		₹
To Premium on redemption of debentures A/c	6,000	By Balance b/d	25,000
To Premium on redemption of preference shares A/c	15,000		
To Balance c/d	4,000		_____
	25,000		25,000

General Reserve A/c

	₹		₹
To Bonus to Shareholders A/c	2,00,000	By Balance b/d	3,50,000
To Balance c/d	2,00,000	By P/L A/c (transfer) b/f	50,000
	4,00,000		4,00,000

Land and Building A/c

	₹		₹
To Balance b/d	6,00,000	By Depreciation	50,000
To Bank (Purchase) (Bal. Fig.)	1,50,000	By Balance c/d	7,00,000
	7,50,000		7,50,000

Question 14

Balance Sheets of ABC Ltd as on March 31, 2009 and March 31, 2010 are as under:

Liabilities	*31.3.2009* ₹	*31.3.2010* ₹	*Assets*	*31.3.2009* ₹	*31.3.2010* ₹
Share Capital	*40,00,000*	*40,00,000*	*Land and Building*	*30,00,000*	*28,00,000*
General Reserve	*8,00,000*	*9,00,000*	*Plant and Machinery*	*36,00,000*	*35,00,000*
Profit and Loss A/c	*5,00,000*	*7,20,000*	*Investments (long-term)*	*8,00,000*	*7,44,000*
10% Debentures	*20,00,000*	*16,00,000*	*Stock*	*9,60,000*	*17,00,000*
Bank Loan (long-term)	*10,00,000*	*12,00,000*	*Debtors*	*12,00,000*	*15,96,000*
Creditors	*8,00,000*	*11,60,000*	*Prepaid Expenses*	*1,00,000*	*80,000*
Outstanding Expenses	*40,000*	*50,000*	*Cash and Bank*	*2,80,000*	*1,70,000*
Proposed Dividend	*6,00,000*	*7,20,000*			
Provision for Taxation	*2,00,000*	*2,40,000*			
	99,40,000	*1,05,90,000*		*99,40,000*	*1,05,90,000*

Additional Information:

(i) New machinery for ₹ 6,00,000 was purchased but an old machinery costing ₹ 2,90,000 was sold for ₹ 1,00,000 and accumulated depreciation thereon was ₹ 1,50,000.

(ii) 10% debentures were redeemed at 20% premium.

(iii) Investments (long term) were sold for ₹ 90,000 and its profit was transferred to general reserve.

(iv) Income-tax paid during the year 2009-10 was ₹ 1,60,000.

(v) An interim dividend of ₹ 2,40,000 has been paid during the year 2009-10.

(vi) Assume the provision for taxation as current liability and proposed dividend as non-current liability.

(vii) Investments (long-term) are non-trade investments.

Required:

(i) Schedule of changes in working capital

(ii) Funds flow from operations for the year ended March 31, 2010.

(8 Marks, November, 2010)

Answer

(i) Schedule of Changes in Working Capital:

Particulars		*31st March*		*Working Capital*	
		2009 ₹	*2010* ₹	*Increase* ₹	*Decrease* ₹
(A)	**Current Assets**				
	Stock	9,60,000	17,00,000	7,40,000	
	Debtors	12,00,000	15,96,000	3,96,000	
	Prepaid Expenses	1,00,000	80,000		20,000
	Cash and Bank	2,80,000	1,70,000		1,10,000
	Total (A)	25,40,000	35,46,000		
(B)	**Current Liabilities**				
	Creditors	8,00,000	11,60,000		3,60,000
	Outstanding Expenses	40,000	50,000		10,000
	Provision for Taxation	2,00,000	2,40,000		40,000
	Total (B)	10,40,000	14,50,000		
	Working Capital (A) – (B)	15,00,000	20,96,000	11,36,000	5,40,000
	Increase in Working Capital	5,96,000			5,96,000
	Total	20,96,000	20,96,000	11,36,000	11,36,000

(ii) Funds flow from Operations for the year ended March 31, 2010

Adjusted Profit and Loss A/C

Particulars		₹	Particulars	₹
To General Reserve		66,000	By Balance b/d	5,00,000
To Depreciation:			By Funds from Operations (Balancing figure)	21,26,000
On Land & Building	2,00,000			
On Plant & Machinery	5,60,000	7,60,000		
To Loss on Sale of Machine		40,000		
To Premium on Redemption of Debentures		80,000		
To Proposed Dividend		7,20,000		
To Interim Dividend		2,40,000		
To Balance c/d		7,40,000		
		26,26,000		26,26,000

Working Notes:

(i) **Depreciation on Land and Building** = ₹ 30,00,000 – 28,00,000 = ₹ 2,00,000

(ii) **Loss on Sale of Old Machine** = ₹ 2,90,000 (Cost) –1,50,000 (Cum. Dep.) – 1,00,000 (Sale Value) = 40,000

(iii) **Depreciation on Plant and Machinery**

	₹		₹
To Balance b/d	36,00,000	By Bank a/c (sold)	1,00,000
To Bank a/c (Purchases)	6,00,000	By Profit & Loss a/c (Loss on Sales)	40,000
		By Depreciation (Balancing figure)	5,60,000
		By Balance c/d	35,00,000
	42,00,000		42,00,000

(iv) **Premium on Redemption of Debentures**

Amount of Debentures Redeemed = ₹ 20,00,000 − 16,00,000 = ₹ 4,00,000

Premium = 20% of 4,00,000 = ₹ 80,000

Question 15

Following are the summarized Balance Sheets of JKM Limited as on 31st March, 2011 and 2012 :

(₹ in lakhs)

Liabilities	*31st March*		*Assets*	*31st March*	
	2011	*2012*		*2011*	*2012*
	₹	*₹*		*₹*	*₹*
Equity Share Capital	*50.00*	*55.00*	*Goodwill*	*5.00*	*4.20*
Capital Reserve	*-*	*2.50*	*Land & Building*	*20.00*	*18.00*
General Reserve	*4.00*	*6.00*	*Plant & Machinery*	*22.00*	*31.00*
Profit & Loss Account	*5.30*	*6.70*	*Investment*	*2.00*	*3.50*
Proposed Dividend	*8.00*	*11.00*	*Stock*	*8.60*	*12.70*
Bills Payable	*2.00*	*1.80*	*Sundry Debtors*	*10.20*	*13.00*
Sundry Creditors	*3.50*	*4.60*	*Bills Receivables*	*1.00*	*0.70*
Provision for Tax	*4.00*	*5.00*	*Cash in hand & Bank*	*7.20*	*8.90*
			Share Issue Exp.	*0.80*	*0.60*
	76.80	*92.60*		*76.80*	*92.60*

Additional Information:

(i) A machine (original cost ₹ 2,80,000; Book Value ₹ 1,70,000) was sold during the year for ₹ 1,50,000.

(ii) Depreciation for 2011-12 was amounted to ₹ 3,00,000 on plant and machinery and ₹ 50,000 on land and building.

(iii) A piece of land had been sold out on 01-11-2011 and the profit on the sale has been credited in capital reserve.

(iv) ₹ 40,000 is received as dividend including ₹ 15,000 pre-acquisition profit, which is credited to investment account.

(v) An interim dividend of ₹ 2,50,000 has been paid during the year 2011-12.

(vi) Income tax paid during the year 2011-12, amounted to ₹ 3,80,000.

Required:

(A) Prepare a schedule of changes in the working capital.

(B) Prepare funds flow statement as on 31st March, 2012. ***(12 Marks, November, 2012)***

Answer

(A) Schedule of Changes in the Working Capital

Particulars	31st March		Changes in Working Capital (in lakhs)	
	2011 (₹)	2012 (₹)	Increase (₹)	Decrease (₹)
A. Current Assets				
Stock	8.60	12.70	4.10	
Sundry Debtors	10.20	13.00	2.80	
Bills Receivables	1.00	0.70		0.30
Cash in Hand & Bank	7.20	8.90	1.70	
Total (A)	27.00	35.3		
B. Current Liabilities				
Sundry Creditors	3.50	4.60		1.10
Bills Payable	2.00	1.80	0.20	
Total (B)	5.5	6.4		
C. Working Capital (A-B)	21.5	28.9		
D. Increase in Working Capital	7.4			7.4
	28.9	28.9	8.8	8.8

(B) **Preparation of Funds Flow Statement**

Working Notes:

Plant & Machinery A/c

Particulars	₹	Particulars	₹
To Balance b/d	22.00	By Depreciation	3.00
To Bank (Purchase)	13.70	By Bank (Sale)	1.50

(Balancing figure)		By Loss on Sale	0.20
		By Balance c/d	31.00
	35.70		35.70

Provision for Taxation A/c

Particulars	₹	Particulars	₹
To Balance c/d	5.00	By Balance b/d	4.00
To Bank A/c	3.80	By P&L A/c (balancing figure)	4.80
	8.80		8.80

Investment A/c

Particulars	₹	Particulars	₹
To Balance b/d	2.00	By Dividend A/c	0.15
To Bank (purchase b/d)	1.65	By Balance c/d	3.50
	3.65		3.65

Land & Building A/c

Particulars	₹	Particulars	₹
To Balance b/d	20.00	By Bank A/c (Sale)	4.00
To Capital Reserve (Profit on Sale)	2.50	By Depreciation	0.50
		By Balance c/d	18.00
	22.50		22.50

Adjusted Profit & Loss A/c

Particulars	₹	Particulars	₹
To Depreciation on:		By Net Profit for 2011	5.30
Plant & Machinery	3.00	By Dividend on Investment	0.25
Land & Building	0.50	By Funds from Operation	26.15
To Loss on Sale of Machinery	0.20		
To Goodwill Written Off	0.80		
To Share Issue Up Written Off	0.20		
To Provision for Taxation	4.80		
To Transfer to General Reserves	2.00		

To Interim Dividend	2.50		
To Proposed Dividend	11.00		
By Net Profit for 2012	6.70		
	31.70		31.70

Funds Flow Statement as on 31st March 2012

Sources of Fund	₹	Application of Fund	₹
Funds from Operation	26.15	Increase in Working Capital	7.40
Dividend on Investment	0.40	Tax paid	3.80
Sale of Machinery	1.50	Interim Dividend	2.50
Issue of Shares	5.00	Dividend	8.00
Sale of Land	4.00	Purchase of Investments	1.65
		Purchase of Plant	13.70
	37.05		37.05

(**Note:** *Schedule of changes in the working capital may be computed alternatively by taking provision for tax as a current liability.)*

Question 16

The following are the summarized Balance Sheet of Flexon Limited as on 31st March 2012 and 2013 :

Liabilities	*31.3.12* ₹	*31.3.13* ₹	*Assets*	*31.3.12* ₹	*31.3.13* ₹
Share Capital	*8,00,000*	*8,00,000*	*Goodwill*	*15,000*	*15,000*
General Reserve	*1,40,000*	*1,80,000*	*Building*	*4,00,000*	*3,60,000*
Profit & Loss A/c.	*1,60,000*	*2,70,000*	*Plant*	*3,70,000*	*5,20,000*
Sundry Creditors	*1,71,000*	*1,67,000*	*Investment (Long-term)*	*1,20,000*	*1,50,000*
Bills Payable	*20,000*	*30,000*	*Stock*	*3,00,000*	*2,30,000*
Provision for Tax	*1,60,000*	*1,80,000*	*Debtors*	*1,80,000*	*2,00,000*
			Cash & Bank	*66,000*	*1,52,000*
	14,51,000	*16,27,000*		*14,51,000*	*16,27,000*

Additional Information:

(1) Depreciation charged during the year 2012-13:

On Plant - ₹ 40,000

On Building - ₹ 40,000

(2) Provision for tax of ₹ 1,90,000 was made during the year 2012-13.

(3) Interim dividend paid during the year 2012-13:

Interim Dividend - ₹ 80,000

Corporate Dividend Tax - ₹ 13,596

Prepare:

(i) Statement of changes in working capital

(ii) Funds flow statement for the year ended 31st March, 2013. ***(8 Marks, November, 2013)***

Answer

(b) (i) Schedule of Changes in Working Capital

Particulars	31st March		Working Capital	
	2012 (₹)	2013 (₹)	Increase (₹)	Decrease (₹)
(A) Current Assets				
Stock	3,00,000	2,30,000	-	70,000
Debtors	1,80,000	2,00,000	20,000	-
Cash & Bank	66,000	1,52,000	86,000	-
Total (A)	5,46,000	5,82,000		
(B) Current Liabilities				
Sundry Creditors	1,71,000	1,67,000	4,000	-
Bills Payable	20,000	30,000	-	10,000
Total (B)	1,91,000	1,97,000		
Working Capital (A-B)	3,55,000	3,85,000	1,10,000	80,000
Increase in Working Capital	30,000	-	-	30,000
Total	3,85,000	3,85,000	1,10,000	1,10,000

Funds Flow Statement as on 31st March, 2013

Sources of Fund	₹	Application of Fund	₹
Funds from Operation	5,13,596	Increase in Working Capital	30,000
		Interim Dividend	80,000
		Purchase of Investment	30,000
		Corporate Dividend Tax	13,596
		Purchase of Plant	1,90,000
		Payment of Income Tax	1,70,000
	5,13,596		5,13,596

Working Notes:

Adjusted Profit and Loss A/c

Particulars		₹	Particulars	₹
To General Reserve		40,000	By Net Profit for 2012	1,60,000
To Depreciation:				
Plant	40,000		By Funds from Operations	5,13,596
Building	40,000	80,000		
To Goodwill		-		
To Interim Dividend		80,000		
To Corporate Dividend Tax		13,596		
To Provision for Tax		1,90,000		
To Net Profit for 2013		2,70,000		
		6,73,596		6,73,596

Provision for Tax A/c

Particulars	₹	Particulars	₹
To Bank A/c (Tax Paid)	1,70,000	By Bal. b/d	1,60,000
To Balance b/d	1,80,000	By P&L A/c	1,90,000
	3,50,000		3,50,000

Plant & Machinery A/c

Particulars	₹	Particulars	₹
To Bal. b/d	3,70,000	By Depreciation	40,000
To Bank	1,90,000	By Bal. c/d	5,20,000
	5,60,000		5,60,000

(**Note**: *Schedule of changes in the working capital maybe computed alternatively by taking provision for tax as current liability and working out the problem accordingly.)*

Question 17

The Balance Sheets of Z Ltd. as on 31st March, 2013 and 31st March, 2014 are as under:

Liabilities	*2013*	*2014*	*Assets*	*2013*	*2014*
	₹	*₹*		*₹*	*₹*
Equity share capital	*15,00,000*	*20,00,000*	*Goodwill*	*5,75,000*	*4,50,000*
12% Redeemable pref. share cap.	*7,50,000*	*5,00,000*	*Land & Building*	*10,00,000*	*8,50,000*
General Reserve	*2,00,000*	*3,50,000*	*Plant*	*4,00,000*	*10,00,000*
Profit & Loss A/c	*1,50,000*	*2,40,000*	*Debtors*	*8,00,000*	*12,60,000*
Creditors	*2,75,000*	*4,15,000*	*Stock*	*4,85,000*	*4,35,000*
Outstanding Expenses	*1,00,000*	*80,000*	*Marketable Securities*	*75,000*	*50,000*
Provision for Tax	*2,00,000*	*2,50,000*	*Cash and Bank*	*50,000*	*40,000*
Proposed Dividend	*2,10,000*	*2,50,000*			
	33,85,000	***40,85,000***		***33,85,000***	***40,85,000***

Additional Information:

(i) Depreciation charged on Plant and Land & Buildings during the year was ₹ 50,000 and ₹ 1,00,000 respectively.

(ii) Income-Tax ₹ 1,75,000 was paid during the year 2013-14.

(iii) An Interim Dividend of ₹ 1,00,000 has been paid in 2013-14.

Prepare Cash Flow Statement. ***(8 Marks, May, 2014)***

Answer

Cash Flow Statement for the year ending 31st March, 2014

			₹	₹
A.	**Cash flow from Operating Activities**			
	Profit and Loss A/c as on 31.3.2014			2,40,000
	Less: Profit and Loss A/c as on 31.3.2013			(1,50,000)
				90,000
	Add:	Transfer to General Reserve	1,50,000	
		Provision for Tax	2,25,000	
		Interim Dividend paid during the year	1,00,000	

	Proposed Dividend	2,50,000	7,25,000
	Profit before Tax		8,15,000
	Adjustment for Depreciation:		
	Land and Building	1,00,000	
	Plant and Machinery	50,000	1,50,000
	Goodwill written off		1,25,000
	Operating Profit before Working Capital Changes		10,90,000
	Adjustment for Working Capital Changes:		
	Decrease in Outstanding Expenses	(20,000)	
	Decrease in Stock	50,000	
	Increase in Debtors	(4,60,000)	
	Increase in Creditors	1,40,000	(2,90,000)
	Cash generated from Operations		8,00,000
	Income tax paid		(1,75,000)
	Net Cash Inflow from Operating Activities (a)		6,25,000
B.	**Cash flow from Investing Activities**		
	Proceeds from Sale of Building		50,000
	Purchase of Plant and Machinery		(6,50,000)
	Net Cash Outflow from Investing Activities (b)		(6,00,000)
C.	**Cash Flow from Financing Activities**		
	Proceeds from Issuance of Share Capital		5,00,000
	Redemption of Preference Shares		(2,50,000)
	Interim Dividend Paid		(1,00,000)
	Final Dividend Paid		(2,10,000)
	Net Cash Outflow from Financing Activities (c)		(60,000)
	Net increase in Cash and Cash Equivalents during the year (a+b+c)		(35,000)
	Cash and Cash Equivalents at the beginning of the year (Cash and Bank and Marketable Securities)		1,25,000
	Cash and Cash Equivalents at the end of the year		90,000

Working Notes:

1. **Provision for the Tax Account**

	₹		₹
To Bank (paid)	1,75,000	By Balance b/d	2,00,000

To	Balance c/d	2,50,000	By	Profit and Loss a/c	2,25,000
		4,25,000			4,25,000

2. **Plant and Machinery Account**

		₹			₹
To	Balance b/d	4,00,000	By	Depreciation	50,000
To	Bank a/c (Purchases) (Balancing figure)	6,50,000	By	Balance c/d	10,00,000
		10,50,000			10,50,000

3. **Land and Building Account**

		₹			₹
To	Balance b/d	10,00,000	By	Depreciation	1,00,000
			By	Bank a/c (Sales) (Balancing figure)	50,000
			By	Balance c/d	8,50,000
		10,00,000			10,00,000

(Note: In the above solution it has been assumed that marketable securities have insignificant risk of changes in value.)

Question 18

Balance Sheets of Star Ltd. are as under:

Balance Sheet ***(in lakh ₹)***

Liabilities	***31/03/13*** ***₹***	***31/03/14*** ***₹***	***Assets***	***31/03/13*** ***₹***	***31/03/14*** ***₹***
Share Capital	*24.00*	*30.00*	*Plant & Machinery*	*15.00*	*21.00*
Reserve	*4.50*	*6.00*	*Buildings*	*12.00*	*18.00*
Profit & Loss A/c	*1.80*	*3.00*	*Investments*	*-*	*3.00*
Debentures	*-*	*6.00*	*Sundry Debtors*	*21.00*	*15.00*
Provision for Taxation	*2.10*	*3.00*	*Stock*	*6.00*	*12.00*
Proposed Dividend	*3.00*	*6.00*	*Cash in hand/Bank*	*6.00*	*6.00*
Sundry Creditors	*24.60*	*21.00*			
Total	***60.00***	***75.00***		***60.00***	***75.00***

With the help of following additional information, prepare Cash Flow Statement:

(i) Depreciation on plant and machinery was charged @ 25% on its opening balance and on building @ 10% on its opening balance.

(ii) During the year an old machine costing ₹ 1,50,000 (written down value ₹ 60,000) was sold for ₹ 1,05,000.

(iii) ₹ 1,50,000 was paid towards Income-tax, during the year. ***(8 Marks, November, 2014)***

Answer

Cash Flow Statement for the year ending on March 31, 2014

		₹ in lakhs	*₹ in lakhs*
I.	**Cash flows from Operating Activities**		
	Net profit made during the year (W.N.1)	8.70	
	Provision for taxation made during the year	2.40	
	Profit on sale of machinery	(0.60)	
	Adjustment for depreciation on Machinery (W.N.2)	3.75	
	Adjustment for depreciation on Land & Building	1.20	
	Operating profit before change in Working Capital	15.45	
	Increase in Inventory	(6.00)	
	Decrease in Debtors	6.00	
	Decrease in Creditors	(3.60)	
	Cash generated from operations	11.85	
	Income-tax paid	(1.50)	
	Net cash from operating activities		10.35
II.	**Cash flows from Investing Activities**		
	Purchase of Machinery	(10.20)	
	Sale of Machinery	1.05	
	Purchase of Building	(7.20)	
	Purchase of investments	(3.00)	
			(19.35)
III.	**Cash flows from Financing Activities**		
	Issue of shares	6.00	
	Issue of debentures	6.00	
	Dividend paid	(3.00)	9.00
Net increase in cash and cash equivalent			Nil
Cash and cash equivalents at the beginning of the period			6.00
Cash and cash equivalents at the end of the period			6.00

Working Notes:

(i) Net Profit made during the year ended 31.3.2014

		₹ *in lakhs*
Increase in P & L (Cr.) Balance		1.20
Add:	Transfer to general reserve	1.50
Add:	Provided for proposed dividend during the year	6.00
		8.70

(ii) Plant & Machinery Account

		₹ *in lakhs*			₹ *in lakhs*
To	Balance b/d	15.00	By	Depreciation (Bal. Fig.) [25% of 15]	3.75
To	P& L A/c [1.05 less 0.45 (0.60 less depreciation 0.15)]	0.60	By	Cash/Bank A/c	1.05
To	Cash/Bank (balancing fig.)	10.20	By	Balance c/d	21.00
		25.80			25.80

(iii) Provision for Taxation Account

		₹ *in lakhs*			₹ *in lakhs*
To	Cash/Bank (Bal. Fig.)	1.50	By	Balance b/d	2.10
To	Balance c/d	3.00	By	P & L A/c	2.40
		4.50			4.50

(iv) Proposed Dividend Account

		₹ *in lakhs*			₹ *in lakhs*
To	Bank	3.00*	By	Balance b/d	3.00
To	Balance c/d	6.00	By	P & L A/c (Bal. Fig.)	6.00
		9.00			9.00

* *last year's proposed dividend assumed to be paid this year.*

(v) Building Account

		₹ *in lakhs*			₹ *in lakhs*
To	Balance b/d	12.00	By	Depreciation	1.20
To	Bank A/c (Purchase)	7.20	By	Balance c/d	18.00
		19.20			19.20

4
Financing Decisions

UNIT – I : COST OF CAPITAL

Question 1

What do you understand by Weighted Average Cost of Capital? ***(3 Marks, November, 2009)***

Answer

Weighted Average Cost of Capital

The composite or overall cost of capital of a firm is the weighted average of the costs of various sources of funds. Weights are taken in proportion of each source of funds in capital structure while making financial decisions. The weighted average cost of capital is calculated by calculating the cost of specific source of fund and multiplying the cost of each source by its proportion in capital structure. Thus, weighted average cost of capital is the weighted average after tax costs of the individual components of firm's capital structure. That is, the after tax cost of each debt and equity is calculated separately and added together to a single overall cost of capital.

Question 2

Discuss the dividend-price approach, and earnings price approach to estimate cost of equity capital. ***(2 Marks, November, 2006)***

Answer

In dividend price approach, cost of equity capital is computed by dividing the current dividend by average market price per share. This ratio expresses the cost of equity capital in relation to what yield the company should pay to attract investors. It is computed as:

$$K_e = \frac{D_1}{P_o}$$

Where,

D_1 = Dividend per share in period 1

P_0 = Market price per share today

Whereas, on the other hand, the advocates of earnings price approach co-relate the earnings of the company with the market price of its share. Accordingly, the cost of ordinary share capital would be based upon the expected rate of earnings of a company. This approach is similar to dividend price approach, only it seeks to nullify the effect of changes in dividend policy.

Question 3

ABC Limited has the following book value capital structure:

Equity Share Capital (150 million shares, ₹ 10 par)	*₹ 1,500 million*
Reserves and Surplus	*₹ 2,250 million*
10.5% Preference Share Capital (1 million shares, ₹ 100 par)	*₹ 100 million*
9.5% Debentures (1.5 million debentures, ₹ 1000 par)	*₹ 1,500 million*
8.5% Term Loans from Financial Institutions	*₹ 500 million*

The debentures of ABC Limited are redeemable after three years and are quoting at ₹ 981.05 per debenture. The applicable income tax rate for the company is 35%.

The current market price per equity share is ₹ 60. The prevailing default-risk free interest rate on 10-year GOI Treasury Bonds is 5.5%. The average market risk premium is 8%. The beta of the company is 1.1875.

The preferred stock of the company is redeemable after 5 years is currently selling at ₹ 98.15 per preference share.

Required:

(i) Calculate weighted average cost of capital of the company using market value weights.

(ii) Define the marginal cost of capital schedule for the firm if it raises ₹ 750 million for a new project. The firm plans to have a target debt to value ratio of 20%. The beta of new project is 1.4375. The debt capital will be raised through term loans. It will carry interest rate of 9.5% for the first 100 million and 10% for the next ₹ 50 million.

(9 Marks, May, 2004)

Answer

Working Notes:

1) **Computation of cost of debentures (K_d) :**

$$981.05 = \frac{95}{(1+ytm)^1} + \frac{95}{(1+ytm)^2} + \frac{1095}{(1+ytm)^3}$$

Yield to maturity (ytm) = 10% (approximately)

$K_d = ytm \times (1 - Tc)$

$= 10\% \times (1 - 0.35) = 6.5\%$

2) **Computation of cost of term loans (K_T) :**

= $i \times (1 - T_c)$

= 8.5% (1– 0.35)

= 5.525%

3) **Computation of cost of preference capital (K_P) :**

$$98.5 = \frac{10.5}{(1+YTM)^1} + \frac{10.5}{(1+YTM)^2} + \frac{10.5}{(1+YTM)^3} + \frac{10.5}{(1+YTM)^4} + \frac{10.5}{(1+YTM)^5}$$

YTM = 11% (approximately)

K_p = 11%

4) **Computation of cost of equity (K_E) :**

= r_f + Average market risk premium × Beta

= 5.5%+ 8% × 1.1875

= 15%

5) Computation of proportion of equity capital, preference share, debentures and term loans in the market value of capital structure:

(₹ in millions)

	Market value of capital structure ₹	***Proportion***
Equity share capital *(150 million share × ₹ 60)*	9,000	81.3000
10.5% Preferential share capital *(1 million shares × 98.15)*	98.15	0.889
9.5 % Debentures *(1.5 million debentures × ₹981.05)*	1,471.575	13.294
8.5% Term loans	500	4.517
	11,069.725	100

(i) Weighted Average cost of capital (WACC) : *(Using market value weights)*

$$WACC^* = K_d \times \frac{D}{V} + K_T \times \frac{T}{V} + K_P \times \frac{P}{V} + K_E \times \frac{E}{V}$$

= 6.5% × 0.1329 + 5.25% × 0.04517 + 11% × 0.0089 + 15% × 0.813

= 0.008638 + 0.002495 + 0.00097 + 0.12195

= 13.41%

* For the values of K_d, K_T, K_P and K_E and weights refer to working notes 1 to 5 respectively.

(ii) Marginal cost of capital (MCC) schedule:

K_E (New Project) = 5.5% + 8% × 1.4375 = 17%

K_d = 9.5% × (1–0.35) = 6.175%

= 10% × (1–0.35) = 6.5%

MCC = $17\% \times 0.80 + 6.175\% \times \frac{100}{750} + 6.5\% \times \frac{50}{750}$

= 14.86% (Approximately)

Question 4

You are analysing the beta for ABC Computers Ltd. and have divided the company into four broad business groups, with market values and betas for each group.

Business group	*Market value of equity*	*Unleveraged beta*
Main frames	*₹100 billion*	*1.10*
Personal Computers	*₹100 billion*	*1.50*
Software	*₹50 billion*	*2.00*
Printers	*₹150 billion*	*1.00*

ABC Computers Ltd. had ₹50 billion in debt outstanding.

Required:

(i) Estimate the beta for ABC Computers Ltd. as a Company. Is this beta going to be equal to the beta estimated by regressing past returns on ABC Computers stock against a market index. Why or why not?

[Part (i) is out of syllabus and this topic is covered in Final Level paper]

(ii) If the treasury bond rate is 7.5%, estimate the cost of equity for ABC Computers Ltd. Estimate the cost of equity for each division. Which cost of equity would you use to value the printer division? The average market risk premium is 8.5%.

(6 Marks, November, 2004)

Answer

(i) *Beta of ABC Computers*

= 1.10 × 2/8 + 1.50×2/8 + 2×1/8 + 1×3/8 = 1.275

Beta coefficient is a measure of volatility of securities return relative to the returns of a broad based market portfolio. Hence beta measures volatility of ABC Computers stock return against broad based market portfolio. In this case we are considering four business groups in computer segment and not a broad based market portfolio , therefore beta calculations will not be the same.

(ii) *Cost of equity*

= rf + av mkt risk premium$\times\beta$

= 7.5% + 1.275×8.5% = 18.34%

Main frame KE = 7.5% + 1.10×8.5% = 16.85%

Personal Computers KE = 7.5% + 1.5×8.5% = 20.25%

Software KE = 7.5% + 2×8.5% = 24.5%

Printers KE = 7.5% + 1×8.5% = 16%

Advise: *To value printer division, the use of 16% KE is recommended.*

Question 5

The R&G Company has following capital structure at 31st March 2004, which is considered to be optimum:

	₹
13% debenture	*3,60,000*
11% preference share capital	*1,20,000*
Equity share capital (2,00,000 shares)	*19,20,000*

The company's share has a current market price of ₹ 27.75 per share. The expected dividend per share in next year is 50 percent of the 2004 EPS. The EPS of last 10 years is as follows. The past trends are expected to continue:

Year	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*
EPS (₹)	1.00	1.120	1.254	1.405	1.574	1.762	1.974	2.211	2.476	2.773

The company can issue 14 percent new debenture. The company's debenture is currently selling at ₹ 98. The new preference issue can be sold at a net price of ₹ 9.80, paying a dividend of ₹ 1.20 per share. The company's marginal tax rate is 50%.

(i) Calculate the after tax cost (a) of new debts and new preference share capital, (b) of ordinary equity, assuming new equity comes from retained earnings.

(ii) Calculate the marginal cost of capital.

(iii) How much can be spent for capital investment before new ordinary share must be sold ? Assuming that retained earnings available for next year's investment are 50% of 2004 earnings.

(iv) What will be marginal cost of capital (cost of fund raised in excess of the amount calculated in part (iii))if the company can sell new ordinary shares to net ₹ 20 per share ? The cost of debt and of preference capital is constant. ***(2+1+2+2=7 Marks, May, 2005)***

Answer

The existing capital structure is assumed to be optimum.

Existing Capital Structure Analysis

Type of capital	*Amount (₹)*	*Proportions*
13% debentures	3,60,000	0.15
11% Preference	1,20,000	0.05
Equity	19,20,000	0.80
	24,00,000	1.00

(i) (a) After tax cost of debt = $K_d = \frac{14}{98} \times (1 - 0.5)$

= 0.07143

After tax cost of preference capital (new)

$Kp = \frac{1.20}{9.80} = 0.122449$

(b) After tax cost of retained earnings

$K_e = \frac{1.3865}{27.75} + g$

(here 'g' is the growth rate)

= 0.05 + 0.12 = 0.17

(ii)

Types of capital (1)	*Proportion (2)*	*Specific cost (3)*	*Product (2) × (3)*
Debt	.15	.07143	.0107
Preference	.05	.122449	.0061
Equity	.80	.17	.1360
Marginal cost of capital at existing capital structure			.1528 or 15.28%

(iii) The company can spend the following amount without increasing its MCC and without selling the new shares.

Retained earnings = 1.3865 × 2,00,000 =2,77,300

The ordinary equity (retained earnings in this case) is 80% of the total capital. Thus investment before issuing equity $\left(\frac{2,77,300}{80}\times 100\right)$ = ₹ 3,46,625

(iv) If the company spends more than ₹ 3,46,625 it will have to issue new shares. The cost of new issue of ordinary share is:

$$K_e = \frac{1.3865}{20} + 0.12 = 0.1893$$

The marginal cost of capital of Rs 3,46,625

Types of capital (1)	*Proportion (2)*	*Specific cost (3)*	*Product (2) × (3)*
Debt	.15	.07143	.0107
Preference	.05	.122449	.0061
Equity(new)	.80	.1893	0.15144
Marginal cost of capital at existing capital structure			0.16824 or 16.82 %

Question 6

A Company issues ₹ 10,00,000 12% debentures of ₹ 100 each. The debentures are redeemable after the expiry of fixed period of 7 years. The Company is in 35% tax bracket.

Required:

(i) Calculate the cost of debt after tax, if debentures are issued at

(a) Par

(b) 10% Discount

(c) 10% Premium.

(ii) If brokerage is paid at 2%, what will be the cost of debentures, if issue is at par?

(6 Marks, May, 2006)

Answer

$$K_d = \frac{I(1-T_c) + \frac{(RV - NP)}{N}}{\left(\frac{RV + NP}{2}\right)}$$

Where,

I = Annual Interest Payment

NP = Net proceeds of debentures

RV = Redemption value of debentures

T_c = Income tax rate

N = Life of debentures

(i) (a) **Cost of debentures issued at par**

$$= \frac{1,20,000 \times (1 - 0.35) + \frac{(10,00,000 - 10,00,000)}{7}}{\left(\frac{10,00,000 + 10,00,000}{2}\right)}$$

$$= \frac{78,000}{10,00,000} = 7.8\%$$

(b) **Cost of debentures issued at 10% discount**

$$= \frac{1,20,000 \times (1 - 0.35) + \frac{(10,00,000 - 9,00,000)}{7}}{\left(\frac{10,00,000 + 9,00,000}{2}\right)}$$

$$= \frac{78,000 + 14,286}{9,50,000} = 9.71\%$$

(c) **Cost of debentures issued at 10% Premium**

$$K_d = \frac{1,20,000 \times (1 - 0.35) + \frac{(10,00,000 - 11,00,000)}{7}}{\left(\frac{10,00,000 + 11,00,000}{2}\right)}$$

$$= \frac{78,000 - 14,286}{10,50,000} = 6.07\%$$

(ii) **Cost of debentures, if brokerage is paid at 2% and debentures are issued at par**

$$K_d = \frac{1,20,000 \times (1 - 0.35) + \frac{(10,00,000 - 9,80,000)}{7}}{\left(\frac{(10,00,000 - 20,000) + 10,00,000}{2}\right)}$$

$$= \frac{80,857}{9,90,000} = 8.17\%$$

Question 7

Z Ltd.'s operating income (before interest and tax) is ₹ 9,00,000. The firm's cost of debt is 10 per cent and currently firm employs ₹ 30,00,000 of debt. The overall cost of capital of firm is 12 per cent.

Required:

Calculate cost of equity. ***(3 Marks, November, 2007)***

Answer

Calculation of Cost of Equity

Calculation of value of firm (v) = $\frac{\text{EBIT}}{\text{Overall cost of capital } (K_o)}$

$$= \frac{9,00,000}{0.12} = ₹\ 75,00,000$$

Market value of equity (S) = V – Debts

= 75,00,000 – 30,00,000 = ₹ 45,00,000

Market value of debts (D) = 30,00,000

$$K_e \text{ (Cost of equity)} = K_o \left(\frac{V}{S}\right) - K_d \left(\frac{D}{S}\right)$$

$$= 0.12\left(\frac{75,00,000}{45,00,000}\right) - 0.10\left(\frac{30,00,000}{45,00,000}\right)$$

$$= 0.20 - .067 = .133 \times 100$$

K_e = 13.3%.

Question 8

ABC Ltd. wishes to raise additional finance of ₹ 20 lakhs for meeting its investment plans. The company has ₹ 4,00,000 in the form of retained earnings available for investment purposes. The following are the further details:

- *Debt equity ratio 25 : 75.*
- *Cost of debt at the rate of 10 percent (before tax) upto ₹ 2,00,000 and 13% (before tax) beyond that.*

- *Earnings per share, ₹ 12.*
- *Dividend payout 50% of earnings.*
- *Expected growth rate in dividend 10%.*
- *Current market price per share, ₹60.*
- *Company's tax rate is 30% and shareh*older's personal tax rate is 20%.

Required:

(i) Calculate the post tax average cost of additional debt.

(ii) Calculate the cost of retained earnings and cost of equity.

(iii) Calculate the overall weighted average (after tax) cost of additional finance.

(8 Marks, May, 2008)

Answer

Pattern of raising capital	=	0.25 × 20,00,000
Debt	=	5,00,000
Equity	=	15,00,000
Equity fund (₹ 15,00,000)		
Retained earnings	=	₹ 4,00,000
Equity (additional)	=	₹ 11,00,000
Total	=	₹ 15,00,000
Debt fund (₹ 5,00,000)		
10% debt	=	₹ 2,00,000
13% debt	=	₹ 3,00,000
Total	=	₹ 5,00,000

(i) K_d = Total Interest (1– t) / ₹ 5,00,000

= [20,000 + 39,000] (1 – 0.3)/ 5,00,000 or (41,300 / 5,00,000) × 100 = 8.26%

(ii) Ke = EPS × payout / mp + g = 12 (50%) / 60 × 100 + 10%

10% + 10% = 20%

Kr = Ke (1 – tp) = 20(1 – 0.2) = 16%

(iii) **Weighted average cost of capital**

	Amount	*After tax*	*Cost*
Equity Capital	11,00,000	20.00%	2,20,000

Retained earning	4,00,000	16.00%	64,000
Debt	5,00,000	8.26%	41,300
Total	**20,00,000**		**3,25,300**

Ko = (3,25,300 / 20,00,000) × 100 = 16.27%

Question 9

The capital structure of MNP Ltd. is as under:

9% Debenture	*₹ 2,75,000*
11% Preference shares	*₹ 2,25,000*
Equity shares (face value : ₹ 10 per share)	*₹ 5,00,000*
	₹ 10,00,000

Additional information:

(i) ₹ 100 per debenture redeemable at par has 2% floatation cost and 10 years of maturity. The market price per debenture is ₹ 105.

(ii) ₹ 100 per preference share redeemable at par has 3% floatation cost and 10 years of maturity. The market price per preference share is ₹ 106.

(iii) Equity share has ₹ 4 floatation cost and market price per share of ₹ 24. The next year expected dividend is ₹ 2 per share with annual growth of 5%. The firm has a practice of paying all earnings in the form of dividends.

(iv) Corporate Income-tax rate is 35%.

Required :

Calculate Weighted Average Cost of Capital (WACC) using market value weights.

(9 Marks, June, 2009)

Answer

Computation of Weighted Average Cost of Capital using Market Value Weights

Cost of Equity (k_e)

$$K_e = \frac{D_1}{Po} + g$$

$$= \frac{₹\ 2}{₹\ 24 - ₹\ 4} + 5\% = 15\%$$

Cost of Debt (k_d)

$$K_d = \frac{I(1-T) + (RV - NP)/N}{(RV + NP)/2}$$

$$= \frac{9(1-0.35)+(100-98)/10}{(100+98)/2}$$

$$= \frac{5.85+0.20}{99} = 6.11\%$$

Cost of Preference Shares (k_p)

$$K_p = \frac{PD+(RV-NP)/N}{(RV+NP)/2}$$

$$= \frac{11+(100-97)/10}{(100+97)/2}$$

$$= \frac{11.30}{98.5} = 11.47\%$$

Calculation of WACC using Market Value Weights

Source of Capital	*Market Value (₹)*	*Weights to Total Capital*	*Specific Cost*	*Total Cost*
Debentures (₹ 105 per debenture)	2,88,750	0.1672	0.0611	0.0102
Preference Shares (₹ 106 per preference share)	2,38,500	0.1381	0.1147	0.0158
Equity Shares (₹ 24 per share)	12,00,000	0.6947	0.1500	0.1042
	17,27,250	1.00		0.1302

WACC using market value weights = 13.02%

Question 10

Y Ltd. retains ₹ 7,50,000 out of its current earnings. The expected rate of return to the shareholders, if they had invested the funds elsewhere is 10%. The brokerage is 3% and the shareholders come in 30% tax bracket. Calculate the cost of retained earnings.

(2 Marks, November, 2009)

Answer

Computation of Cost of Retained Earnings (K_r)

$K_r = k (1-T_P) (1-B)$

$K_r = 0.10 (1- 0.30) (1- 0.03)$

$= 0.10 (0.70) \times (0.97) = 0.0679$ or 6.79%

Cost of Retained Earnings = 6.79%

Question 11

SK Limited has obtained funds from the following sources, the specific cost are also given against them:

Source of funds	*Amount (₹)*	*Cost of Capital*
Equity shares	*30,00,000*	*15 percent*
Preference shares	*8,00,000*	*8 percent*
Retained earnings	*12,00,000*	*11 percent*
Debentures	*10,00,000*	*9 percent (before tax)*

You are required to calculate weighted average cost of capital. Assume that Corporate tax rate is 30 percent. ***(3 Marks, May, 2010)***

Answer

Calculation of Weighted Average Cost of Capital (WACC)

Sources of Funds	*Amount (₹)*	*Weight*	*Cost of Capital (after tax) %*	*WACC %*
Equity Shares	30,00,000	0.500	15	7.50
Preference Shares	8,00,000	0.133	8	1.06
Retained Earnings	12,00,000	0.200	11	2.20
Debentures	10,00,000	0.167	6.3*	1.05
Total	60,00,000			11.81%

*Cost of Debentures (Kd) (after tax) = Kd (before tax) x (I – T)

= 9% (1 - 0.3) = 6.3%

Weighted Average Cost of Capital = 11.81%

Question 12

PQR Ltd. has the following capital structure on October 31, 2010:

	₹
Equity Share Capital (2,00,000 Shares of ₹ 10 each)	*20,00,000*
Reserves & Surplus	*20,00,000*
12% Preference Shares	*10,00,000*
9% Debentures	*30,00,000*
	80,00,000

The market price of equity share is ₹ 30. It is expected that the company will pay next year a dividend of ₹ 3 per share, which will grow at 7% forever. Assume 40% income tax rate.

You are required to compute weighted average cost of capital using market value weights.

(3 Marks, November, 2010)

Answer

Computation of Weighted Average Cost of Capital (WACC): Existing Capital Structure

Calculation of Cost of Equity

$$\text{Cost of Equity} = \frac{D_1}{P_o} + g$$

$$= \frac{₹\ 3}{₹\ 30} + 0.07 = 0.1 + 0.07$$

$$= 0.17 = 17\%$$

	After Tax Cost	Weights	Weighted Cost
9% Debentures (K_d)	0.054*	0.3	0.0162
12% Preference Shares	0.12	0.1	0.012
Equity Capital	0.17	0.6	0.102
			0.1302

K_d = rd (1−T_c) = 9% × (1 − 0.4) = 5.4% or 0.054

Weighted Average Cost of Capital = 0.1302 or 13.02%

Question 13

Beeta Ltd. has furnished the following information:

- *Earning per share (ESP)* *₹ 4*
- *Dividend payout ratio* *₹ 25%*
- *Market price per share* *₹ 40*
- *Rate of tax* *30%*
- *Growth rate of dividend* *8%*

The company wants to raise additional capital of ₹ 10 lakhs including debt of ₹ 4 lakhs. The cost of debt (before tax) is 10% upto ₹ 2 lakhs and 15% beyond that.

Compute the after tax cost of equity and debt and the weighted average cost of capital.

(5 Marks, November, 2011)

Answer

(i) Cost of Equity Share Capital (K_e)

$$K_e \text{ (after tax)} = \left(\frac{DPS}{MPS} \times 100\right) + G$$

DPS = 25% of ₹ 4 = ₹ 1.00

$$K_e = \left(\frac{1}{40} \times 100\right) + 8$$

K_e = 10.5%

(ii) Cost of Debt (K_d)

$$K_d \text{ (After tax)} = \frac{\text{Interest}}{\text{Net Proceeds}} \times 100 \times (1 - T)$$

Interest on ₹ 2,00,000 @ 10% = 20,000

Interest on ₹ 2,00,000 @ 15% = 30,000

50,000

$$K_d = \frac{50,000}{4,00,000} \times 100 \times (1 - 0.3)$$

= 8.75 %

(iii) Weighted Average Cost of Capital (WACC)

Source (1)	Amount (2) In ₹	Weights (3)	Cost of Capital (4)	Weighted Average Cost (5) = (3)x(4)
Equity	6,00,000	0.6	0.105	0.063
Debt	4,00,000	0.4	0.0875	0.035
Weighted Average Cost of Capital				**0.098 or 9.8%**

[**Note:** *Ke can be computed alternatively taking growth rate into consideration ($D_0(1+g)/P_0 + g$). The values of Ke and WACC then would change accordingly as 10.7% and 9.92% respectively.]*

Question 14

RES Ltd. is an all equity financed company with a market value of ₹ 25,00,000 and cost of equity K_e = 21%. The company wants to buyback equity shares worth ₹ 5,00,000 by issuing and raising 15% perpetual debt of the same amount. Rate of tax may be taken as 30%. After the capital restructuring and applying MM Model (with taxes), you are required to calculate:

(i) Market value of RES Ltd.

(ii) Cost of Equity K_e

(iii) Weighted average cost of capital and comment on it. ***(5 Marks, May, 2012)***

Answer

Computation of Market Value, Cost of Equity and WACC of RES Ltd.

Market Value of Equity = 25,00,000

K_e =21%

$$\frac{\text{Net income (NI) for equity - holders}}{K_e} = \text{Market Value of Equity}$$

$$\frac{\text{Net income (NI) for equity holders}}{0.21} = 25,00,000$$

Net income for equity holders = 5,25,000

EBIT= 5,25,000/0.7= 7,50,000

	All Equity	Debt and Equity
EBIT	7,50,000	7,50,000
Interest to debt-holders	-	75,000
EBT	7,50,000	6,75,000
Taxes (30%)	2,25,000	2,02,500
Income available to equity shareholders	5,25,000	4,72,500
Income to debt holders plus income available to shareholders	5,25,000	5,47,500

Present value of tax-shield benefits = ₹ 5,00,000 x 0.30 = 1,50,000

(i) Value of Restructured firm

= 25,00,000 + 1,50,000 = 26,50,000

(ii) Cost of Equity (K_e)

Total Value = 26,50,000

Less: Value of Debt = 5,00,000

Value of Equity = 21,50,000

$$K_e = \frac{4,72,500}{21,50,000} = 0.219 = 22\%$$

(iii) WACC

Cost of Debt (after tax)= 15% (1- 0.3)= 0.15 (0.70) = 0.105= 10.5%

Components of Costs	Amount	Cost of Capital	Weight	Weighted COC
Equity	21,50,000	0.22	0.81	0.178
Debt	5,00,000	0.105	0.19	0.020
	26,50,000			0.198

WACC = 19.8%

Comment: At present the company is all equity financed. So, Ke = Ko i.e. 21%. However after restructuring, the Ko would be reduced to 19.81% and Ke would increase from 21% to 21.98%. Reduction in Ko and increase in Ke is good for the health of the company.

Question 15

A company issued 40,000, 12% Redeemable Preference Share of ₹ 100 each at a premium of ₹ 5 each, redeemable after 10 years at a premium of ₹ 10 each. The floatation cost of each share is ₹ 2.

You are required to calculate cost of preference share capital ignoring dividend tax.

(5 Marks, May, 2013)

Answer

Calculation of Cost of Preference Shares (K_p)

Preference Dividend (PD) = 0.12 x 40,000 x 100 = 4,80,000

Floatation Cost = 40,000 x 2 = ₹ 80,000

Net Proceeds (NP) = 42,00,000 – 80,000 = 41,20,000

Redemption Value (RV) = 40,000 x 110 = 44,00,000

$$\text{Cost of Redeemable Preference Shares} = \frac{PD + (RV - NP)/N}{\frac{RV + NP}{2}}$$

$$K_p = \frac{4,80,000 + (44,00,000 - 41,20,000)/10}{\frac{44,00,000 + 41,20,000}{2}}$$

$$= \frac{4,80,000 + (2,80,000)/10}{85,20,000/2}$$

$$= \frac{4,80,000 + 28,000}{42,60,000} = \frac{5,08,000}{42,60,000} = 0.1192$$

K_p = 11.92%

***(Note:** K_p may be computed alternatively by taking the RV and NP for one unit of preference shares. Final figure would remain unchanged)*.

Question 16

The following details are provided by the GPS Limited :

	₹
Equity Share Capital	*65,00,000*
12% Preference Share Capital	*12,00,000*
15% Redeemable Debentures	*20,00,000*
10% Convertible Debentures	*8,00,000*

The cost of equity capital for the company is 16.30% and Income Tax rate for the company is 30%.

You are required to calculate the Weighted Average Cost of Capital (WACC) of the company

. ***(5 Marks, May, 2014)***

Answer

Calculation of Weighted Average Cost of Capital (WACC)

Source	*Amount (₹)*	*Weight*	*Cost of Capital after tax*	*WACC*
Equity Capital	65,00,000	0.619	0.163	0.1009
12% Preference Capital	12,00,000	0.114	0.120	0.0137
15% Redeemable Debentures	20,00,000	0.190	0.105*	0.020
10% Convertible Debentures	8,00,000	0.076	0.07**	0.0053
Total	1,05,00,000	1.0000		0.1399

* Cost of Debentures (after tax) = 15 (1 – 0.30) = 10.5% = 0.105

** Cost of Debentures (after tax) = 10 (1 – 0.30) = 7% = 0.07

Weighted Average Cost of Capital = 0.1399 = 13.99%

(Note: In the above solution, the Cost of Debentures has been computed in the above manner without considering the impact of special features i.e. redeemability and convertibility in absence of requisite information.)

Question 17

Alpha Limited requires funds amounting to ₹ 80 lakhs for its new project. To raise the funds, the company has following two alternatives:

(i) to issue Equity Shares (at par) amounting to ₹ 60 lakhs and borrow the balance amount at the interest of 12% p.a.; or

(ii) to issue Equity Shares (at par) and 12% Debentures in equal proportion.

The Income-tax rate is 30%.

Find out the point of indifference between the available two modes of financing and state which option will be beneficial in different situations. ***(5 Marks, November, 2014)***

Answer

(i) (**Note**: *The par value of equity share is assumed to be ₹100*)

Amount = ₹ 80 Lakhs

Plan I = Equity of ₹ 60 lakhs + Debt of ₹ 20 lakhs

Plan II = Equity of ₹ 40 lakhs + Debentures of ₹ 40 Lakhs.

Plan I: Interest Payable on Loan

= 0.12 x 20,00,000 = 2,40,000

Plan II: Interest Payable on Debentures

= 0.12 x 40,00,000 = 4,80,000

Computation of Point of Indifference

$$\frac{(EBIT - I)(I - t)}{E_1} = \frac{(EBIT - I_2)(I - t)}{E_2}$$

$$\frac{(EBIT - 2,40,000)(1 - 0.3)}{60,000} = \frac{(EBIT - 4,80,000)(I - 0.3)}{40,000}$$

2 (EBIT – 2,40,000) = 3(EBIT – 4,80,000)

2 EBIT – 4,80,000 = 3 EBIT – 14,40,000

2 EBIT – 3 EBIT = -14,40,000 + 4,80,000

EBIT = 9,60,000

(ii) Earnings per share (EPS) under Two Situations for both the Plans

Situation A (EBIT is assumed to be ₹ 9,50,000)		
Particulars	**Plan I**	**Plan II**
EBIT	9,50,000	9,50,000
Less: Interest @ 12%	2,40,000	4,80,000
EBT	7,10,000	4,70,000
Less: Taxes @ 30%	2,13,000	1,41,000
EAT	4,97,000	3,29,000
No. of Equity Shares	60,000	40,000
EPS	8.28	8.23

Comment: In Situation A, when expected EBIT is less than the EBIT at indifference point then, Plan I is more viable as it has higher EPS. The advantage of EPS would be available from the use of equity capital and not debt capital.

Situation B (EBIT is assumed to be ₹ 9,70,000)		
Particulars	**Plan I**	**Plan II**
EBIT	9,70,000	9,70,000
Less: Interest @ 12%	2,40,000	4,80,000
EBT	7,30,000	4,90,000
Less: Taxes @ 30%	2,19,000	1,47,000
EAT	5,11,000	3,43,000
No. of Equity Shares	60,000	40,000
EPS	8.52	8.58

Comment: In Situation B, when expected EBIT is more than the EBIT at indifference point then, Plan II is more viable as it has higher EPS. The use of fixed-cost source of funds would be beneficial from the EPS viewpoint. In this case, financial leverage would be favourable.

(Note: *The problem can also be worked out assuming any other figure of EBIT which is more than 9,60,000 and any other figure less than 9,60,000. Alternatively, the answer may also be based on the factors/ principles governing the capital structure like the cost, risk, control, etc.*).

UNIT – II : CAPITAL STRUCTURE DECISIONS

Question 1

Discuss the relationship between the financial leverage and firms required rate of return to equity shareholders as per Modigliani and Miller Proposition II. ***(3 Marks, May 2003; May 2004)***

Answer

Relationship between the financial leverage and firm's required rate of return to equity shareholders with corporate taxes is given by the following relation:

$$r_E = r_0 + \frac{D}{E}(1 - T_C)(r_O - r_B)$$

Where,

r_E = required rate of return to equity shareholders

r_0 = required rate of return for an all equity firm

D = Debt amount in capital structure

E = Equity amount in capital structure

T_C = Corporate tax rate

r_B = required rate of return to lenders

Question 2

Discuss the major considerations in capital structure planning. ***(6 Marks, May, 2006)***

Answer

Major considerations in capital structure planning

There are three major considerations, i.e. risk, cost of capital and control, which help the finance manager in determining the proportion in which he can raise funds from various sources.

Although, three factors, i.e., risk, cost and control determine the capital structure of a particular business undertaking at a given point of time.

Risk: The finance manager attempts to design the capital structure in such a manner, so that risk and cost are the least and the control of the existing management is diluted to the least extent. However, there are also subsidiary factors also like – marketability of the issue, manoeuvrability and flexibility of the capital structure, timing of raising the funds. Risk is of two kinds, i.e., Financial risk and Business risk. Here we are concerned primarily with the financial risk. Financial risk also is of two types:

- Risk of cash insolvency

- Risk of variation in the expected earnings available to equity share-holders

Cost of Capital: Cost is an important consideration in capital structure decisions. It is obvious that a business should be at least capable of earning enough revenue to meet its cost of capital and finance its growth. Hence, along with a risk as a factor, the finance manager has to consider the cost aspect carefully while determining the capital structure.

Control: Along with cost and risk factors, the control aspect is also an important consideration in planning the capital structure. When a company issues further equity shares, it automatically dilutes the controlling interest of the present owners. Similarly, preference shareholders can have voting rights and thereby affect the composition of the Board of Directors, in case dividends on such shares are not paid for two consecutive years. Financial institutions normally stipulate that they shall have one or more directors on the Boards. Hence, when the management agrees to raise loans from financial institutions, by implication it agrees to forego a part of its control over the company. It is obvious, therefore, that decisions concerning capital structure are taken after keeping the control factor in mind.

Question 3

Explain in brief the assumptions of Modigliani-Miller theory. ***(2 Marks, May, 2007)***

Answer

Assumptions of Modigliani – Miller Theory

(a) Capital markets are perfect. All information is freely available and there is no transaction cost.

(b) All investors are rational.

(c) No existence of corporate taxes.

(d) Firms can be grouped into "Equivalent risk classes" on the basis of their business risk.

Question 4

What is optimum capital structure? Explain. ***(2 Marks, November, 2007 & 2008)***

Answer

Optimum Capital Structure: Optimum capital structure deals with the issue of right mix of debt and equity in the long-term capital structure of a firm. According to this, if a company takes on debt, the value of the firm increases upto a certain point. Beyond that value of the firm will start to decrease. If the company is unable to pay the debt within the specified period then it will affect the goodwill of the company in the market. Therefore, company should select its appropriate capital structure with due consideration of all factors.

Question 5

Explain the assumptions of Net Operating Income approach (NOI) theory of capital structure.

(3 Marks, November, 2007)

Answer

Assumptions of Net Operating Income (NOI) Theory of Capital Structure

According to NOI approach, there is no relationship between the cost of capital and value of the firm i.e. the value of the firm is independent of the capital structure of the firm.

Assumptions

(a) The corporate income taxes do not exist.

(b) The market capitalizes the value of the firm as whole. Thus the split between debt and equity is not important.

(c) The increase in proportion of debt in capital structure leads to change in risk perception of the shareholders.

(d) The overall cost of capital (K_o) remains constant for all degrees of debt equity mix.

Question 6

Explain the principles of "Trading on equity". ***(2 Marks, May, 2008)***

Answer

The term trading on equity means debts are contracted and loans are raised mainly on the basis of equity capital. Those who provide debt have a limited share in the firm's earning and hence want to be protected in terms of earnings and values represented by equity capital. Since fixed charges do not vary with firms earnings before interest and tax, a magnified effect is produced on earning per share. Whether the leverage is favourable, in the sense, increase in earnings per share more proportionately to the increased earnings before interest and tax, depends on the profitability of investment proposal. If the rate of returns on investment exceeds their explicit cost, financial leverage is said to be positive.

Question 7

Discuss the concept of Debt-Equity or EBIT-EPS indifference point, while determining the capital structure of a company. ***(2 Marks, June, 2009)***

Answer

Concept of Debt-Equity or EBIT-EPS Indifference Point while Determining the Capital Structure of a Company

The determination of optimum level of debt in the capital structure of a company is a formidable task and is a major policy decision. It ensures that the firm is able to service its

debt as well as contain its interest cost. Determination of optimum level of debt involves equalizing between return and risk.

EBIT – EPS analysis is a widely used tool to determine level of debt in a firm. Through this analysis, a comparison can be drawn for various methods of financing by obtaining indifference point. It is a point to the EBIT level at which EPS remains unchanged irrespective of debt-equity mix. The indifference point for the capital mix (equity share capital and debt) can be determined as follows:

$$\frac{(EBIT - I_1)(1-T)}{E_1} = \frac{(EBIT - I_2)(1-T)}{E_2}$$

Question 8

What do you understand by Capital structure? How does it differ from Financial structure?

(2 Marks, May, 2010)

Answer

Meaning of Capital Structure and its Differentiation from Financial Structure

Capital Structure refers to the combination of debt and equity which a company uses to finance its long-term operations. It is the permanent financing of the company representing long-term sources of capital i.e. owner's equity and long-term debts but excludes current liabilities. On the other hand, Financial Structure is the entire left-hand side of the balance sheet which represents all the long-term and short-term sources of capital. Thus, capital structure is only a part of financial structure.

Question 9

Discuss financial break-even and EBIT-EPS indifference analysis. ***(4 Marks, November, 2010)***

Answer

Financial Break-even and EBIT-EPS Indifference Analysis

Financial break-even point is the minimum level of EBIT needed to satisfy all the fixed financial charges i.e. interest and preference dividend. It denotes the level of EBIT for which firm's EPS equals zero. If the EBIT is less than the financial breakeven point, then the EPS will be negative but if the expected level of EBIT is more than the breakeven point, then more fixed costs financing instruments can be taken in the capital structure, otherwise, equity would be preferred.

EBIT-EPS analysis is a vital tool for designing the optimal capital structure of a firm. The objective of this analysis is to find the EBIT level that will equate EPS regardless of the financing plan chosen.

$$\frac{(EBIT - I_1)(1-T)}{E_1} = \frac{(EBIT - I_2)(1-T)}{E_2}$$

Where,

EBIT = Indifference point

E_1 = Number of equity shares in Alternative 1

E_2 = Number of equity shares in Alternative 2

I_1 = Interest charges in Alternative 1

1_2 = Interest charges in Alternative 2

T = Tax-rate

Alternative 1= All equity finance

Alternative 2= Debt-equity finance.

Question 10

What is Net Operating Income (NOI) theory of capital structure? Explain the assumptions of Net Operating Income approach theory of capital structure. ***(4 Marks, May, 2012)***

Answer

Net Operating Income (NOI) Theory of Capital Structure

According to NOI approach, there is no relationship between the cost of capital and value of the firm i.e. the value of the firm is independent of the capital structure of the firm.

Assumptions

(a) The corporate income taxes do not exist.

(b) The market capitalizes the value of the firm as whole. Thus the split between debt and equity is not important.

(c) The increase in proportion of debt in capital structure leads to change in risk perception of the shareholders.

(d) The overall cost of capital (K_o) remains constant for all degrees of debt equity mix.

Question 11

List the fundamental principles governing capital structure. ***(4 Marks, November, 2012)***

Answer

Fundamental Principles Governing Capital Structure

The fundamental principles are:

(i) *Cost Principle:* According to this principle, an ideal pattern or capital structure is one that minimises cost of capital structure and maximises earnings per share (EPS).

(ii) *Risk Principle:* According to this principle, reliance is placed more on common equity for financing capital requirements than excessive use of debt. Use of more and more debt means higher commitment in form of interest payout. This would lead to erosion of shareholders value in unfavourable business situation.

(iii) *Control Principle:* While designing a capital structure, the finance manager may also keep in mind that existing management control and ownership remains undisturbed.

(iv) *Flexibility Principle:* It means that the management chooses such a combination of sources of financing which it finds easier to adjust according to changes in need of funds in future too.

(v) *Other Considerations:* Besides above principles, other factors such as nature of industry, timing of issue and competition in the industry should also be considered.

(**Note:** *Students may answer any four of the above principles.*)

Question 12

What do you mean by capital structure? State its significance in financing decision.

(4 Marks, November, 2013)

Answer

Concept of Capital Structure and its Significance in Financing Decision

Capital structure refers to the mix of a firm's capitalisation i.e. mix of long-term sources of funds such as debentures, preference share capital, equity share capital and retained earnings for meeting its total capital requirement.

Significance in Financing Decision

The capital structure decisions are very important in financial management as they influence debt – equity mix which ultimately affects shareholders return and risk. These decisions help in deciding the forms of financing (which sources to be tapped), their actual requirements (amount to be funded) and their relative proportions (mix) in total capitalisation. Therefore, such a pattern of capital structure must be chosen which minimises cost of capital and maximises the owners' return.

Question 13

What is Over-capitalisation? State its causes and consequences. ***(4 Marks, November, 2013)***

Answer

Overcapitalization and its Causes and Consequences

It is a situation where a firm has more capital than it needs or in other words assets are worth less than its issued share capital, and earnings are insufficient to pay dividend and interest.

Causes of Over Capitalization

Over-capitalisation arises due to following reasons:

(i) Raising more money through issue of shares or debentures than company can employ profitably.

(ii) Borrowing huge amount at higher rate than rate at which company can earn.

(iii) Excessive payment for the acquisition of fictitious assets such as goodwill etc.

(iv) Improper provision for depreciation, replacement of assets and distribution of dividends at a higher rate.

(v) Wrong estimation of earnings and capitalization.

(Note:** Students may answer any two of the above reasons**)

Consequences of Over-Capitalisation

Over-capitalisation results in the following consequences:

(i) Considerable reduction in the rate of dividend and interest payments.

(ii) Reduction in the market price of shares.

(iii) Resorting to "window dressing".

(iv) Some companies may opt for reorganization. However, sometimes the matter gets worse and the company may go into liquidation.

(Note:** Students may answer any two of the above consequences**)

Question 14

D Ltd. is foreseeing a growth rate of 12% per annum in the next two years. The growth rate is likely to be 10% for the third and fourth year. After that the growth rate is expected to stabilise at 8% per annum. If the last dividend was ₹ 1.50 per share and the investor's required rate of return is 16%, determine the current value of equity share of the company.

The P.V. factors at 16%

Year	*1*	*2*	*3*	*4*
P.V. Factor	*.862*	*.743*	*.641*	*.552*

(6 Marks, May, 2005)

Answer

The current value of equity share of D Ltd. is sum of the following:

(i) Presently value (PV) of dividends payments during 1-4 years; and

(ii) Present value (PV) of expected market price at the end of the fourth year based on constant growth rate of 8 per cent.

PV of dividends – year 1-4

Year	*Dividend*	*PV factor at 16%*	*Total PV (in ₹)*
1	1.50(1 + 0.12)=1.68	0.862	1.45
2	1.68 (1+0.12)= 1.88	0.743	1.40
3	1.88 (1 + 0.10)=2.07	0.641	1.33
4	2.07 (1 + 0.10)= 2.28	0.552	1.26
	Total		5.44

Present value of the market price (P_4): end of the fourth year –

$P_4 = D_5 / (Ke-g)$ = ₹ 2.28 (1.08) / (16% – 8%) = ₹ 30.78

PV of ₹ 30.78 = ₹ 30.78×0.552 = ₹ 16.99

Hence,

Value of equity shares ₹ 5.44 + ₹ 16.99 = ₹ 22.43

Question 15

A Company needs ₹ 31,25,000 for the construction of new plant. The following three plans are feasible:

I The Company may issue 3,12,500 equity shares at ₹ 10 per share.

II The Company may issue 1,56,250 ordinary equity shares at ₹ 10 per share and 15,625 debentures of Rs,. 100 denomination bearing a 8% rate of interest.

III The Company may issue 1,56,250 equity shares at ₹ 10 per share and 15,625 preference shares at ₹ 100 epr share bearing a 8% rate of dividend.

(i) if the Company's earnings before interest and taxes are ₹ 62,500, ₹ 1,25,000, ₹ 2,50,000, ₹ 3,75,000 and ₹ 6,25,000, what are the earnings per share under each of three financial plans ? Assume a Corporate Income tax rate of 40%.

(ii) Which alternative would you recommend and why?

(iii) Determine the EBIT-EPS indifference points by formulae between Financing Plan I and Plan II and Plan I and Plan III. ***(6+1+3=10 Marks, November, 2005)***

Answer

(i) Computation of EPS under three-financial plans.

Plan I: Equity Financing

EBIT	₹ 62,500	₹ 1,25,000	₹ 2,50,000	₹ 3,75,000	₹ 6,25,000
Interest	0	0	0	0	0
EBT	₹ 62,500	₹ 1,25,000	₹ 2,50,000	₹ 3,75,000	₹ 6,25,000

Less: Taxes 40%	25,000	50,000	1,00,000	1,50,000	2,50,000
PAT	₹ 37,500	₹ 75,000	₹ 1,50,000	₹ 2,25,000	₹ 3,75,000
No. of equity shares	3,12,500	3,12,500	3,12,500	3,12,500	3,12,500
EPS	₹ 0.12	0.24	0.48	0.72	1.20

Plan II: Debt – Equity Mix

EBIT	₹ 62,500	₹ 1,25,000	₹ 2,50,000	₹ 3,75,000	₹ 6,25,000
Less: Interest	1,25,000	1,25,000	1,25,000	1,25,000	1,25,000
EBT	(62,500)	0	1,25,000	2,50,000	5,00,000
Less: Taxes 40%	25,000*	0	50,000	1,00,000	2,00,000
PAT	(37,500)	0	75,000	1,50,000	3,00,000
No. of equity shares	1,56,250	1,56,250	1,56,250	1,56,250	1,56,250
EPS	(₹ 0.24)	0	0.48	0.96	1.92

* The Company will be able to set off losses against other profits. If the Company has no profits from operations, losses will be carried forward.

Plan III : Preference Shares – Equity Mix

EBIT	₹ 62,500	₹ 1,25,000	₹ 2,50,000	₹ 3,75,000	₹ 6,25,000
Less: Interest	0	0	0	0	0
EBT	62,500	1,25,000	2,50,000	3,75,000	6,25,000
Less: Taxes (40%)	25,000	50,000	1,00,000	1,50,000	2,50,000
PAT	37,500	75,000	1,50,000	2,25,000	3,75,000
Less: Pref. dividend	1,25,000	1,25,000	1,25,000	1,25,000	1,25,000
PAT for ordinary shareholders	(87,500)	(50,000)	25,000	1,00,000	2,50,000
No. of Equity shares	1,56,250	1,56,250	1,56,250	1,56,250	1,56,250
EPS	(0.56)	(0.32)	0.16	0.64	1.60

(ii) The choice of the financing plan will depend on the state of economic conditions. If the company's sales are increasing, the EPS will be maximum under Plan II: Debt – Equity Mix. Under favourable economic conditions, debt financing gives more benefit due to tax shield availability than equity or preference financing.

(iii) EBIT – EPS Indifference Point : Plan I and Plan II

$$\frac{(EBIT^*) \times (1 - T_C)}{N_1} = \frac{(EBIT^* - Interest) \times (1 - T_C)}{N_2}$$

$$\frac{EBIT^{*}(1-0.40)}{3,12,500}=\frac{(EBIT^{*}-1,25,000)\times(1-0.40)}{1,56,250}$$

$$EBIT^{*}=\frac{3,12,500}{3,12,500-1,56,250}\times 1,25,000$$

= ₹ 2,50,000

EBIT – EPS Indifference Point: Plan I and Plan III

$$\frac{EBIT^{*}(1-T_c)}{N_1}=\frac{EBIT^{*}(1-T_c)-\text{Pref. Div.}}{N_2}$$

$$EBIT^{*}=\frac{N_1}{N_1-N_2}\times\frac{\text{Pref. Div.}}{1\text{-}T_C}$$

$$=\frac{3,12,500}{3,12,500-1,56,250}\times\frac{1,25,000}{1-0.4}$$

= ₹ 4,16,666.67

Question 16

There are two firms P and Q which are identical except P does not use any debt in its capital structure while Q has ₹ 8,00,000, 9% debentures in its capital structure. Both the firms have earnings before interest and tax of ₹ 2,60,000 p.a. and the capitalization rate is 10%. Assuming the corporate tax of 30%, calculate the value of these firms according to MM Hypothesis. ***(3 Marks, November, 2009)***

Answer

Calculation of Value of Firms P and Q according to MM Hypothesis

Market Value of Firm P (Unlevered)

$$V_u=\frac{EBIT(1-t)}{K_e}=\frac{2,60,000\ (1-0.30)}{10\%}=\frac{₹\ 1,82,000}{10\ \%}=₹\ 18,20,000$$

Market Value of Firm Q (Levered)

$V_E = V_u + DT$

= ₹ 18,20,000 + (8,00,000 × 0.30)

= ₹ 18,20,000 + 2,40,000 = ₹ 20,60,000

Question 17

The management of Z Company Ltd. wants to raise its funds from market to meet out the financial demands of its long-term projects. The company has various combinations of proposals to raise its funds. You are given the following proposals of the company:

(i)

Proposals	*% of Equity*	*% of Debts*	*% of Preference shares*
P	*100*	*-*	*-*
Q	*50*	*50*	*-*
R	*50*	*-*	*50*

(ii) Cost of debt – 10%

Cost of preference shares – 10%

(iii) Tax rate – 50%

(iv) Equity shares of the face value of ₹ 10 each will be issued at a premium of ₹ 10 per share.

(v) Total investment to be raised ₹ 40,00,000.

(vi) Expected earnings before interest and tax ₹ 18,00,000.

From the above proposals the management wants to take advice from you for appropriate plan after computing the following:

- *Earnings per share*
- *Financial break-even-point*
- *Compute the EBIT range among the plans for indifference. Also indicate if any of the plans dominate.* ***(12 Marks, May, 2011)***

Answer

(i) Computation of Earnings per Share (EPS)

Plans	**P**	**Q**	**R**
	₹	₹	₹
Earnings before interest & tax (EBIT)	18,00,000	18,00,000	18,00,000
Less: Interest charges	-	2,00,000	-
Earnings before tax (EBT)	18,00,000	16,00,000	18,00,000
Less : Tax @ 50%	9,00,000	8,00,000	9,00,000

Earnings after tax (EAT)	9,00,000	8,00,000	9,00,000
Less : Preference share dividend	-	-	2,00,000
Earnings available for equity shareholders	9,00,000	8,00,000	7,00,000
No. of shares	2,00,000	1,00,000	1,00,000
E.P.S (₹)	**4.5**	**8**	**7**

(ii) Computation of Financial Break-even Points

Proposal 'P' = 0

Proposal 'Q' = ₹ 2,00,000 (Interest charges)

Proposal 'R' = Earnings required for payment of preference share dividend i.e. ₹ 2,00,000 ÷ 0.5 (Tax Rate) = ₹ 4,00,000

(iii) Computation of Indifference Point between the Proposals

The indifference point

$$\frac{(EBIT - 1_1)(1-T)}{E_1} = \frac{(EBIT - 1_2)(1-T)}{E_2}$$

Where,

EBIT = Earnings before interest and tax

1_1 = Fixed Charges (Interest) under Proposal 'P'

1_2 = Fixed charges (Interest) under Proposal 'Q'

T = Tax Rate

E_1 = Number of Equity shares in Proposal P

E_2 = Number of Equity shares in Proposal Q

Combination of Proposals

(a) Indifference point where EBIT of proposal "P" and proposal 'Q' is equal

$$\frac{(EBIT - 0)(1-.5)}{2,00,000} = \frac{(EBIT - 2,00,000)(1-0.5)}{1,00,000}$$

.5 EBIT (1,00,000) = (.5 EBIT -1,00,000) 2,00,000

.5 EBIT = EBIT – 2,00,000

EBIT = ₹ 4,00,000

(b) Indifference point where EBIT of proposal 'P' and Proposal 'R' is equal:

$$\frac{(EBIT-1)(1-T)}{E_1} = \frac{EBIT-12)(1-T)}{E_2} - \text{Preference share dividend}$$

$$\frac{(EBIT-0)(1-.5)}{2,00,000} = \frac{(EBIT-0)(1-.5)-2,00,000}{1,00,000}$$

$$\frac{.5EBIT}{2,00,000} = \frac{.5EBIT-2,00,000}{1,00,000}$$

.25 EBIT = 0.5 EBIT -2,00,000

EBIT = 2,00,000 ÷ 0.25 = ₹ 8,00,000

(c) Indifference point where EBIT of proposal 'Q' and proposal 'R' are equal

$$\frac{(EBIT-2,00,000)(1-0.5)}{1,00,000} = \frac{(EBIT-0)(1-0.5)-2,00,000}{1,00,000}$$

.5 EBIT -1,00,000 = .5 EBIT – 2,00,000

There is no indifference point between proposal 'Q' and proposal 'R'

Analysis: It can be seen that Financial proposal 'Q' dominates proposal 'R', since the financial break-even-point of the former is only ₹ 2,00,000 but in case of latter, it is ₹ 4,00,000.

Question 18

X Ltd. is considering the following two alternative financing plans:

	Plan - I	*Plan - II*
	₹	*₹*
Equity shares of ₹10 each	*4,00,000*	*4,00,000*
12% Debentures	*2,00,000*	*-*
Preference Shares of ₹100 each	*-*	*2,00,000*
₹	*6,00,000*	*6,00,000*

The indifference point between the plans is ₹ 2,40,000. Corporate tax rate is 30%. Calculate the rate of dividend on preference shares. ***(5 Marks, November, 2013)***

Answer

Computation of Rate of Preference Dividend

EBIT = 2,40,000

Tax rate = 30%

$$\frac{(EBIT - Interest)\ (1 - Tax\ rate)}{No.\ of\ Equity\ Shares\ (N_1)} = \frac{EBIT\ (1 - Tax\ rate) - Preference\ Dividend}{No.\ of\ Equity\ Shares\ (N_2)}$$

$$\frac{(2,40,000 - 24,000)\ (1 - 0.30)}{40,000} = \frac{2,40,000\ (1 - 0.30) - Preference\ Dividend}{40,000}$$

$$\frac{2,16,000\ (1 - 0.30)}{40,000} = \frac{1,68,000 - Preference\ Dividend}{40,000}$$

1,51,200 = 1,68,000 – Preference Dividend

Preference Dividend = 1,68,000 – 1,51,200

Preference Dividend = 16,800

$$\text{Rate of Dividend} = \frac{\text{Preference Dividend}}{\text{Preference Share Capital}} \times 100 = \frac{16,800}{2,00,000} \times 100 = 8.4\%$$

Question 19

'A' Ltd. and 'B' Ltd. are identical in every respect except capital structure. 'A' Ltd. does not employ debts in its capital structure whereas 'B' Ltd. employs 12% Debentures amounting to ₹ 10 lakhs. Assuming that :

(i) All assumptions of M-M model are met;

(ii) Income-tax rate is 30%;

(iii) EBIT is ₹ 2,50,000 and

(iv) The Equity capitalization rate of 'A' Ltd. is 20%.

Calculate the value of both the companies and also find out the Weighted Average Cost of Capital for both the companies. ***(5 Marks, November, 2014)***

Answer

(i) Calculation of Value of Firms 'A Ltd.' and 'B Ltd' according to MM Hypothesis

Market Value of 'A Ltd' (Unlevered)

$$V_u = \frac{EBIT\ (1 - t)}{K_e}$$

$$= \frac{2,50,000\ (1 - 0.30)}{20\%}$$

$$= \frac{1,75,000}{20\%} = ₹\ 8,75,000$$

Market Value of 'B Ltd.' (Levered)

$V_E = V_u + DT$

= 8,75,000 + (10,00,000 x 0.30)

= 8,75,000 + 3,00,000 = ₹ 11,75,000

(ii) Computation of Weighted Average Cost of Capital (WACC)

WACC of 'A Ltd.' = 20% ($K_e = K_o$)

WACC of 'B Ltd.'

	B Ltd.
EBIT	2,50,000
Interest to Debt holders	(1,20,000)
EBT	1,30,000
Taxes @ 30%	(39,000)
Income available to Equity Shareholders	91,000
Total Value of Firm	11,75,000
Less: Market Value of Debt	(10,00,000)
Market Value of Equity	1,75,000
K_e = 91,000 / 1,75,000	0.52

For Computation of WACC B. Ltd

Component of Costs	Amount	Weight	Cost of Capital	WACC
Equity	1,75,000	0.149	0.52	0.0775
Debt	10,00,000	0.851	0.084*	0.0715
	11,75,000		WACC	0.1490

K_d= 12% (1- 0.3) = 12% x 0.7 = 8.4%

WACC = 14.90%

UNIT – III : BUSINESS RISK AND FINANCIAL RISK

Question 1

Discuss the impact of financial leverage on shareholders wealth by using return-on-assets (ROA) and return-on-equity (ROE) analytic framework. ***(3 Marks, May, 2003; May 2004)***

Answer

The impact of financial leverage on ROE is positive, if cost of debt (after-tax) is less than ROA. But it is a double-edged sword.

$$ROA = \frac{NOPAT}{Sales} \times \frac{Sales}{Capital\ employed}$$

$$ROE = ROA + \frac{D}{E}\ (ROA - K_d)$$

Where

NOPAT = EBIT * (1 – T_c)

Capital employed = Shareholders funds + Loan funds

D = Debt amount in capital structure

E = Equity capital amount in capital structure

K_d = Interest rate * (1 – T_c) in case of fresh loans of a company.

K_d = Yield to maturity *(1–T_c) in case of existing loans of a company.

Question 2

Differentiate between Business risk and Financial risk.

(3 Marks, 4 Marks, May 2007; November, 2009 & November, 2012)

Answer

Business Risk and Financial Risk

Business risk refers to the risk associated with the firm's operations. It is an unavoidable risk because of the environment in which the firm has to operate and the business risk is represented by the variability of earnings before interest and tax (EBIT). The variability in turn is influenced by revenues and expenses. Revenues and expenses are affected by demand of firm's products, variations in prices and proportion of fixed cost in total cost.

Whereas, Financial risk refers to the additional risk placed on firm's shareholders as a result of debt use in financing. Companies that issue more debt instruments would have higher

financial risk than companies financed mostly by equity. Financial risk can be measured by ratios such as firm's financial leverage multiplier, total debt to assets ratio etc.

Question 3

Explain the concept of leveraged lease. ***(2 Marks, November 2007)***

Answer

Concept of Leveraged Lease: Leveraged lease involves lessor, lessee and financier. In leveraged lease, the lessor makes a substantial borrowing, even upto 80 per cent of the assets purchase price. He provides remaining amount – about 20 per cent or so – as equity to become the owner. The lessor claims all tax benefits related to the ownership of the assets. Lenders, generally large financial institutions, provide loans on a non-recourse basis to the lessor. Their debt is served exclusively out of the lease proceeds. To secure the loan provided by the lenders, the lessor also agrees to give them a mortgage on the asset. Leveraged lease are called so because the high non-recourse debt creates a high degree of leverage.

Question 4

"Operating risk is associated with cost structure, whereas financial risk is associated with capital structure of a business concern." Critically examine this statement.

(4 Marks, May, 2013)

Answer

"Operating risk is associated with cost structure whereas financial risk is associated with capital structure of a business concern".

Operating risk refers to the risk associated with the firm's operations. It is represented by the variability of earnings before interest and tax (EBIT). The variability in turn is influenced by revenues and expenses, which are affected by demand of firm's products, variations in prices and proportion of fixed cost in total cost. If there is no fixed cost, there would be no operating risk. Whereas financial risk refers to the additional risk placed on firm's shareholders as a result of debt and preference shares used in the capital structure of the concern. Companies that issue more debt instruments would have higher financial risk than companies financed mostly by equity.

Question 5

The following summarises the percentage changes in operating income, percentage changes in revenues, and betas for four pharmaceutical firms.

Firm	*Change in revenue*	*Change in operating income*	*Beta*
PQR Ltd.	*27%*	*25%*	*1.00*
RST Ltd.	*25%*	*32%*	*1.15*
TUV Ltd.	*23%*	*36%*	*1.30*
WXY Ltd.	*21%*	*40%*	*1.40*

Required:

(i) Calculate the degree of operating leverage for each of these firms. Comment also.

(ii) Use the operating leverage to explain why these firms have different beta.

(6 Marks, November, 2004)

Answer

(i) Degree of operating leverage $= \frac{\%\ \text{Change in Operating income}}{\%\ \text{Change in Revenues}}$

PQR Ltd .	=	25% / 27%	=	0.9259
RST Ltd.	=	0.32 / 0.25	=	1.28
TUV Ltd.	=	0.36 / 0.23	=	1.5652
WXY Ltd.	=	0.40 / 0.21	=	1.9048

It is level specific.

(ii) High operating leverage leads to high beta. The sources of risk are the cyclic nature revenues, operating risk and financial risk.

Question 6

A Company had the following Balance Sheet as on March 31, 2006:

Liabilities and Equity	*₹ (in crores)*	*Assets*	*₹ (in crores)*
Equity Share Capital (one crore shares of ₹ 10 each)	*10*	*Fixed Assets (Net)*	*25*
		Current Assets	*15*
Reserves and Surplus	*2*		
15% Debentures	*20*		
Current Liabilities	*8*		
	40		*40*

The additional information given is as under:

Fixed Costs per annum (excluding interest)	*₹ 8 crores*
Variable operating costs ratio	*65%*
Total Assets turnover ratio	*2.5*
Income-tax rate	*40%*

Required:

Calculate the following and comment:

(i) Earnings per share

(ii) Operating Leverage

(iii) Financial Leverage

(iv) Combined Leverage. ***(8 Marks, November, 2006)***

Answer

Total Assets = ₹ 40 crores

Total Asset Turnover Ratio = 2.5

Hence, Total Sales = 40 × 2.5 = ₹ 100 crores

Computation of Profits after Tax (PAT)

	(₹ in crores)
Sales	100
Less: Variable operating cost @ 65%	65
Contribution	35
Less: Fixed cost (other than Interest)	8
EBIT	27
Less: Interest on debentures (15% × 20)	3
PBT	24
Less: Tax 40%	9.6
PAT	14.4

(i) Earnings per share

$$\therefore \text{EPS} = \frac{₹\,14.4 \text{ crores}}{1 \text{ crore equity shares}} = ₹\ 14.40$$

(ii) Operating Leverage

$$\text{Operating leverage} = \frac{\text{Contribution}}{\text{EBIT}} = \frac{35}{27} = 1.296$$

It indicates the choice of technology and fixed cost in cost structure. It is level specific. When firm operates beyond operating break-even level, then operating leverage is low. It indicates sensitivity of earnings before interest and tax (EBIT) to change in sales at a particular level.

(iii) Financial Leverage

$$\text{Financial Leverage} = \frac{\text{EBIT}}{\text{PBT}} = \frac{27}{24} = 1.125$$

The financial leverage is very comfortable since the debt service obligation is small vis-à-vis EBIT.

(iv) Combined Leverage

$$\text{Combined Leverage} = \frac{\text{Contribution}}{\text{EBIT}} \times \frac{\text{EBIT}}{\text{PBT}}$$

$$= 1.296 \times 1.125$$

$$= 1.458$$

The combined leverage studies the choice of fixed cost in cost structure and choice of debt in capital structure. It studies how sensitive the change in EPS is vis-à-vis change in sales.

The leverages – operating, financial and combined are measures of risk.

Question 7

The following details of RST Limited for the year ended 31March, 2006 are given below:

Operating leverage	*1.4*
Combined leverage	*2.8*
Fixed Cost (Excluding interest)	*₹ 2.04 lakhs*
Sales	*₹ 30.00 lakhs*
12% Debentures of ₹ 100 each	*₹ 21.25 lakhs*
Equity Share Capital of ₹ 10 each	*₹ 17.00 lakhs*
Income tax rate	*30 per cent*

Required:

(i) Calculate Financial leverage

(ii) Calculate P/V ratio and Earning per Share (EPS)

(iii) If the company belongs to an industry, whose assets turnover is 1.5, does it have a high or low assets leverage?

(iv) At what level of sales the Earning before Tax (EBT) of the company will be equal to zero?

(8 Marks, May, 2007)

Answer

(i) Financial leverage

Combined Leverage = Operating Leverage (OL) × Financial Leverage (FL)

$2.8 = 1.4 \times FL$

$FL = 2$

Financial Leverage = 2

(ii) P/V Ratio and EPS

$$P/V \text{ ratio} = \frac{C}{S} \times 100$$

$$\text{Operating leverage} = \frac{C}{C - F} \times 100$$

$$1.4 = \frac{C}{C - 2,04,000}$$

$1.4 (C - 2,04,000) = C$

$1.4 C - 2,85,600 = C$

$$C = \frac{2,85,600}{0.4}$$

$C = 7,14,000$

$$P/V = \frac{7,14,000}{30,00,000} \times 100 = 23.8\%$$

Therefore, P/V Ratio = 23.8%

$$EPS = \frac{\text{Profit after tax}}{\text{No. of equity shares}}$$

EBT = Sales – V – FC – Interest

= 30,00,000 – 22,86,000 – 2,04,000 – 2,55,000 = 2,55,000

PAT = EBT – Tax

= 2,55,000 – 76,500 = 1,78,500

$$EPS = \frac{1,78,500}{1,70,000} = 1.05$$

(iii) Assets turnover

$$\text{Assets turnover} = \frac{\text{Sales}}{\text{Total Assets}} = \frac{30,00,000}{38,25,000} = 0.784$$

0.784 < 1.5 means lower than industry turnover.

(iv) EBT zero means 100% reduction in EBT. Since combined leverage is 2.8, sales have to be dropped by 100/2.8 = 35.71%. Hence new sales will be

$$30,00,000 \times (100 - 35.71) = 19,28,700.$$

Therefore, at 19,28,700 level of sales, the Earnings before Tax of the company will be equal to zero.

Question 8

A firm has Sales of ₹ 40 lakhs; Variable cost of ₹ 25 lakhs; Fixed cost of ₹ 6 lakhs; 10% debt of ₹ 30 lakhs; and Equity Capital of ₹ 45 lakhs.

Required Calculate operating and financial leverage. ***(2 Marks, November, 2007)***

Answer

Calculation of Operating and Financial Leverage

	₹
Sales	40,00,000
Less: Variable cost	25,00,000
Contribution (C)	15,00,000
Less: Fixed cost	6,00,000
EBIT	9,00,000
Less: Interest	3,00,000
EBT	6,00,000

$$\text{Operating leverage} = \frac{C}{EBIT} = \frac{15,00,000}{9,00,000} = 1.67$$

$$\text{Financial leverage} = \frac{EBIT}{EBT} = \frac{9,00,000}{6,00,000} = 1.50$$

Question 9

The following data relate to RT Ltd:

	₹
Earnings before interest and tax (EBIT)	*10,00,000*
Fixed cost	*20,00,000*
Earnings Before Tax (EBT)	*8,00,000*

Required: Calculate combined leverage. ***(2 Marks, May, 2008)***

Answer

Contribution:

C = S – V and

EBIT = C – F

10,00,000 = C – 20,00,000

∴ C = 30,00,000

Operating leverage = C / EBIT = 30,00,000/10,00,000 = 3 times

Financial leverage = EBIT/EBT = 10,00,000/8,00,000 = 1.25 times

Combined leverage = OL x FL = 3 x 1.25 = 3.75 times

Question 10

A company operates at a production level of 1,000 units. The contribution is ₹ 60 per unit, operating leverage is 6, and combined leverage is 24. If tax rate is 30%, what would be its earnings after tax? ***(3 Marks, November, 2008)***

Answer

Computation of Earnings after tax

Contribution = ₹ 60 × 1,000 = ₹ 60,000

Operating Leverage (OL) × Financial Leverage (FL) = Combined Leverage (CL)

6 × Financial Leverage = 24

∴ Financial Leverage = 4

$$\text{Operating Leverage} = \frac{\text{Contribution}}{\text{EBIT}} = \frac{60,000}{\text{EBIT}} = 6$$

$$\therefore \text{EBIT} = \frac{60,000}{6} = 10,000$$

$$\text{FL} = \frac{\text{EBIT}}{\text{EBT}} = 4$$

$$\therefore \text{EBT} = \frac{\text{EBIT}}{4} = \frac{10,000}{4} = 2,500$$

Since tax rate = 30%

Earnings after Tax (EAT) = EBT (1 − 0.30)

= 2,500 (0.70)

∴ Earning After Tax (EAT) = 1,750

Question 11

From the following financial data of Company A and Company B: Prepare their Income Statements.

	Company A	*Company B*
	₹	*₹*
Variable Cost	*56,000*	*60% of sales*
Fixed Cost	*20,000*	*-*
Interest Expenses	*12,000*	*9,000*
Financial Leverage	*5 : 1*	*-*
Operating Leverage	*-*	*4 : 1*
Income Tax Rate	*30%*	*30%*
Sales	*-*	*1,05,000*

(8 Marks, November, 2009)

Answer

Income Statements of Company A and Company B

	Company A	*Company B*
	₹	*₹*
Sales	91,000	1,05,000
Less: Variable cost	56,000	63,000
Contribution	35,000	42,000
Less: Fixed Cost	20,000	31,500
Earnings before interest and tax (EBIT)	15,000	10,500
Less: Interest	12,000	9,000
Earnings before tax (EBT)	3,000	1,500
Less: Tax @ 30%	900	450
Earnings after tax (EAT)	2,100	1,050

Working Notes:

Company A

(i) Financial Leverage $= \frac{\text{EBIT}}{\text{EBIT} - \text{Interest}}$

$5 = \frac{\text{EBIT}}{\text{EBIT} - 12{,}000}$

5 (EBIT – 12,000) = EBIT

4 EBIT = 60,000

EBIT = ₹15,000

(ii) Contribution = EBIT + Fixed Cost

= 15,000 + 20,000 = ₹ 35,000

(iii) Sales = Contribution + Variable cost

= 35,000 + 56,000 = ₹ 91,000

Company B

(i) Contribution = 40% of Sales (as Variable Cost is 60% of Sales)

= 40% of 1,05,000 = ₹ 42,000

(ii) Financial Leverage $= \frac{\text{Contribution}}{\text{EBIT}}$

$4 = \frac{42,000}{\text{EBIT}}$

$\text{EBIT} = \frac{42,000}{4} = ₹10,500$

(iii) Fixed Cost = Contribution – EBIT = 42,000 – 10,500 = ₹ 31,500

Question 12

Calculate the degree of operating leverage, degree of financial leverage and the degree of combined leverage for the following firms and interpret the results:

	P	*Q*	*R*
Output (units)	*2,50,000*	*1,25,000*	*7,50,000*
Fixed Cost (₹)	*5,00,000*	*2,50,000*	*10,00,000*
Unit Variable Cost (₹)	*5*	*2*	*7.50*
Unit Selling Price (₹)	*7.50*	*7*	*10.0*
Interest Expense (₹)	*75,000*	*25,000*	*-*

(4 Marks, November, 2010)

Answer

Estimation of Degree of Operating Leverage (DOL), Degree of Financial Leverage (DFL) and Degree of Combined Leverage (DCL)

	P	*Q*	*R*
Output (in units)	2,50,000	1,25,000	7,50,000
Selling Price (per unit)	7.50	7	10
Sales Revenues	18,75,000	8,75,000	75,00,000
Less: Variable Cost	12,50,000	2,50,000	56,25,000
Contribution Margin	6,25,000	6,25,000	18,75,000
Less: Fixed Cost	5,00,000	2,50,000	10,00,000
EBIT	1,25,000	3,75,000	8,75,000
Less: Interest Expense	75,000	25,000	-
EBT	50,000	3,50,000	8,75,000
DOL = $\frac{\text{Contribution}}{\text{EBIT}}$	5 x	1.67 x	2.14 x
DFL = $\frac{\text{EBIT}}{\text{EBT}}$	2.5 x	1.07 x	1.00 x
DCL = DOL× DFL	12.5 x	1.79 x	2.14 x
Comment	Aggressive Policy	Moderate Policy	Moderate Policy with no financial leverage

Question 13

You are given two financial plans of a company which has two financial situations. The detailed information are as under:

Installed capacity	*10,000 units*
Actual production and sales	*60% of installed capacity*
Selling price per unit	*₹ 30*
Variable cost per unit	*₹ 20*
Fixed cost:	
Situation 'A' = ₹ 20,000	
Situation 'B' = ₹ 25,000	

Capital structure of the company is as follows:

	Financial Plans	
	XY	***XM***
	₹	*₹*
Equity	*12,000*	*35,000*
Debt (cost of debt 12%)	*40,000*	*10,000*
	52,000	*45,000*

You are required to calculate operating leverage and financial leverage of both the plans.

(5 Marks, May, 2011)

Answer

Computation of Operating and Financial Leverage

Actual Production and Sales: 60% of 10,000 = 6,000 units

Contribution per unit: ₹ 30 – ₹ 20 = ₹ 10

Total Contribution: 6,000 × ₹ 10 = ₹ 60,000

Financial Plan	**XY**		**XM**	
Situation	**A**	**B**	**A**	**B**
	₹	₹	₹	₹
Contribution (C)	60,000	60,000	60,000	60,000
Less: Fixed Cost	20,000	25,000	20,000	25,000
Operating Profit or EBIT	40,000	35,000	40,000	35,000
Less: Interest	4,800	4,800	1,200	1,200
Earnings before tax (EBT)	35,200	30,200	38,800	33,800
Operating Leverage = $\frac{C}{EBIT}$	$\frac{60,000}{40,000}$	$\frac{60,000}{35,000}$	$\frac{60,000}{40,000}$	$\frac{60,000}{35,000}$
	= 1.5	= 1.71	= 1.5	= 1.71
Financial Leverage = $\frac{EBIT}{EBT}$	$\frac{40,000}{35,200}$	$\frac{35,000}{30,200}$	$\frac{40,000}{38,800}$	$\frac{35,000}{33,800}$
	= 1.14	= 1.16	= 1.03	= 1.04

Question 14

Alpha Ltd. has furnished the following Balance Sheet as on March 31, 2011:

Liabilities	*₹*	*Assets*	*₹*
Equity Share Capital (1,00,000)	*10,00,000*	*Fixed Assets*	*30,00,000*
equity shares of ₹ 10 each)		*Current Assets*	*18,00,000*
General Reserve	*2,00,000*		
15% Debentures	*28,00,000*		
Current Liabilities	*8,00,000*		
	48,00,000		***48,00,000***

Additional Information:

(1)	*Annual Fixed Cost other than Interest*	*28,00,000*
(2)	*Variable Cost Ratio*	*60%*
(3)	*Total Assets Turnover Ratio*	*2.5*
(4)	*Tax Rate*	*30%*

You are required to calculate:

(i) Earnings per Share (EPS), and

(ii) Combined Leverage. ***(8 Marks, November, 2011)***

Answer

Total Assets = ₹ 48,00,000

Total Assets Turnover Ratio = 2.5

Total Sales = 48,00,000 × 2.5 = ₹ 1,20,00,000

Computation of Profit after Tax (PAT)

Particulars	**Amount**
Sales	1,20,00,000
Less: Variable Cost (60% of Sales Contribution)	72,00,000
Contribution	48,00,000
Less: Fixed Cost (other than Interest)	28,00,000
	20,00,000
Less: Interest on Debentures (15% of 28,00,000)	4,20,000
PBT	15,80,000
Less: Tax @ 30%	4,74,000
PAT	11,06,000

(i) $EPS = \frac{PAT}{\text{No. of Equity Shares}}$

$$= \frac{11,06,000}{1,00,000} = ₹\ 11.06$$

(ii) DCL $= \frac{\text{Contribution}}{\text{EBIT}} \times \frac{\text{EBIT}}{\text{PBT}}$

Or $= \frac{\text{Contribution}}{\text{PBT}}$

$$= \frac{48,00,000}{15,80,000} = 3.04$$

Question 15

The capital structure of JCPL Ltd. is as follows:

	₹
Equity share capital of ₹ 10 each	*8,00,000*
8% Preferences share capital of ₹ 10 each	*6,25,000*
10% Debenture of ₹ 100 each	*4,00,000*
	18,25,000

Additional Information:

Profit after tax (tax rate 30%) ₹ 1,82,000

Operating expenses (including depreciation ₹ 90,000) being 1.50 times of EBIT

Equity share dividend paid 15%.

Market price per equity share ₹ 20.

Require to calculate:

(i) Operating and financial leverage.

(ii) Cover for the preference and equity share of dividends.

(iii) The earning yield and price earnings ratio.

(iv) The net fund flow. ***(8 Marks, May, 2012)***

Answer

[Assumption: All operating expenses (excluding depreciation) are variable]

Working Notes	₹
Net profit after tax	1,82,000
Tax @ 30%	78,000

EBT	2,60,000
Interest on debenture	40,000
EBIT	3,00,000
Operating Expenses 1.50 times	4,50,000
Sales	7,50,000

(i) Operating Leverage = Contribution/EBIT

= (7,50,000 - 3,60,000) / 3,00,000

= 3,90,000 / 3,00,000 = 1.30 times.

Financial Leverage = EBIT / EBT = 3,00,000 / 2,60,000 = 1.15 times

OR

$$FL = EBIT + EBT - \left(\frac{\text{Pref Dividend}}{1-t}\right)$$

$$= \frac{3,00,000}{2,60,000-(\frac{50,000}{1-0.3})} = \frac{3,00,000}{2,60,000-(7,14,29)} = \frac{3,00,000}{1,88,571} = 1.59 = 1.6$$

(ii) Preference Dividend Cover = PAT / Preference share Dividend

= (1,82,000 / 50,000) = 3.64 times

Equity dividend cover = PAT - Pref. div / Equity dividend

= (1,82,000 - 50,000) / 1,20,000= 1.10 times

(iii) Earning yield = EPS / Market price $\times$ 100 i.e.

= 1,32,000 / 80,000 = 1.65 / 20 = 8.25%

Price Earnings Ratio = Market price / EPS = 20 / 1.65 = 12.1 Times

(iv) Net Funds Flow

Net Funds flow = Net profit after tax + depreciation – Total dividend

= 1,82,000 + 90,000 – (50,000 + 1,20,000)

= 2,72,000 – 1,70,000

Net funds flow = 1,02,000

Question 16

X Limited has estimated that for a new product its break-even point is 20,000 units if the item is sold for ₹ 14 per unit and variable cost ₹ 9 per unit. Calculate the degree of operating leverage for sales volume 25,000 units and 30,000 units. ***(5 Marks, November, 2012)***

Answer

Computation of Degree of Operating Leverage (DOL)

Selling Price = ₹ 14 per unit

Variable Cost = ₹ 9 per unit

Fixed Cost = BEP x (Selling price – Variable cost) = 20,000 x (14 - 9) = 20,000 x 5 = 1,00,000

	₹ (For 25,000 units)	₹ (For 30,000 units)
Sales (@ ₹14 /unit)	3,50,000	4,20,000
Less: Variable Cost (@ 9 unit)	2,25,000	2,70,000
Contribution	1,25,000	1,50,000
Less: Fixed Cost	1,00,000	1,00,000
EBIT	25,000	50,000
DOL $\left(\frac{\text{Contribution}}{\text{EBIT}}\right)$	$\left(\frac{1,25,000}{25,000}\right)$	$\left(\frac{1,50,000}{50,000}\right)$
DOL	5 times	3 times

Question 17

The following information related to XL Company Ltd. for the year ended 31st March, 2013 are available to you:

Equity share capital of ₹ 10 each	*₹ 25 lakh*
11% Bonds of ₹ 1000 each	*₹ 18.5 lakh*
Sales	*₹ 42 lakh*
Fixed cost (Excluding Interest)	*₹ 3.48 lakh*
Financial leverage	*1.39*
Profit-Volume Ratio	*25.55%*
Income Tax Rate Applicable	*35%*

You are required to calculate:

(i) Operating Leverage;

(ii) Combined Leverage; and

(iii) Earning per Share. ***(6 Marks, May, 2013)***

Answer

Profit – Volume Ratio = $\frac{\text{Contribution}}{\text{Sales}}$

$$25.55 = \frac{\text{Contribution}}{42,00,000} \times 100$$

Contribution = 10,73,100

(i) **Operating Leverage** $= \frac{\text{Contribution}}{\text{Contribution - Fixed Cost}}$

$$= \frac{10,73,100}{10,73,100 - 3,48,000} = \frac{10,73,100}{7,25,100} = 1.48$$

(ii) **Combined Leverage** = Operating Leverage x Financial Leverage

= 1.48 x 1.39 = 2.06

(iii) **Earnings per Share (EPS)**

Number of Equity Shares = 2,50,000

Earnings before Tax (EBT) = Sales – Variable Cost – Fixed Cost – Interest

= 42,00,000 – 31,26,900 – 3,48,000 – 2,03,500

EBT = 5,21,600

Profit after Tax (PAT) = EBT – Tax

= 5,21,600 – 1,82,560

= 3,39,040

$$\text{EPS} = \frac{3,39,040}{2,50,000} = 1.3561$$

EPS = 1.36

Question 18

Calculate the degree of operating leverage, degree of financial leverage and the degree of combined leverage for the following firms:

		N	*S*	*D*
Production (in units)		*17,500*	*6,700*	*31,800*
Fixed costs	₹	*4,00,000*	*3,50,000*	*2,50,000*
Interest on loan	₹	*1,25,000*	*75,000*	*Nil*
Selling price per unit	₹	*85*	*130*	*37*
Variable cost per unit	₹	*38.00*	*42.50*	*12.00*

(5 Marks, November, 2013)

Answer

Computation of Degree of Operating Leverage (DOL), Degree of Financial Leverage (DFL) and Degree of Combined Leverage (DCL)

	Firm N	Firm S	Firm D
Output (Units)	17,500	6,700	31,800
Selling Price/Unit	85	130	37
Sales Revenue (A)	14,87,500	8,71,000	11,76,600
Variable Cost/Unit	38.00	42.50	12.00
Less: Variable Cost (B)	6,65,000	2,84,750	3,81,600
Contribution (A-B)	8,22,500	5,86,250	7,95,000
Less: Fixed Cost	4,00,000	3,50,000	2,50,000
EBIT	*4,22,500*	*2,36,250*	*5,45,000*
Less: Interest on Loan	*1,25,000*	*75,000*	-
PBT	*2,97,500*	*1,61,250*	*5,45,000*
$DOL = \frac{C}{EBIT}$	$\frac{8,22,500}{4,22,500}$	$\frac{5,86,250}{2,36,250}$	$\frac{7,95,000}{5,45,000}$
	= 1.95	*= 2.48*	*= 1.46*
$DFL = \frac{EBIT}{PBT}$	$\frac{4,22,500}{2,97,500}$	$\frac{2,36,250}{1,61,250}$	$\frac{5,45,000}{5,45,000}$
	= 1.42	*= 1.47*	*= 1.00*
DCL = OL x FL	*1.95 x 1.42*	*2.48 x 1.47*	*1.46 x 1*
OR	*= 2.77*	*= 3.65*	*= 1.46*
$DCL = \frac{Contribution}{PBT}$	$\frac{8,22,500}{2,97,500} = 2.76$	$\frac{5,86,250}{1,61,250} = 3.64$	$\frac{7,95,000}{5,45,000} = 1.46$

Question 19

A company had the following Balance Sheet as on 31st March, 2014:

Liabilities	***₹ (In crores)***	***Assets***	***(₹ In crores)***
Equity Share Capital (50 lakhs shares of ₹ 10 each)	*5*		
Reserves and Surplus	*1*	*Fixed Assets (Net)*	*12.5*

15% Debentures	*10*	*Current Assets*	*7.5*
Current Liabilities	*4*		
	20		***20***

The additional information given is as under:

Fixed cost per annum (excluding interest)	*₹ 4 crores*
Variable operating cost ratio	*65%*
Total assets turnover ratio	*2.5*
Income Tax rate	*30%*

Required:

Calculate the following and comment:

(i) Earnings Per Share

(ii) Operating Leverage

(iii) Financial Leverage

(iv) Combined Leverage ***(8 Marks, May, 2014)***

Answer

Total Assets = ₹ 20 crores

Total Asset Turnover Ratio = 2.5

Hence, Total Sales = 20 × 2.5 = ₹ 50 crores

Computation of Profit after Tax (PAT)

	(₹ in crores)
Sales	50.00
Less: Variable Operating Cost @ 65%	32.50
Contribution	17.50
Less: Fixed Cost (other than Interest)	4.00
EBIT	13.50
Less: Interest on Debentures (15% × 10)	1.50
PBT	12.00
Less: Tax @ 30%	3.60
PAT	8.40

(i) Earnings per Share

$$EPS = \frac{8.40 \text{ crores}}{\text{Number of Equity Shares}}$$

$$= \frac{8.40 \text{ crores}}{50,00,000} = ₹ 16.80$$

It indicates the amount the company earns per share. Investors use this as a guide while valuing the share and making investment decisions. It is also a indicator used in comparing firms within an industry or industry segment.

(ii) Operating Leverage

$$\text{Operating Leverage} = \frac{\text{Contribution}}{\text{EBIT}}$$

$$= \frac{17.50}{13.50}$$

$$= 1.296$$

It indicates the choice of technology and fixed cost in cost structure. It is level specific. When firm operates beyond operating break-even level, then operating leverage is low. It indicates sensitivity of earnings before interest and tax (EBIT) to change in sales at a particular level.

(iii) Financial Leverage

$$\text{Financial Leverage} = \frac{\text{EBIT}}{\text{PBT}}$$

$$= \frac{13.50}{12.00} = 1.125$$

The financial leverage is very comfortable since the debt service obligation is small vis-à-vis EBIT.

(iv) Combined Leverage

$$\text{Combined Leverage} = \frac{\text{Contribution}}{\text{EBIT}} \times \frac{\text{EBIT}}{\text{PBT}}$$

Or, = Operating Leverage × Financial Leverage

$$= 1.296 \times 1.125 = 1.458$$

The combined leverage studies the choice of fixed cost in cost structure and choice of debt in capital structure. It studies how sensitive the change in EPS is vis-à-vis change in sales. The leverages – operating, financial and combined are measures of risk.

Question 20

The Capital structure of RST Ltd. is as follows:

	₹
Equity Share of ₹ 10 each	*8,00,000*
10% Preference Share of ₹ 100 each	*5,00,000*
12% Debentures of ₹ 100 each	*7,00,000*
	20,00,000

Additional Information:

- *Profit after tax (Tax Rate 30%) are ₹ 2,80,000*
- *Operating Expenses (including Depreciation ₹ 96,800) are 1.5 times of EBIT*
- *Equity Dividend paid is 15%*
- *Market price of Equity Share is ₹ 23*

Calculate:

(i) Operating and Financial Leverage

(ii) Cover for preference and equity dividend

(iii) The Earning Yield Ratio and Price Earning Ratio

(iv) The Net Fund Flow

Note: All operating expenses (excluding depreciation) are variable.

(8 Marks, November, 2014)

Answer

Working Notes:

	₹
Net Profit after Tax	2,80,000
Tax @ 30%	1,20,000
EBT	4,00,000
Interest on Debentures	84,000
EBIT	4,84,000
Operating Expenses (1.5 times of EBIT)	7,26,000
Sales	12,10,000

(i) Operating Leverage

$$= \frac{\text{Contribution}}{\text{EBIT}}$$

$$= \frac{(12,10,000 - 6,29,200)}{4,84,000}$$

$$= \frac{5,80,800}{4,84,000} = 1.2 \text{ times}$$

$$\textbf{Financial Leverage} = \frac{\text{EBIT}}{\text{EBT}}$$

$$= \frac{4,84,000}{4,00,000}$$

$$= 1.21 \text{ times}$$

OR

$$\textbf{Financial Leverage} = \frac{\text{EBIT}}{\text{EBT} - \left(\frac{\text{Preference Dividend}}{1 - t}\right)}$$

$$= \frac{4,84,000}{4,00,000 - \left(\frac{50,000}{1 - 0.30}\right)}$$

$$= \frac{4,84,000}{4,00,000 - 71,428.57}$$

$$= \frac{4,84,000}{3,28,571} = 1.47 \text{ times}$$

(ii) Cover for Preference Dividend

$$= \frac{\text{PAT}}{\text{Preference Share Dividend}}$$

$$= \frac{2,80,000}{50,000} = 5.6 \text{ times}$$

Cover for Equity Dividend

$$= \frac{(\text{PAT - Preference Dividend})}{\text{Equity Share Dividend}}$$

$$= \frac{(2,80,000 - 50,000)}{1,20,000}$$

$$= \frac{2,30,000}{1,20,000} = 1.92 \text{ times}$$

(iii) Earning Yield Ratio

$$= \frac{\text{EPS}}{\text{Market Price}} \times 100$$

$$= \left(\frac{2,30,000}{\frac{80,000}{23}} \times 100 \right)$$

$$= \frac{2.875}{23} \times 100 = 12.5\%$$

Price – Earnings Ratio (PE Ratio)

$$= \frac{\text{Market Price}}{\text{EPS}} = \frac{23}{2.875}$$

= 8 times

(iv) **Net Funds Flow**

= Net PAT + Depreciation-Total Dividend

= 2,80,000 + 96,800 – (50,000 + 1,20,000)

= 3,76,800 – 1,70,000

Net Funds Flow = 2,06,800

Question 21

Distinguish between 'Business Risk' and 'Financial Risk'. ***(4 Marks, November, 2014)***

Answer

Business Risk and Financial Risk: Business risk refers to the risk associated with the firm's operations. It is an unavoidable risk because of the environment in which the firm has to operate and the business risk is represented by the variability of earnings before interest and

tax (EBIT). The variability in turn is influenced by revenues and expenses. Revenues and expenses are affected by demand of firm's products, variations in prices and proportion of fixed cost in total cost.

Whereas, Financial risk refers to the additional risk placed on firm's shareholders as a result of debt use in financing. Companies that issue more debt instruments would have higher financial risk than companies financed mostly by equity. Financial risk can be measured by ratios such as firm's financial leverage multiplier, total debt to assets ratio etc.

5
Types of Financing

Question 1

What is debt securitisation? Explain the basics of debt securitisation process.

(6 Marks, 3 Marks, 4 Marks, May 2004; November, 2004; May, 2006; May, 2008; May 2011)

Answer

Debt Securitisation: It is a method of recycling of funds. It is especially beneficial to financial intermediaries to support the lending volumes. Assets generating steady cash flows are packaged together and against this asset pool, market securities can be issued, e.g. housing finance, auto loans, and credit card receivables.

Process of Debt Securitisation

(i) *The origination function* – A borrower seeks a loan from a finance company, bank, HDFC. The credit worthiness of borrower is evaluated and contract is entered into with repayment schedule structured over the life of the loan.

(ii) *The pooling function* – Similar loans on receivables are clubbed together to create an underlying pool of assets. The pool is transferred in favour of Special purpose Vehicle (SPV), which acts as a trustee for investors.

(iii) *The securitisation function* – SPV will structure and issue securities on the basis of asset pool. The securities carry a coupon and expected maturity which can be asset-based/mortgage based. These are generally sold to investors through merchant bankers. Investors are – pension funds, mutual funds, insurance funds.

The process of securitization is generally without recourse i.e. investors bear the credit risk and issuer is under an obligation to pay to investors only if the cash flows are received by him from the collateral. The benefits to the originator are that assets are shifted off the balance sheet, thus giving the originator recourse to off-balance sheet funding.

Question 2

Discuss the risk-return considerations in financing of current assets. ***(4 Marks, November, 2004)***

Answer

The financing of current assets involves a trade off between risk and return. A firm can choose from short or long term sources of finance. Short term financing is less expensive than long

term financing but at the same time, short term financing involves greater risk than long term financing.

Depending on the mix of short term and long term financing, the approach followed by a company may be referred as matching approach, conservative approach and aggressive approach.

In matching approach, long-term finance is used to finance fixed assets and permanent current assets and short term financing to finance temporary or variable current assets. Under the conservative plan, the firm finances its permanent assets and also a part of temporary current assets with long term financing and hence less risk of facing the problem of shortage of funds.

An aggressive policy is said to be followed by the firm when it uses more short term financing than warranted by the matching plan and finances a part of its permanent current assets with short term financing.

Question 3

Discuss the eligibility criteria for issue of commercial paper. ***(3 Marks, May, 2005)***

Answer

Eligibility Criteria for Issuer of Commercial Paper

The companies satisfying the following conditions are eligible to issue commercial paper.

- The tangible net worth of the company is ₹ 5 crores or more as per audited balance sheet of the company.
- The fund base working capital limit is not less than ₹ 5 crores.
- The company is required to obtain the necessary credit rating from the rating agencies such as CRISIL, ICRA etc.
- The issuers should ensure that the credit rating at the time of applying to RBI should not be more than two months old.
- The minimum current ratio should be 1.33:1 based on classification of current assets and liabilities.
- For public sector companies there are no listing requirement but for companies other than public sector, the same should be listed on one or more stock exchanges.
- All issue expenses shall be borne by the company issuing commercial paper.

Question 4

Write short notes on the following:

(a) Global Depository Receipts or Euro Convertible Bonds. ***(3 Marks, May, 2004)***

(b) American Depository Receipts (ADRs) ***(6 Marks, May, 2004; May 2006)***

(c) Bridge Finance ***(6 Marks; 2 Marks May 2006; Nov. 2011)***

(d) Deep Discount Bonds vs. Zero Coupon Bonds ***(3 Marks, May, 2004)***

(e) Venture Capital Financing ***(2 Marks, May, 2005; May, 2008)***

(f) Seed Capital Assistance ***(3 Marks; 2 Marks, May, 2005; May 2010)***

Answer

(a) Global Depository Receipts (GDRs): It is a negotiable certificate denominated in US dollars which represents a Non-US company's publically traded local currency equity shares. GDRs are created when the local currency shares of an Indian company are delivered to Depository's local custodian Bank against which the Depository bank issues depository receipts in US dollars. The GDRs may be traded freely in the overseas market like any other dollar-expressed security either on a foreign stock exchange or in the over-the-counter market or among qualified institutional buyers.

By issue of GDRs Indian companies are able to tap global equity market to raise foreign currency funds by way of equity. It has distinct advantage over debt as there is no repayment of the principal and service costs are lower.

(Or)

Euro Convertible Bond: Euro Convertible bonds are quasi-debt securities (unsecured) which can be converted into depository receipts or local shares. ECBs offer the investor an option to convert the bond into equity at a fixed price after the minimum lock in period. The price of equity shares at the time of conversion will have a premium element. The bonds carry a fixed rate of interest. These are bearer securities and generally the issue of such bonds may carry two options viz. call option and put option. A call option allows the company to force conversion if the market price of the shares exceeds a particular percentage of the conversion price. A put option allows the investors to get his money back before maturity. In the case of ECBs, the payment of interest and the redemption of the bonds will be made by the issuer company in US dollars. ECBs issues are listed at London or Luxemburg stock exchanges.

An issuing company desirous of raising the ECBs is required to obtain prior permission of the Department of Economic Affairs, Ministry of Finance, Government of India, Companies having 3 years of good track record will only be permitted to raise funds. The condition is not applicable in the case of projects in infrastructure sector. The proceeds of ECBs would be permitted only for following purposes:

(i) Import of capital goods

(ii) Retiring foreign currency debts

(iii) Capitalising Indian joint venture abroad

(iv) 25% of total proceedings can be used for working capital and general corporate restructuring.

The impact of such issues has been to procure for the issuing companies' finances at very competitive rates of interest. For the country a higher debt means a forex outgo in terms of interest.

(b) American Depository Receipts (ADRs): These are depository receipts issued by a company in USA and are governed by the provisions of Securities and Exchange Commission of USA. As the regulations are severe, Indian companies tap the American market through private debt placement of GDRs listed in London and Luxemburg stock exchanges.

Apart from legal impediments, ADRs are costlier than Global Depository Receipts (GDRs). Legal fees are considerably high for US listing. Registration fee in USA is also substantial. Hence ADRs are less popular than GDRs.

(c) Bridge Finance: Bridge finance refers, normally, to loans taken by the business, usually from commercial banks for a short period, pending disbursement of term loans by financial institutions, normally it takes time for the financial institution to finalise procedures of creation of security, tie-up participation with other institutions etc. even though a positive appraisal of the project has been made. However, once the loans are approved in principle, firms in order not to lose further time in starting their projects arrange for bridge finance. Such temporary loan is normally repaid out of the proceeds of the principal term loans. It is secured by hypothecation of moveable assets, personal guarantees and demand promissory notes. Generally rate of interest on bridge finance is higher as compared with that on term loans.

(d) Deep Discount Bonds vs. Zero Coupon Bonds: Deep Discount Bonds (DDBs) are in the form of zero interest bonds. These bonds are sold at a discounted value and on maturity face value is paid to the investors. In such bonds, there is no interest payout during lock-in period.

IDBI was first to issue a Deep Discount Bonds (DDBs) in India in January 1992. The bond of a face value of Rs.1 lakh was sold for ₹2,700 with a maturity period of 25 years.

A zero coupon bond (ZCB) does not carry any interest but it is sold by the issuing company at a discount. The difference between discounted value and maturing or face value represents the interest to be earned by the investor on such bonds.

(e) Venture Capital Financing: The term venture capital refers to capital investment made in a business or industrial enterprise, which carries elements of risks and insecurity and the probability of business hazards. Capital investment may assume the form of either equity or debt or both as a derivative instrument. The risk associated with the enterprise could be so high as to entail total loss or be so insignificant as to lead to high gains.

The European Venture Capital Association describes venture capital as risk finance for entrepreneurial growth oriented companies. It is an investment for the medium or long term seeking to maximise the return.

Venture Capital, thus, implies an investment in the form of equity for high-risk projects with the expectation of higher profits. The investments are made through private placement with the expectation of risk of total loss or huge returns. High technology industry is more attractive to venture capital financing due to the high profit potential. The main object of investing equity is to get high capital profit at saturation stage.

In broad sense under venture capital financing venture capitalist makes investment to purchase debt or equity from inexperienced entrepreneurs who undertake highly risky ventures with potential of success.

(f) Seed Capital Assistance: The seed capital assistance has been designed by IDBI for professionally or technically qualified entrepreneurs. All the projects eligible for financial assistance from IDBI, directly or indirectly through refinance are eligible under the scheme. The project cost should not exceed ₹2 crores and the maximum assistance under the project will be restricted to 50% of the required promoters contribution or Rs 15 lacs whichever is lower.

The seed capital Assistance is interest free but carries a security charge of one percent per annum for the first five years and an increasing rate thereafter.

Question 5

Explain in brief the features of Commercial Paper. ***(3 Marks, May, 2007)***

Answer

Features of Commercial Paper (CP)

A commercial paper is an unsecured money market instrument issued in the form of a promissory note. 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 which issued guidelines in 1990 on the basis of the recommendations of the Vaghul Working Group. These guidelines were aimed at:

(i) Enabling the highly rated corporate borrowers to diversify their sources of short term borrowings, and

(ii) To provide an additional instrument to the short term investors.

It can be issued for maturities between 7 days and a maximum upto one year from the date of issue. These can be issued in denominations of ₹5 lakh or multiples therefore. All eligible issuers are required to get the credit rating from credit rating agencies.

Question 6

Explain the term 'Ploughing back of Profits'. ***(2 Marks, May, 2007; November, 2009)***

Answer

Ploughing back of Profits: Long-term funds may also be provided by accumulating the profits of the company and by ploughing them back into business. Such funds belong to the ordinary shareholders and increase the net worth of the company. A public limited company must plough back a reasonable amount of its profits each year keeping in view the legal requirements in this regard and its own expansion plans. Such funds also entail almost no risk. Further, control of present owners is also not diluted by retaining profits.

Question 7

Discuss the features of deep discount bonds. ***(2 Marks, November, 2007 & 2008; May, 2012)***

Answer

Features of Deep Discount Bonds: Deep discount bonds are a form of zero-interest bonds. These bonds are sold at discounted value and on maturity; face value is paid to the investors. In such bonds, there is no interest payout during the lock- in period. The investors can sell the bonds in stock market and realise the difference between face value and market price as capital gain.

IDBI was the first to issue deep discount bonds in India in January 1993. The bond of a face value of ₹1 lakh was sold for ₹2700 with a maturity period of 25 years.

Question 8

Explain the concept of Indian depository receipts. ***(2 Marks, November, 2007)***

Answer

Concept of Indian Depository Receipts: The concept of the depository receipt mechanism which is used to raise funds in foreign currency has been applied in the Indian capital market through the issue of Indian Depository Receipts (IDRs). Foreign companies can issue IDRs to raise funds from Indian market on the same lines as an Indian company uses ADRs/GDRs to raise foreign capital. The IDRs are listed and traded in India in the same way as other Indian securities are traded.

Question 9

Explain the methods of venture capital financing. ***(3 Marks, November, 2007)***

Answer

Some Common Methods of Venture Capital Financing

(a) *Equity financing*: The venture capital undertaking requires long-term funds but is unable to provide returns in initial stage so equity capital is the best option.

(b) *Conditional Loan*: A conditional loan is repayable in the form of a royalty after the venture is able to generate sales. No interest is paid on such loans.

(c) *Income note*: It is hybrid security; the entrepreneur has to pay both interest and royalty on sales but at substantially low rates.

(d) *Participating debenture*: Such security carries charges in three phases - in the start-up phase, no interest is charged, next stage a low rate of interest up to a particular level of operation is charged, after that, high rate of interest is required to be paid.

Question 10

Discuss the features of Secured Premium Notes (SPNs). ***(2 Marks, May, 2008)***

Answer

Secured premium notes are issued along with detachable warrants and are redeemable after a notified period of say 4 to 7 years. This is a kind of NCD attached with warrant. It was first introduced by TISCO, which issued the SPNs to existing shareholders on right basis. Subsequently the SPNs will be repaid in some number of equal instalments. The warrant attached to SPNs gives the holder the right to apply for and get allotment of equity shares as per the conditions within the time period notified by the company.

Question 11

Explain the concept of closed and open- ended lease. ***(2 Marks, May, 2008)***

Answer

In the close-ended lease, the assets gets transferred to the lessor at the end of lease, the risk of obsolescence, residual values etc. remain with the lessor being the legal owner of the assets. In the open-ended lease, the lessee has the option of purchasing the assets at the end of lease period.

Question 12

Discuss the advantages of preference share capital as an instrument of raising funds.

(2 Marks, May, 2008)

Answer

Advantages of Issue of Preference Shares

(i) No dilution in EPS on enlarged capital base.

(ii) There is no risk of takeover as the preference shareholders do not have voting rights.

(iii) There is leveraging advantage as it bears a fixed charge.

(iv) The preference dividends are fixed and pre-decided. Preference shareholders do not participate in surplus profit as the ordinary shareholders

(v) Preference capital can be redeemed after a specified period.

Question 13

Explain briefly the features of External Commercial Borrowings (ECBs). ***(3 Marks, May, 2008)***

Answer

External Commercial Borrowings are loans taken from non-resident lenders in accordance with exchange control regulations. These loans can be taken from:

- International banks
- Capital markets
- Multilateral financial institutions like IFC, ADB, IBRD etc.
- Export Credit Agencies
- Foreign collaborators
- Foreign Equity Holders.

ECBs can be accessed under automatic and approval routes depending upon the purpose and volume.

In automatic there is no need for any approval from RBI / Government while approval is required for areas such as textiles and steel sectors restructuring packages.

Question 14

Name the various financial instruments dealt with in the international market.

(2 Marks, November, 2008)

Answer

Financial Instruments in the International Market: Some of the various financial instruments dealt with in the international market are:

(a) Euro Bonds
(b) Foreign Bonds
(c) Fully Hedged Bonds
(d) Medium Term Notes
(e) Floating Rate Notes
(f) External Commercial Borrowings
(g) Foreign Currency Futures
(h) Foreign Currency Option
(i) Euro Commercial Papers.

Question 15

Discuss the concept of American Depository Receipts. ***(2 Marks, June, 2009)***

Answer

Concept of American Depository Receipts

American Depository Receipts (ADRs) are securities offered by non- US companies who want to list on any of the US exchanges. It is a derivative instrument. It represents a certain number of company's shares. These are used by depository bank against a fee income. ADRs allow US investors to buy shares of these companies without the cost of investing directly in a foreign stock exchange. ADRs are listed on either NYSE or NASDAQ. It facilitates integration of global capital markets. The company can use the ADR route either to get international listing or to raise money in international capital market.

Question 16

Discuss the benefits to the originator of Debt Securitization. ***(2 Marks, June, 2009)***

Answer

Benefits to the Originator of Debt Securitization

The benefits to the originator of debt securitization are as follows:

(a) The assets are shifted off the balance sheet, thus giving the originator recourse to off balance sheet funding.

(b) It converts illiquid assets to liquid portfolio.

(c) It facilitates better balance sheet management as assets are transferred off balance sheet facilitating satisfaction of capital adequacy norms.

(d) The originator's credit rating enhances.

Question 17

Differentiate between Factoring and Bills discounting.

(2 Marks; 4 Marks, November, 2009; May 2013)

Answer

Differentiation between Factoring and Bills Discounting

The differences between Factoring and Bills discounting are:

(a) Factoring is called as "Invoice Factoring' whereas Bills discounting is known as 'Invoice discounting."

(b) In Factoring, the parties are known as the client, factor and debtor whereas in Bills discounting, they are known as drawer, drawee and payee.

(c) Factoring is a sort of management of book debts whereas bills discounting is a sort of borrowing from commercial banks.

(d) For factoring there is no specific Act, whereas in the case of bills discounting, the Negotiable Instruments Act is applicable.

Question 18

Distinguish between Global Depository Receipts and American Depository Receipts.

(4 Marks, November, 2010)

Answer

Global Depository Receipts (GDRs) and American Depository Receipts (ADRs)

Global Depository Receipts are negotiable certificates held in the bank of one country representing a specific number of shares of a stock traded on the exchange of another country. These financial instruments are used by companies to raise capital in either dollars or Euros. These are mainly traded in European countries and particularly in London.

Whereas, American Depository Receipts, on the other hand, are basically negotiable certificates denominated in US dollars that represent a non-US company's publicly traded local currency equity shares. These are created when the local currency shares of Indian Company are delivered to the depository's local custodian bank, against which the depository bank issues Depository Receipts in US dollars. These are deposited in a custodial account in the US. Such receipts have to be issued in accordance with the provisions stipulated by the SEC.

Question 19

What is factoring? Enumerate the main advantages of factoring. ***(5 Marks, May, 2011)***

Answer

Concept of Factoring and its Main Advantages: Factoring involves provision of specialized services relating to credit investigation, sales ledger management purchase and collection of debts, credit protection as well as provision of finance against receivables and risk bearing. In factoring, accounts receivables are generally sold to a financial institution (a subsidiary of commercial bank – called "factor"), who charges commission and bears the credit risks associated with the accounts receivables purchased by it.

Advantages of Factoring

The main advantages of factoring are:

(i) The firm can convert accounts receivables into cash without bothering about repayment.

(ii) Factoring ensures a definite pattern of cash inflows.

(iii) Continuous factoring virtually eliminates the need for the credit department. Factoring is gaining popularity as useful source of financing short-term funds requirement of business enterprises because of the inherent advantage of flexibility it affords to the borrowing

firm. The seller firm may continue to finance its receivables on a more or less automatic basis. If sales expand or contract it can vary the financing proportionally.

(iv) Unlike an unsecured loan, compensating balances are not required in this case. Another advantage consists of relieving the borrowing firm of substantially credit and collection costs and from a considerable part of cash management.

Question 20

Distinguish between Operating lease and financial lease. ***(4 Marks, November, 2011)***

Answer

Difference between Financial Lease and Operating Lease

S.No.	Finance Lease	Operating Lease
1.	The risk and reward incident to ownership are passed on the lessee. The lessor only remains the legal owner of the asset.	The lessee is only provided the use of the asset for a certain time. Risk incident to ownership belongs only to the lessor.
2	The lessee bears the risk of obsolescence.	The lessee is only allowed the use of asset.
3	The lease is non-cancellable by either party under it.	The lease is kept cancellable by the lessor.
4.	The lessor does not bear the cost of repairs, maintenance or operations.	Usually, the lessor bears the cost of repairs, maintenance or operations.
5.	The lease is usually full payout.	The lease is usually non-payout.

Question 21

Discuss the factors that a venture capitalist should consider before financing any risky project.

(4 Marks, May, 2012)

Answer

Factors to be considered by a Venture Capitalist before financing any Risky Project:

(i) Quality of the management team is a very important factor to be considered. They are required to show a high level of commitment to the project.

(ii) The technical ability of the team is also vital. They should be able to develop and produce a new product / service.

(iii) Technical feasibility of the new product / service should be considered.

(iv) Since the risk involved in investing in the company is quite high, venture capitalists should ensure that the prospects for future profits compensate for the risk.

(v) A research must be carried out to ensure that there is a market for the new product.

(vi) The venture capitalist himself should have the capacity to bear risk or loss, if the project fails.

(vii) The venture capitalist should try to establish a number of exist routes.

(viii) In case of companies, venture capitalist can seek for a place on the Board of Directors to have a say on all significant matters affecting the business.

(**Note:** Students may answer any four of the above factors)

Question 22

"Financing a business through borrowing is cheaper than using equity." Briefly explain.

(4 Marks, November, 2012)

Answer

"Financing a business through borrowing is cheaper than using equity"

(i) Debt capital is cheaper than equity capital from the point of its cost and interest being deductible for income tax purpose, whereas no such deduction is allowed for dividends.

(ii) Issue of new equity dilutes existing control pattern while borrowing does not result in dilution of control.

(iii) In a period of rising prices, borrowing is advantageous. The fixed monetary outgo decreases in real terms as the price level increases.

Question 23

What is debt securitisation? Also state its advantages. ***(4 Marks, May, 2013)***

Answer

Debt Securitisation: It is a method of recycling of funds. It is especially beneficial to financial intermediaries to support the lending volumes. Assets generating steady cash flows are packaged together and against this asset pool, market securities can be issued, e.g. housing finance, auto loans, and credit card receivables.

The advantages of debt securitisation to the originator are the following:

(i) The asset is shifted off the Balance Sheet, thus giving the originator recourse to off balance sheet funding.

(ii) It converts illiquid assets to liquid portfolio.

(iii) It facilitates better balance sheet management; assets are transferred off balance sheet facilitating satisfaction of capital adequacy norms.

(iv) The originator's credit rating enhances.

For the investors securitisation opens up new investment avenues. Though the investor bears the credit risk, the securities are tied up to definite assets.

Question 24

What is venture capital financing? Discuss the factors that a venture capitalist should consider before financing any risky project. ***(4 Marks, May, 2013)***

Answer

Under Venture Capital financing, venture capitalist makes investment to purchase debt or equity from inexperienced entrepreneurs who undertake highly risky ventures with potential of success. The factors to be considered by a Venture Capitalist before financing any Risky Project are:

(i) Quality of the management team is a very important factor to be considered. They are required to show a high level of commitment to the project.

(ii) The technical ability of the team is also vital. They should be able to develop and produce a new product / service.

(iii) Technical feasibility of the new product / service should be considered.

(iv) Since the risk involved in investing in the company is quite high, venture capitalists should ensure that the prospects for future profits compensate for the risk.

(v) A research must be carried out to ensure that there is a market for the new product.

(vi) The venture capitalist himself should have the capacity to bear risk or loss, if the project fails.

(vii) The venture capitalist should try to establish a number of exist routes.

(viii) In case of companies, venture capitalist can seek for a place on the Board of Directors to have a say on all significant matters affecting the business.

(**Note:** *Students may answer any two of the above factors.*)

Question 25

State the main elements of leveraged lease. ***(4 Marks, November, 2013)***

Answer

Main Elements of Leveraged Lease: Under this lease, a third party is involved beside lessor and lessee. The lessor borrows a part of the purchase cost (say 80%) of the asset from the third party i.e., lender. The asset so purchased is held as security against the loan. The lender is paid off from the lease rentals directly by the lessee and the surplus after meeting the claims of the lender goes to the lessor. The lessor is entitled to claim depreciation allowance.

Question 26

State the main features of Global Depository Receipts (GDRs) and American Depository Receipts (ADRs). ***(4 Marks, May, 2014)***

Answer

Global Depository Receipts and American Depository Receipts

Global Depository Receipts (GDRs) are basically negotiable certificates denominated in US dollars that represent a non-US company's publicly traded local currency equity shares. These are created when the local currency shares of Indian company are delivered to the depository's local custodian bank, against which the depository bank issues Depository Receipts in US dollars.

American Depository Receipts (ADRs) are securities offered by non-US companies who want to list on any of the US exchange. Each ADR represents a certain number of a company's regular shares. ADRs allow US investors to buy shares of these companies without the costs of investing directly in a foreign stock exchange. ADRs are issued by an approved New York bank or trust company against the deposit of the original shares. These are deposited in a custodial account in the US. Such receipts have to be issued in accordance with the provisions stipulated by the SEC USA which are very stringent.

Question 27

Name any four financial instruments, which are related to international financial market.

(2 Marks, May, 2014)

Answer

Financial Instruments in the International Market

Some of the various financial instruments dealt with in the international market are:

(a) Euro Bonds

(b) Foreign Bonds

(c) Fully Hedged Bonds

(d) Medium Term Notes

(e) Floating Rate Notes

(f) External Commercial Borrowings

(g) Foreign Currency Futures

(h) Foreign Currency Option

(i) Euro Commercial Papers.

(**Note:** Students may answer any four of the above financial instruments)

Question 28

Distinguish between 'Operating Lease' and 'Financial Lease'. ***(4 Marks, November, 2014)***

Answer

Difference between Financial Lease and Operating Lease

S.No.	Finance Lease	Operating Lease
1.	The risk and reward incident to ownership are passed on the lessee. The lessor only remains the legal owner of the asset.	The lessee is only provided the use of the asset for a certain time. Risk incident to ownership belongs only to the lessor.
2.	The lessee bears the risk of obsolescence.	The lessor bears the risk of obsolescence.
3.	The lease is non-cancellable by either party under it.	The lease is cancellable by the lessor.
4.	The lessor does not bear the cost of repairs, maintenance or operations.	Usually, the lessor bears the cost of repairs, maintenance or operations.
5.	The lease is usually full payout.	The lease is usually non-payout.

(**Note:** *Students may answer any four of the above differences*)

6
Investment Decisions

Question 1

Discuss the need for social cost benefit analysis. ***(4 Marks, November, 2006)***

(Out of syllabus/removed from the syllabus of Financial Management)

Answer

Several hundred crores of rupees are committed every year to various public projects. Analysis of such projects has to be done with reference to social costs and benefits. Since they cannot be expected to yield an adequate commercial return on the funds employed, at least during the short run.

Social cost benefit analysis is important for the private corporations also who have a moral responsibility to undertake socially desirable projects.

The need for social cost benefit analysis arises due to the following:

(i) The market prices used to measure costs & benefits in project analysis, may not represent social values due to market imperfections.

(ii) Monetary cost benefit analysis fails to consider the external positive & negative effects of a project.

(iii) Taxes & subsidies are transfer payments & hence irrelevant in national economic profitability analysis.

(iv) The redistribution benefits because of project needs to be captured.

(v) The merit wants are important appraisal criteria for social cost benefit analysis.

Question 2

Decision tree analysis is helpful in managerial decisions." Explain with an example.

(Out of syllabus/removed from the syllabus of Financial Management)

(5 Marks, May, 2005)

Answer

Significance of Decision Tree Analysis: it is generally observed that the present investment decision may have several implications for future investments decisions. Such complex

investment decisions involve a sequence of decisions over time. It is also argued that since present choices modify future alternatives, industrial activity cannot be reduced to a single decision and must be viewed as a sequence of decisions extending from the present time into the future. These sequential decisions are taken on the bases of decision tree analysis. While constructing and using decision tree, some important steps to be considered are as follows:

(i) Investment proposal should be properly defined.

(ii) Decision alternatives should be clearly clarified.

(iii) The decision tree should be properly graphed indicating the decision points, chances, events and other data.

(iv) The results should be analysed and the best alternative should be selected.

Question 3

Define Modified Internal Rate of Return method. ***(2 Marks, May, 2007)***

Answer

Modified Internal Rate of Return (MIRR): There are several limitations attached with the concept of the conventional Internal Rate of Return. The MIRR addresses some of these deficiencies. For example, it eliminates multiple IRR rates; it addresses the reinvestment rate issue and produces results, which are consistent with the Net Present Value method.

Under this method, all cash flows, apart from the initial investment, are brought to the terminal value using an appropriate discount rate(usually the cost of capital). This results in a single stream of cash inflow in the terminal year. The MIRR is obtained by assuming a single outflow in the zeroth year and the terminal cash inflow as mentioned above. The discount rate which equates the present value of the terminal cash in flow to the zeroth year outflow is called the MIRR.

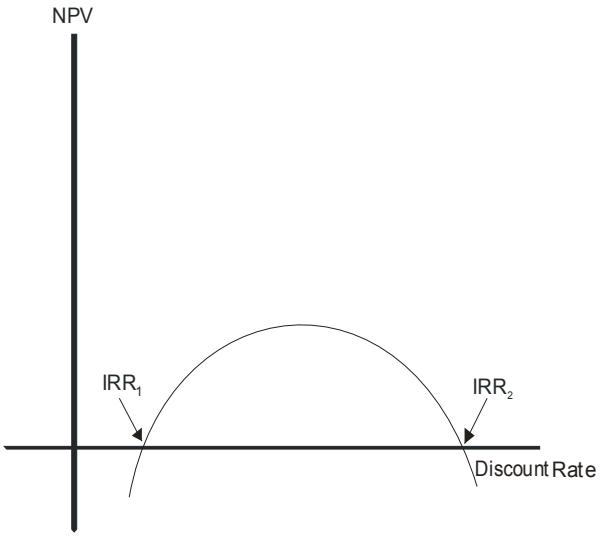
Question 4

Explain the concept of Multiple Internal Rate of Return. ***(3 Marks, November, 2008)***

Answer

Multiple Internal Rate of Return (MIRR)

In cases where project cash flows change signs or reverse during the life of a project for example, an initial cash outflow is followed by cash inflows and subsequently followed by a major cash outflow; there may be more than one internal rate of return (IRR). The following graph of discount rate versus net present value (NPV) may be used as an illustration:



In such situations if the cost of capital is less than the two IR₹, a decision can be made easily, however, otherwise the IRR decision rule may turn out to be misleading as the project should only be invested if the cost of capital is between IRR^1 and IRR^2. To understand the concept of multiple IR₹ it is necessary to understand the implicit re-investment assumption in both NPV and IRR techniques.

Question 5

Explain the concept of discounted payback period. ***(3 Marks, June, 2009)***

Answer

Concept of Discounted Payback Period

Payback period is time taken to recover the original investment from project cash flows. It is also termed as break even period. The focus of the analysis is on liquidity aspect and it suffers from the limitation of ignoring time value of money and profitability. Discounted payback period considers present value of cash flows, discounted at company's cost of capital to estimate breakeven period i.e. it is that period in which future discounted cashflows equal the initial outflow. The shorter the period, better it is. It also ignores post discounted payback period cash flows.

Question 6

Explain the term "Desirability factor". ***(1.5 Marks, November, 2009)***

Answer

***Desirability Factor*:** In certain cases we have to compare a number of proposals each involving different amount of cash inflows. One of the methods of comparing such proposals is

to work out, what is known as the 'Desirability Factor' or 'Profitability Index'. In general terms, a project is acceptable if the Profitability Index is greater than 1.

Mathematically,

$$\text{Desirability Factor} = \frac{\text{Sum of Discounted Cash inflows}}{\text{Initial Cash Outlay or Total Discounted Cash outflows}}$$

Question 7

Distinguish between Net present value method and internal rate of return method.

(4 Marks, November, 2011)

Answer

Difference between Net Present Value (NPV) Method and Internal Rate of Return (IRR) Method

(i) The results of NPV and IRR methods regarding the choice of an asset under certain circumstances are mutually contradictory under two methods.

(ii) The NPV is expressed in financial values whereas IRR is expressed in percentage terms.

(iii) In the NPV, cash flows are assumed to be reinvested at cost of capital rate whereas in IRR, reinvestment is assumed to be made at IRR rates.

(iv) Under IRR method, a project is selected when IRR is greater than cut-off date, whereas, under NPV method, a project is accepted with positive NPV.

Question 8

The cash flows of two mutually exclusive Projects are as under:

	t_0	t_1	t_2	t_3	t_4	t_5	t_6
Project 'P' (₹)	*(40,000)*	*13,000*	*8,000*	*14,000*	*12,000*	*11,000*	*15,000*
Project 'J' (₹)	*(20,000)*	*7,000*	*13,000*	*12,000*	*–*	*–*	*–*

Required:

(i) Estimate the net present value (NPV) of the Project 'P' and 'J' using 15% as the hurdle rate.

(ii) Estimate the internal rate of return (IRR) of the Project 'P' and 'J'.

(iii) Why there is a conflict in the project choice by using NPV and IRR criterion?

(iv) Which criteria you will use in such a situation? Estimate the value at that criterion. Make a project choice.

The present value interest factor values at different rates of discount are as under:

Rate of discount	t_0	t_1	t_2	t_3	t_4	t_5	t_6
0.15	*1.00*	*0.8696*	*0.7561*	*0.6575*	*0.5718*	*0.4972*	*0.4323*
0.18	*1.00*	*0.8475*	*0.7182*	*0.6086*	*0.5158*	*0.4371*	*0.3704*
0.20	*1.00*	*0.8333*	*0.6944*	*0.5787*	*0.4823*	*0.4019*	*0.3349*
0.24	*1.00*	*0.8065*	*0.6504*	*0.5245*	*0.4230*	*0.3411*	*0.2751*
0.26	*1.00*	*0.7937*	*0.6299*	*0.4999*	*0.3968*	*0.3149*	*0.2499*

(7 Marks, May, 2004)

Answer

(i) Estimation of net present value (NPV) of the Project 'P' and 'J' using 15% as the hurdle rate:

NPV of Project 'P':

$$= -40,000 + \frac{13,000}{(1.15)^1} + \frac{8,000}{(1.15)^2} + \frac{14,000}{(1.15)^3} + \frac{12,000}{(1.15)^4} + \frac{11,000}{(1.15)^5} + \frac{15,000}{(1.15)^6}$$

$$= -40,000 + 11,304.35 + 6,049.15 + 9,205.68 + 6,861.45 + 5,469.37 + 6,485.65$$

= ₹ 5,375.65 or ₹5,376

NPV of Project 'J' :

$$= -20,000 + \frac{7,000}{(1.15)^1} + \frac{13,000}{(1.15)^2} + \frac{12,000}{(1.15)^3}$$

$$= -20,000 + 6,086.96 + 9,829.87 + 7,890.58$$

= ₹3,807.41

(ii) Estimation of internal rate of return (IRR) of the Project ' P ' and ' J '

Internal rate of return r (IRR) is that rate at which the sum of cash inflows after discounting equals to the discounted cash out flows. The value of r in the case of given projects can be determined by using the following formula:

$$CO_o = \frac{CF_0}{(1+r)^0} + \frac{CF_1}{(1+r)^1} + \text{--------} + \frac{CF_n}{(1+r)^n} + \frac{SV+WC}{(1+r)^n}$$

Where,

Co = Cash flows at the time 0

CF_t = Cash inflow at the end of year t

r = Discount rate

n = Life of the project

SV & WC = Salvage value and working capital at the end of n years.

In the case of project 'P' the value of r (IRR) is given by the following relation:

$$40{,}000 = \frac{13{,}000}{(1+r\%)^1} + \frac{8{,}000}{(1+r\%)^2} + \frac{14{,}000}{(1+r\%)^3} + \frac{12{,}000}{(1+r\%)^4} + \frac{11{,}000}{(1+r\%)^5} + \frac{15{,}000}{(1+r\%)^6}$$

r = 19.73%

Similarly we can determine the internal rate of return for the project 'J'. In the case of project 'J' it comes to:

r = 25.20%

(iii) The conflict between NPV and IRR rule in the case of mutually exclusive project situation arises due to re-investment rate assumption. NPV rule assumes that intermediate cash flows are reinvested at k and IRR assumes that they are reinvested at r. The assumption of NPV rule is more realistic.

(iv) When there is a conflict in the project choice by using NPV and IRR criterion, we would prefer to use "Equal Annualized Criterion". According to this criterion the net annual cash inflow in the case of Projects 'P' and 'J' respectively would be:

Project 'P' = (Net present value/ cumulative present value of Re.1 p.a @15% for 6 years)

= (₹5,375.65 / 3.7845)

= ₹1,420.44

Project 'J' = (₹3807.41/2.2832)

= ₹1667.58

Since the cash inflow per annum in the case of project 'J' is more than that of project 'P', so Project J is recommended.

Question 9

(a) PQR Limited has decided to go in for a new model of Mercedes Car. The cost of the vehicle is ₹40 lakhs. The company has two alternatives:

(i) Taking the car on finance lease; or

(ii) Borrowing and purchasing the car.

LMN Limited is willing to provide the car on finance lease of PQR Limited for five years at an annual rental of ₹8.75 lakhs, payable at the end of the year.

The vehicle is expected to have useful life of 5 years, and it will fetch a net salvage value of ₹10 lakhs at the end of year five. The depreciation rate for tax purpose is 40% on written-down value basis. The applicable tax rate for the company is 35%. The applicable before tax borrowing rate for the company is 13.8462%.

What is the net advantage of leasing for the PQR Limited?

The values of present value interest factor at different rates of discount are as under:

Rate of discount	t_1	t_2	t_3	t_4	t_5
0.138462	*0.8784*	*0.7715*	*0.6777*	*0.5953*	*0.5229*
0.09	*0.9174*	*0.8417*	*0.7722*	*0.7084*	*0.6499*

[This question is out of syllabus of IPCC but this topic is covered at the Final level]

(8 Marks, May, 2004)

Answer

Cash flow of lease contract is shown below:

(₹ in lakhs)

	0	*1*	*2*	*3*	*4*	*5*
Cost of car	40					
Depreciation		16	9.6	5.76	3.456	2.0736
Loss of depreciation tax shield *(Dep × tax rate)*		–5.6	–3.36	–2.016	–1.2096	–0.7258
Lease payment		–8.75	–8.75	–8.75	–8.75	–8.75
Tax shield on lease payment		3.0625	3.0625	3.0625	3.0625	3.0625
Loss of salvage value						–10
Cash flow of lease	40	–11.2875	–9.0475	–7.7035	–6.8971	–16.4133

Present value cash flow of lease = ₹39.47 lakhs	–10.3551 *(–11.2875 × 0.9174)*	–7.61528 *(–9.0475 × 0.8417)*	–5.9486 *(–7.7035 × 0.7722)*	–4.8859 *(–6.8971 × 0.7084)*	–10.667 *(–16.4133 × 0.6499)*

Net Advantage of Leasing (K_d = 9%) = ₹0.53 lakhs *(₹40 lakhs – ₹39.47 lakhs)*

Question 10

PQR Ltd. is evaluating a proposal to acquire new equipment. The new equipment would cost ₹ 3.5 million and was expected to generate cash inflows of ₹ 4,70,000 a year for nine years. After that point, the equipment would be obsolete and have no significant salvage value. The company's weighted average cost of capital is 16%.

The management of the PQR Ltd. seemed to be convinced with the merits of the investment but was not sure about the best way to finance it. PQR Ltd. could raise the money by issuing a secured eight-year note at an interest rate of 12%. However, PQR Ltd. had huge tax-loss carry forwards from a disastrous foray into foreign exchange options. As a result, the company was unlikely to be in a position of tax-paying for many years. The CEO of PQR Ltd. thought it better to lease the equipment than to buy it. The proposals for lease have been obtained from MGM Leasing Ltd. and Zeta Leasing Ltd. The terms of the lease are as under:

	MGM Leasing Ltd.	*Zeta Leasing Ltd.*
Lease period offered	*9 years*	*7 years*
Number of lease rental payments with initial lease payment due on entering the lease contract	*10*	*8*
Annual lese rental	*₹5,44,300*	*₹6,19,400*
Lease terms equivalent to borrowing cost (Claim of lessor)	*11.5% p.a.*	*11.41% p.a.*
Leasing terms proposal coverage	*Entire*	*Entire*
	₹3.5 million cost of equipment	*₹3.5 million cost of equipment*
Tax rate	*35%*	*35%*

Both the Leasing companies were in a tax-paying position and write off their investment in new equipment using following rate:

Year	*1*	*2*	*3*	*4*	*5*	*6*
Depreciation rate	*20%*	*32%*	*19.20%*	*11.52%*	*11.52%*	*5.76%*

Required:

(i) Calculate the NPV to PQR Ltd. of the two lease proposals.

(ii) Does the new equipment have a positive NPV with (i) ordinary financing, (ii) lease financing ?

(iii) Calculate the NPVs of the leases from the lessors' view points. Is there a chance that they could offer more attractive terms?

(iv) Evaluate the terms presented by each of the lessors. ***(16 Marks, November, 2004)***

[This question is out of syllabus of IPCC but this topic is covered at the Final level]

Answer

(i) NPV to PQR Ltd of MGM Leasing Ltd lease proposal.

Investment decision: Present value of Operating cash inflows

Present Value at 16% = ₹ 4,70,000 × 4.6065 = ₹ 21,65,055 (A)

Financing decision : Present value of cash outflows

Present value at 12 % = ₹ 5,44,300 + ₹ 5,44,300 × 5.3282

= ₹ 34,44,439 (B)

Hence Net Present Value = (A) – (B) = (₹ 12,79,384)

NPV to PQR Ltd of Zeta Leasing Ltd lease proposal.

Investment decision :Present value of Operating cash inflows

Present Value at 16% = ₹ 4,70,000 × 4.6065 = ₹ 21,65,055 (A)

Financing decision : Present value of cash outflows

Present value at 12 % = ₹ 6,19,400 + ₹ 6,19,400 × 4.5638

= ₹ 34,46,218. (B)

Hence Net Present Value = (A) – (B) = (₹ 12,81,163)

(ii) NPV of new equipment with ordinary financing

Investment decision :Present value of Operating cash inflows

Present Value at 16% = ₹ 4,70,000 × 4.6065 = ₹ 21,65,055 (A)

Financing decision : Present value of cash outflows

₹ 35,00,000 (B)

Hence Net Present Value = (A) – (B) = (₹ 13,34,945)

Conclusion : The company has a negative NPV with ordinary financing as well as lease financing.

(iii) NPV to MGM Leasing Ltd.

(₹, 000)

Year	*Equipment cost*	*Dep'n*	*Dep'n tax shield*	*After tax lease payment*	*After tax CFs*	*Present value factor at 7.8%*	*After tax CFs (Present Value)*
0	(3,500)	700	245	353.795	(2,901.21)	1	(2,901.21)
1		1,120	392	353.795	745.795	0.928	692.0978
2		672	235.2	353.795	588.995	0.861	507.1247
3		403.2	141.12	353.795	494.915	0.798	394.9422
4		403.2	141.12	353.795	494.915	0.74	366.2371
5		201.6	70.56	353.795	424.355	0.687	291.5319

6				353.795	353.795	0.637	225.3674
7				353.795	353.795	0.591	209.0928
8				353.795	353.795	0.548	193.8797
9				353.795	353.795	0.509	180.0817
Total						7.299	159.1502

Discount rate = 12% x(1-.35) =7.8%

NPV = ₹ 159.1502

MGM Lease Ltd's NPV is positive. They could reduce the lease terms by ₹ 1,59,150 divided by cumulative PV factor at 7.8% (7.299) divided by (1 – 0.35) i.e. ₹ 33,545.16 to make their proposal more attractive.

NPV to Zeta Leasing Ltd.

(₹000)

Year	*Equipment cost*	*Dep'n*	*Dep'n tax shield*	*After tax lease payment*	*After tax CFs*	*Present value factor at 7.8%*	*After tax CFs (Present Value)*
0	(3,500)	700	245	402.61	(2,852.39)	1	(2852.39)
1		1,120	392	402.61	794.61	0.928	737.3981
2		672	235.2	402.61	637.81	0.861	549.1544
3		403.2	141.12	402.61	543.73	0.798	433.8965
4		403.2	141.12	402.61	543.73	0.74	402.3602
5		201.6	70.56	402.61	473.17	0.687	325.0678
6				402.61	402.61	0.637	256.4626
7				402.61	402.61	0.591	237.9425
						6.242	89.8921

NPV (7.8%) = ₹ ₹ 89,892

Zeta Ltd could improve the proposal by reducing the lease terms by ₹ 89,892 divided by cumulative PV factor at 7.8% (6.242) divided by (1 – 0.35) i.e. ₹ 22,155.62 to make their proposal more attractive.

(iv) From PQR Ltd's point of view the leasing terms offered by MGM Leasing gives the least Net Present Value. PQR Ltd is not getting tax shield on leasing, depreciation and interest because of heavy losses incurred in the earlier years. With proper negotiations, the leasing terms can be reduced marginally.

Question 11

MNP Limited is thinking of replacing its existing machine by a new machine which would cost ₹ 60 lakhs. The company's current production is ₹ 80,000 units, and is expected to increase to 1,00,000 units, if the new machine is bought. The selling price of the product would remain unchanged at ₹ 200 per unit. The following is the cost of producing one unit of product using both the existing and new machine:

			Unit cost (₹)
	Existing Machine (80,000 units)	New Machine (1,00,000 units)	Difference
Materials	75.0	63.75	(11.25)
Wages & Salaries	51.25	37.50	(13.75)
Supervision	20.0	25.0	5.0
Repairs and Maintenance	11.25	7.50	(3.75)
Power and Fuel	15.50	14.25	(1.25)
Depreciation	0.25	5.0	4.75
Allocated Corporate Overheads	10.0	12.50	2.50
	183.25	165.50	(17.75)

The existing machine has an accounting book value of ₹ 1,00,000, and it has been fully depreciated for tax purpose. It is estimated that machine will be useful for 5 years. The supplier of the new machine has offered to accept the old machine for ₹ 2,50,000. However, the market price of old machine today is ₹ 1,50,000 and it is expected to be ₹ 35,000 after 5 years. The new machine has a life of 5 years and a salvage value of ₹, 2,50,000 at the end of its economic life. Assume corporate Income tax rate at 40%, and depreciation is charged on straight line basis for Income-tax purposes. Further assume that book profit is treated as ordinary income for tax purpose. The opportunity cost of capital of the Company is 15%.

Required:

(i) Estimate net present value of the replacement decision.

(ii) Estimate the internal rate of return of the replacement decision.

(iii) Should Company go ahead with the replacement decision? Suggest.

Year (t)	1	2	3	4	5
$PVIF_{0.15,t}$	0.8696	0.7561	0.6575	0.5718	0.4972
$PVIF_{0.20,t}$	0.8333	0.6944	0.5787	0.4823	0.4019
$PVIF_{0.25,t}$	0.80	0.64	0.512	0.4096	0.3277
$PVIF_{0.30,t}$	0.7692	0.5917	0.4552	0.3501	0.2693
$PVIF_{0.35,t}$	0.7407	0.5487	0.4064	0.3011	0.2230

(8+3+1=12 Marks, November, 2005)

Answer

(i) Net Cash Outlay of New Machine

Purchase Price	₹ 60,00,000
Less: Exchange value of old machine	
[2, 50,000- 0.4(2,50,000-0)]	1,50,000
	₹ 58,50,000

Market Value of Old Machine: The old machine could be sold for ₹ 1,50,000 in the market. Since the exchange value is more than the market value, this option is not attractive. This opportunity will be lost whether the old machine is retained or replaced. Thus, on incremental basis, it has no impact.

Depreciation base: Old machine has been fully depreciated for tax purpose.

Thus the depreciation base of the new machine will be its original cost i.e. ₹ 60,00,000.

Net Cash Flows: Unit cost includes depreciation and allocated overheads. Allocated overheads are allocations from corporate office therefore they are irrelevant. The depreciation tax shield may be computed separately. Excluding depreciation and allocated overheads, unit costs can be calculated. The company will obtain additional revenue from additional 20,000 units sold.

Thus, after-tax saving, excluding depreciation, tax shield, would be

= {100,000(200 – 148) – 80,000(200 – 173)} ×(1 – 0.40)

= {52,00,000 – 21,60,000}×0.60

= ₹ 18,24,000

After adjusting depreciation tax shield and salvage value, net cash flows and net present value is estimated.

Calculation of Cash flows and Project Profitability

							₹ ('000)
		0	*1*	*2*	*3*	*4*	*5*
1	After-tax savings	-	1824	1824	1824	1824	1824
2	Depreciation (₹ 60,00,000 – 2,50,000)/5	-	1150	1150	1150	1150	1150
3	Tax shield on depreciation (Depreciation × Tax rate)	-	460	460	460	460	460
4	Net cash flows	-	2284	2284	2284	2284	2284

	from operations (1+3)						
5	Initial cost	(5850)					
6	Net Salvage Value (2,50,000 – 35,000)	-	-	-	-	-	215
7	Net Cash Flows (4+5+6)	(5850)	2284	2284	2284	2284	2499
8	PVF at 15%	1.00	0.8696	0.7561	0.6575	0.5718	0.4972
9	PV	(5850)	1986.166	1726.932	1501.73	1305.99	1242.50
10	NPV	₹ 1913.32					

(ii)

						₹ ('000)
	0	*1*	*2*	*3*	*4*	*5*
NCF	(5850)	2284	2284	2284	2284	2499
PVF at 20%	1.00	0.8333	0.6944	0.5787	0.4823	0.4019
PV	(5850)	1903.257	1586.01	1321.751	1101.57	1004.35
PV of benefits	6916.94					
PVF at 30%	1.00	0.7692	0.5917	0.4550	0.3501	0.2693
PV	(5850)	1756.85	1351.44	1039.22	799.63	672.98
PV of benefits	5620.12					

$$\text{IRR} = 20\% + 10\% \times \frac{1066.94}{1296.82}$$

$$= 28.23\%$$

(iii) Advise: *The Company should go ahead with replacement project, since it is positive NPV decision.*

Question 12

A Company is considering a proposal of installing a drying equipment. The equipment would involve a Cash outlay of ₹ 6,00,000 and net Working Capital of ₹ 80,000. The expected life of the project is 5 years without any salvage value. Assume that the company is allowed to charge depreciation on straight-line basis for Income-tax purpose. The estimated before-tax cash inflows are given below:

	Before-tax Cash inflows (₹ '000)				
Year	*1*	*2*	*3*	*4*	*5*
	240	*275*	*210*	*180*	*160*

The applicable Income-tax rate to the Company is 35%. If the Company's opportunity Cost of Capital is 12%, calculate the equipment's discounted payback period, payback period, net present value and internal rate of return.

The PV factors at 12%, 14% and 15% are:

Year	*1*	*2*	*3*	*4*	*5*
PV factor at 12%	*0.8929*	*0.7972*	*0.7118*	*0.6355*	*0.5674*
PV factor at 14%	*0.8772*	*0.7695*	*0.6750*	*0.5921*	*0.5194*
PV factor at 15%	*0.8696*	*0.7561*	*0.6575*	*0.5718*	*0.4972*

(10 Marks, May, 2006)

Answer

(i) Equipment's initial cost = ₹ 6,00,000 + 80,000 = ₹ 6,80,000

(ii) Annual straight line depreciation = ₹ 6,00,000/5 = ₹ 1,20,000.

(iii) Net cash flows can be calculated as follows:

= Before tax CFs × (1 – Tc) + Tc × Depreciation

						(₹ '000)	
		CFs					
	Year	0	1	2	3	4	5
1.	Initial cost	(680)					
2.	Before tax CFs		240	275	210	180	160
3.	Tax @ 35%		84	96.25	73.5	63	56
4.	After tax-CFs		156	178.75	136.5	117	104
5.	Depreciation tax shield (Depreciation × Tc)		42	42	42	42	42
6.	Working capital released		–	–	–	–	80
7.	Net Cash Flow (4 + 5 + 6)		198	220.75	178.5	159	226
8.	PVF at 12%	1.00	0. 8929	0.7972	0.7118	0.6355	0.5674
9.	PV (7 × 8)	(680)	176.79	175.98	127.06	101.04	128.23
10.	NPV	29.12					

	0	1	2	3	4	5
PVF at 15%	1	0.8696	0.7561	0.6575	0.5718	0.4972
PV	(680)	172.18	166.91	117.36	90.92	112.37
NPV	−20.26					

Internal Rate of Return

$$IRR = 12\% + \frac{29.12}{49.38} \times 3\%$$

= 13.77%

Discounted Payback Period

Discounted CFs at K = 12% considered = $176.79 + 175.98 + 127.06 + 101.04 + 12 \times \frac{99.13}{128.24}$

= 4 years and 9.28 months

Payback Period (NCFs are considered)

$$= 198 + 220.75 + 178.5 + 12 \times \frac{82.75}{159}$$

= 3 years and 6.25 months

Question 13

Company UVW has to make a choice between two identical machines, in terms of Capacity, 'A' and 'B'. They have been designed differently, but do exactly the same job.

Machine 'A' costs ₹7,50,000 and will last for three years. It costs ₹2,00,000 per year to run.

Machine 'B' is an economy model costing only ₹5,00,000, but will last for only two years. It costs ₹3,00,000 per year to run.

The cash flows of Machine 'A' and 'B' are real cash flows. The costs are forecasted in rupees of constant purchasing power. Ignore taxes. The opportunity cost of capital is 9%.

Required:

Which machine the company UVW should buy?

The present value (PV) factors at 9% are:

Year	t_1	t_2	t_3
$PVIF_{0.09.t}$	*0.9174*	*0.8417*	*0.7722*

(8 Marks, November, 2006)

Answer

Statement Showing the Evaluation of Two Machines

	Machines	*A*	*B*
(i)	Purchase Cost	₹ 7,50,000	₹ 5,00,000
(ii)	Life of Machine	3 years	2 years
(iii)	Running Cost of Machine per year	₹ 2,00,000	₹ 3,00,000
(iv)	PVIFA 0.09,3	2.5313	
	PVIFA 0.09, 2		1.7591
(v)	PV of Running Cost of Machine	₹ 5,06,260	₹ 5,27,730
(vi)	Cash outflows of Machine {(i) + (v)}	₹ 12,56,260	₹ 10,27,730
(vii)	Equivalent PV of Annual Cash outflow (vi/iv)	₹ 4,96,290	₹ 5,84,236

Recommendation: *Company UVW should buy Machine 'A' since equivalent annual cash outflow is less than that of Machine B.*

Question 14

XYZ Ltd. is planning to introduce a new product with a project life of 8 years. The project is to be set up in Special Economic Zone (SEZ), qualifies for one time (at starting) tax free subsidy from the State Government of ₹ 25,00,000 on capital investment. Initial equipment cost will be ₹ 1.75 crores. Additional equipment costing ₹ 12,50,000 will be purchased at the end of the third year from the cash inflow of this year. At the end of 8 years, the original equipment will have no resale value, but additional equipment can be sold for ₹ 1,25,000. A working capital of ₹ 20,00,000 will be needed and it will be released at the end of eighth year. The project will be financed with sufficient amount of equity capital.

The sales volumes over eight years have been estimated as follows:

Year	*1*	*2*	*3*	*4–5*	*6–8*
Units	*72,000*	*1,08,000*	*2,60,000*	*2,70,000*	*1,80,000*

A sales price of ₹ 120 per unit is expected and variable expenses will amount to 60% of sales revenue. Fixed cash operating costs will amount ₹ 18,00,000 per year. The loss of any year will be set off from the profits of subsequent two years. The company is subject to 30 per cent tax rate and considers 12 per cent to be an appropriate after tax cost of capital for this project. The company follows straight line method of depreciation.

Required:

Calculate the net present value of the project and advise the management to take appropriate decision.

Note:

The PV factors at 12% are

Year	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
	.893	*.797*	*.712*	*.636*	*.567*	*.507*	*.452*	*.404*

(8 Marks, November, 2007)

Answer

(₹'000)

Year	*Sales*	*VC*	*FC*	*Dep.*	*Profit*	*Tax*	*PAT*	*Dep.*	*Cash inflow*
1	86.40	51.84	18	21.875	(5.315)	–	–	21.875	16.56
2	129.60	77.76	18	21.875	11.965 – (5.315) = 6.65 After adjustment of loss	1.995	4.655	21.875	26.53
3	312.00	187.20	18	21.875	84.925	25.4775	59.4475	21.875	81.3225
4–5	324.00	194.40	18	24.125	87.475	26.2425	61.2325	24.125	85.3575
6–8	216.00	129.60	18	24.125	44.275	13.2825	30.9925	24.125	55.1175

	₹
Cost of New Equipment	1,75,00,000
Less: Subsidy	25,00,000
Add: Working Capital	20,00,000
Outflow	1,70,00,000

Calculation of NPV

Year	*Cash inflows*	*PV factor*	*NPV*
	(₹)		*(₹)*
1	16,56,000	.893	14,78,808
2	26,53,000	.797	21,14,441
3	81,32,250 – 12,50,000 = 68,82,250	.712	49,00,162
4	85,35,750	.636	54,28,737
5	85,35,750	.567	48,39,770
6	55,11,750	.507	27,94,457
7	55,11,750	.452	24,91,311
8	55,11,750 + 20,00,000 + 1,25,000 = 76,36,750	.404	30,85,247
	Net Present Value		2,71,32,933

NPV	2,71,32,933
Less: Out flow	1,70,00,000
Saving	1,01,32,933

Advise: *Since the project has a positive NPV, therefore, it should be accepted.*

Question 15

C Ltd. is considering investing in a project. The expected original investment in the project will be ₹ 2,00,000, the life of project will be 5 year with no salvage value. The expected net cash inflows after depreciation but before tax during the life of the project will be as following:

Year	*1*	*2*	*3*	*4*	*5*
₹	*85,000*	*1,00,000*	*80,000*	*80,000*	*40,000*

The project will be depreciated at the rate of 20% on original cost. The company is subjected to 30% tax rate.

Required:

(i) Calculate payback period and average rate of return (ARR)

(ii) Calculate net present value and net present value index, if cost of capital is 10%.

(iii) Calculate internal rate of return.

Note: The P.V. factors are:

Year	*P.V. at 10%*	*P.V. at 37%*	*P.V. at 38%*	*P.V. at 40%*
1	*.909*	*.730*	*.725*	*.714*
2	*.826*	*.533*	*.525*	*.510*
3	*.751*	*.389*	*.381*	*.364*
4	*.683*	*.284*	*.276*	*.260*
5	*.621*	*.207*	*.200*	*.186*

(8 Marks, May, 2008)

Answer

	Project		**Outflow**		**₹ 2,00,000**		
	Year	*1*	*2*	*3*	*4*	*5*	
		₹	*₹*	*₹*	*₹*	*₹*	
	Profit after depreciation but before tax	85,000	1,00,000	80,000	80,000	40,000	

	Tax (30 %)	25,500	30,000	24,000	24,000	12,000	
	PAT	59,500	70,000	56,000	56,000	28,000	Average = ₹53,900
	Add: Dep.	40,000	40,000	40,000	40,000	40,000	
	Net cash inflow	99,500	1,10,000	96,000	96,000	68,000	Average = ₹93,900.

(i) **Calculation of payback period**

$$1 + \frac{1,00,500}{1,10,000} = 1.914 \text{ years}$$

(ii) **Calculation of ARR**

Initial investment	2,00,000	1,60,000	1,20,000	80,000	40,000	
Depreciation	40,000	40,000	40,000	40,000	40,000	
Closing investment	1,60,000	1,20,000	80,000	40,000	0	
Average investment	1,80,000	1,40,000	1,00,000	60,000	20,000	Average=1,00,000

ARR = Average of profit after tax / Average investment = $\frac{53,900}{1,00,000} = 53.90\%$

(iii) **Calculation of Net Present Value 10%**

Net cash inflow	99,500.00	1,10,000.00	96,000.00	96,000.00	68,000.00	
	0.909	0.826	0.751	0.683	0.621	
Present value	90,445.50	90,860.00	72,096.00	65,568.00	42,228.00	3,61,197.50

Net present value = ₹ 3,61,197.50 – ₹ 2,00,000 = ₹ 1,61,197.50

Net present value index = ₹ 1,61,197.50 / ₹ 2,00,000 = 0.81

(iv) **Calculation of IRR**

Present value factor-Initial investment / Average annual cash inflow

2,00,000 / 93,900 = 2.13

It lies in between 38 % and 40%

Net Cash Inflows	99,500.00	1,10,000.00	96,000.00	96,000.00	68,000.00	
Present Value Factor @ 38%	0.725	0.525	0.381	0.276	0.200	
Present value @ 38% (P1)	72,137.50	57,750.00	36,576.00	26,496.00	13,600.00	Total = 2,06,559.50
Net Cash Inflows	99,500.00	1,10,000.00	96,000.00	96,000.00	68,000.00	
Present Value Factor @ 40%	0.714	0.510	0.364	0.260	0.186	
Present value @ 40% (P2)	71,043	56,100	34,944	24,960	12,648	Total = 1,99,695

IRR is calculated by Interpolation:

IRR = LDR + (P1 – Q) / P1 – P2 (SDR – LDR)

= 38 + (2,06,559.50 – 2,00,000) / (2,06,559.50 – 1,99,695) × (40 – 38)

= 39.911137%

Question 16

A company wants to invest in a machinery that would cost ₹ 50,000 at the beginning of year 1. It is estimated that the net cash inflows from operations will be ₹ 18,000 per annum for 3 years, if the company opts to service a part of the machine at the end of year 1 at ₹ 10,000. In such a case, the scrap value at the end of year 3 will be ₹ 12,500. However, if the company decides not to service the part, then it will have to be replaced at the end of year 2 at ₹ 15,400. But in this case, the machine will work for the 4th year also and get operational cash inflow of ₹ 18,000 for the 4th year. It will have to be scrapped at the end of year 4 at ₹ 9,000. Assuming cost of capital at 10% and ignoring taxes, will you recommend the purchase of this machine based on the net present value of its cash flows?

If the supplier gives a discount of ₹ 5,000 for purchase, what would be your decision? (The present value factors at the end of years 0, 1, 2, 3, 4, 5 and 6 are respectively 1, 0.9091, 0.8264, 0.7513, 0.6830, 0.6209 and 0.5644). ***(7 Marks, November, 2008)***

Answer

Option I : Purchase Machinery and Service Part at the end of Year 1.

Net Present value of cash flow @ 10% per annum discount rate.

$$NPV = -50,000 + \frac{18,000}{(1.1)} + \frac{18,000}{(1.1)^2} + \frac{18,000}{(1.1)^3} - \frac{10,000}{(1.1)} + \frac{12,500}{(1.1)^3}$$

$= -50,000 + 18,000\ (0.9091 + 0.8264 + 0.7513) - (10,000 \times 0.9091) + (12,500 \times 0.7513)$

$= -50,000 + (18,000 \times 2.4868) - 9,091 + 9,391$

$= -50,000 + 44,762 - 9,091 + 9,391$

NPV = – 4,938

Since, Net Present Value is negative; therefore, this option is not to be considered.

If Supplier gives a discount of ₹ 5,000 then,

NPV = +5,000 – 4,938 = + 62

In this case, Net Present Value is positive but very small, therefore, this option may not be advisable.

Option II : Purchase Machinery and Replace Part at the end of Year 2.

$$NPV = -50,000 + \frac{18,000}{(1.1)} + \frac{18,000}{(1.1)^2} + \frac{18,000}{(1.1)^3} - \frac{15,400}{(1.1)^2} + \frac{27,000}{(1.1)^4}$$

$= -50,000 + 18,000\ (0.9091 + 0.8264 + 0.7513) - (15,400 \times 0.8264) + (27,000 \times 0.6830)$

$= -50,000 + 18,000\ (2.4868) - (15,400 \times 0.8264) + (27,000 \times 0.6830)$

$= -50,000 + 44,762 - (15,400 \times 0.8264) + (27,000 \times 0.6830)$

$= -50,000 + 44,762 - 12,727 + 18,441$

$= -62,727 + 63,203$

$= +476$

Net Present Value is positive, but very low as compared to the investment.

If the Supplier gives a discount of ₹ 5,000, then

NPV = 5,000 + 476 = 5,476

Decision: *Option II is worth investing as the net present value is positive and higher as compared to Option I.*

Question 17

A company is required to choose between two machines A and B. The two machines are designed differently, but have identical capacity and do exactly the same job. Machine A costs ₹ 6,00,000 and will last for 3 years. It costs ₹ 1,20,000 per year to run.

Machine B is an 'economy' model costing ₹ 4,00,000 but will last only for two years, and costs ₹ 1,80,000 per year to run. These are real cash flows. The costs are forecasted in rupees of

constant purchasing power. Opportunity cost of capital is 10%. Which machine company should buy? Ignore tax.

$PVIF_{0.10, 1}$ = 0.9091, $PVIF_{0.10, 2}$ = 0.8264, $PVIF_{0.10, 3}$ = 0.7513. ***(7 Marks, June, 2009)***

Answer

Advise to the Management Regarding Buying of Machines

Statement Showing Evaluation of Two Machines

Machines	*A*	*B*
Purchase cost (₹): (i)	6,00,000	4,00,000
Life of machines (years)	3	2
Running cost of machine per year (₹): (ii)	1,20,000	1,80,000
Cumulative present value factor for 1-3 years @ 10%: (iii)	2.4868	-
Cumulative present value factor for 1-2 years @ 10%: (iv)	-	1.7355
Present value of running cost of machines (₹): (v)	2,98,416	3,12,390
	[(ii) × (iii)]	[(ii) × (iv)]
Cash outflow of machines (₹): (vi)=(i) +(v)	8,98,416	7,12,390
Equivalent present value of annual cash outflow	3,61,273.93	4,10,481.13
	[(vi)÷(iii)]	[(vi) ÷(iv)]

Recommendation: *The Company should buy Machine A since its equivalent cash outflow is less than Machine B.*

Question 18

A hospital is considering purchasing a diagnostic machine costing ₹ 80,000. The projected life of the machine is 8 years and has an expected salvage value of ₹ 6,000 at the end of 8 years. The annual operating cost of the machine is ₹ 7,500. It is expected to generate revenues of ₹ 40,000 per year for eight years. Presently, the hospital is outsourcing the diagnostic work and is earning commission income of ₹ 12,000 per annum; net of taxes.

Required:

Whether it would be profitable for the hospital to purchase the machine? Give your recommendation under:

(i) Net Present Value method

(ii) Profitability Index method.

PV factors at 10% are given below:

Year 1	*Year 2*	*Year 3*	*Year 4*	*Year 5*	*Year 6*	*Year 7*	*Year 8*
0.909	*0.826*	*0.751*	*0.683*	*0.621*	*0.564*	*0.513*	*0.467*

(8 Marks, November, 2009)

Answer

Advise to the Hospital Management

Determination of Cash inflows	
Sales Revenue	40,000
Less: Operating Cost	7,500
	32,500
Less: Depreciation (80,000 – 6,000)/8	9,250
Net Income	23,250
Tax @ 30%	6,975
Earnings after Tax (EAT)	16,275
Add: Depreciation	9,250
Cash inflow after tax per annum	25,525
Less: Loss of Commission Income	12,000
Net Cash inflow after tax per annum	13,525
In 8th Year :	
New Cash inflow after tax	13,525
Add: Salvage Value of Machine	6,000
Net Cash inflow in year 8	19,525

Calculation of Net Present Value (NPV)

Year	*CFAT*	*PV Factor @10%*	*Present Value of Cash inflows*
1 to 7	13,525	4.867	65,826.18
8	19,525	0.467	9,118.18
			74,944.36
Less: Cash Outflows			80,000.00
	NPV		(5,055.64)

$$\text{Profitability Index} = \frac{\text{Sum of discounted cash inflows}}{\text{Present value of cash outflows}}$$

$$= \frac{74,944.36}{80,000} = 0.937$$

Advise: Since the net present value is negative and profitability index is also less than 1, therefore, the hospital should not purchase the diagnostic machine.

Note: Since the tax rate is not mentioned in the question, therefore, it is assumed to be 30 percent in the given solution.

Question 19

The management of P Limited is considering selecting a machine out of two mutually exclusive machines. The company's cost of capital is 12 percent and corporate tax rate for the company is 30 percent. Details of the machines are as follows:

	Machine – I	*Machine – II*
Cost of machine	*₹10,00,000*	*₹15,00,000*
Expected life	*5 years*	*6 years*
Annual income before tax and depreciation	*₹3,45,000*	*₹4,55,000*

Depreciation is to be charged on straight line basis.

You are required to:

(i) Calculate the discounted pay-back period, net present value and internal rate of return for each machine.

(ii) Advise the management of P Limited as to which machine they should take up.

The present value factors of Re. 1 are as follows:

Year	*1*	*2*	*3*	*4*	*5*	*6*
At 12%	*.893*	*.797*	*.712*	*.636*	*.567*	*.507*
At 13%	*.885*	*.783*	*.693*	*.613*	*.543*	*.480*
At 14%	*.877*	*.769*	*.675*	*.592*	*.519*	*.456*
At 15%	*.870*	*.756*	*.658*	*.572*	*.497*	*.432*
At 16%	*.862*	*.743*	*.641*	*.552*	*.476*	*.410*

(9 Marks, May, 2010)

Answer

(i) Computation of Discounted Payback Period, Net Present Value (NPV) and Internal Rate of Return (IRR) for Two Machines

Calculation of Cash Inflows

	Machine – I (₹)	**Machine – II (₹)**
Annual Income before Tax and Depreciation	3,45,000	4,55,000

Less : Depreciation		
Machine – I: 10,00,000 /5	2,00,000	-
Machine – II: 15,00,000 / 6	-	2,50,000
Income before Tax	1,45,000	2,05,000
Less: Tax @ 30 %	43,500	61,500
Income after Tax	1,01,500	1,43,500
Add: Depreciation	2,00,000	2,50,000
Annual Cash Inflows	3,01,500	3,93,500

		Machine – I			Machine – II		
Year	*P.V. of Re.1 @12%*	*Cash flow*	*P.V.*	*Cumulative P.V*	*Cash flow*	*P.V.*	*Cumulative P.V.*
1	0.893	3,01,500	2,69,240	2,69,240	3,93,500	3,51,396	3,51,396
2	0.797	3,01,500	2,40,296	5,09,536	3,93,500	3,13,620	6,65,016
3	0.712	3,01,500	2,14,668	7,24,204	3,93,500	2,80,172	9,45,188
4	0.636	3,01,500	1,91,754	9,15,958	3,93,500	2,50,266	11,95,454
5	0.567	3,01,500	1,70,951	10,86,909	3,93,500	2,23,115	14,18,569
6	0.507	-	-	-	3,93,500	1,99,505	16,18,074

Discounted Payback Period for:

Machine - I

$$\text{Discounted Payback Period} = 4 + \frac{(10,00,000 - 9,15,958)}{1,70,951}$$

$$= 4 + \frac{84,042}{1,70,951}$$

$$= 4 + 0.4916$$

= 4.49 years or 4 years and 5.9 months

Machine - II

$$\text{Discounted Payback Period} = 5 + \frac{(15,00,000 - 14,18,969)}{1,99,505}$$

$$= 5 + \frac{81,431}{1,99,505}$$

= 5 + 0.4082

= 5.41 years or 5 years and 4.9 months

Net Present Value for:

Machine – I

NPV = ₹ 10,86,909 – 10,00,000 = ₹ 86,909

Machine – II

NPV = ₹ 16,18,074 – 15,00,000 = ₹ 1,18,074

Internal Rate of Return (IRR) for:

Machine – I

$$\text{P.V. Factor} = \frac{\text{Initial Investment}}{\text{Annual Cash Inflow}} = \frac{10,00,000}{3,01,500} = 3.3167$$

PV factor falls between 15% and 16%

Present Value of Cash inflow at 15% and 16% will be:

Present Value at 15% = 3.353 x 3,01,500 = 10,10,930

Present Value at 16% = 3.274 x 3,01,500 = 9,87,111

$$\text{IRR} = 15 + \frac{10,10,930 - 10,00,0000}{10,10,930 - 9,87,111} \times (16 - 15)$$

$$= 15 + \frac{10,930}{23,819} \times 1 = 15.4588\% = 15.46\%$$

Machine - II

$$\text{P.V. Factor} = \frac{15,00,000}{3,93,500} = 3.8119$$

Present Value of Cash inflow at 14% and 15% will be:

Present Value at 14% = 3.888 x 3,93,500 = 15,29,928

Present Value at 15% = 3.785 x 3,93,500 = 14,89,398

$$\text{IRR} = 14 + \frac{15,29,928 - 15,00,000}{15,29,928 - 14,89,398} \times (15 - 14)$$

$$= 14 + \frac{29,928}{40,530} \times 1 = 14.7384\ \% = 14.74\%$$

(ii) Advise to the Management

Ranking of Machines in terms of the Three Methods

	Machine - I	Machine - II
Discounted Payback Period	I	II
Net Present Value	II	I
Internal Rate of Return	I	II

Advise: *Since Machine - I has better ranking than Machine – II, therefore, Machine – I should be selected.*

Question 20

A company has to make a choice between two machines X and Y. The two machines are designed differently, but have identical capacity and do exactly the same job. Machine 'X' costs ₹ 5,50,000 and will last for three years. It costs ₹ 1,25,000 per year to run. Machine 'Y' is an economy model costing ₹ 4,00,000, but will last for two years and costs ₹ 1,50,000 per year to run. These are real cash flows. The costs are forecasted in Rupees of constant purchasing power. Opportunity cost of capital is 12%. Ignore taxes. Which machine company should buy?

	t = 1	*t = 2*	*t = 3*
$PVIF_{0.12, t}$	*0.8929*	*0.7972*	*0.7118*
$PVIFA_{0.12,2}$	*= 1.6901*		
$PVIFA_{0,12,3}$	*= 2.4019*		

(8 Marks, November, 2010)

Answer

Statement showing the Evaluation of Two Machines

Machines	*X*	*Y*
Purchase cost (₹): (i)	5,50,000	4,00,000
Life of Machines (years)	3	2
Running Cost of Machine per year (₹): (ii)	1,25,000	1,50,000
Cumulative Present value factor for 1-3 years @ 10%: (iii)	2.4019	-
Cumulative Present value factor for 1-2 years @ 10%: (iv)	-	1.6901
Present Value of Running Cost of Machines (₹): (v)	3,00,237.5	2,53,515
	[(ii) × (iii)]	[(ii) × (iv)]
Cash Outflow of Machines (₹): (vi)=(i) +(v)	8,50,237.5	6,53,515.0

Equivalent Present Value of Annual Cash Outflow Equated Annualized Cost = $\frac{\text{PV of Machine Cost}}{\text{PVI FA}_{0.12,t}}$	3,53,985.39 [(vi)÷(iii)]	3,86,672.39 [(vi) ÷(iv)]

Advise: *The Company should buy Machine X since its equivalent cash outflow (₹ 3,53,985.39) is less than that of Machine Y (₹ 3,86,672.39).*

Question 21

A Ltd. is considering the purchase of a machine which will perform some operations which are at present performed by workers. Machines X and Y are alternative models. The following details are available:

	Machine X	***Machine Y***
	(₹)	**(₹)**
Cost of machine	*1,50,000*	*2,40,000*
Estimated life of machine	*5 years*	*6 years*
Estimated cost of maintenance p.a.	*7,000*	*11,000*
Estimated cost of indirect material, p.c.	*6,000*	*8,000*
Estimated savings in scrap p.a.	*10,000*	*15,000*
Estimated cost of supervision p.a.	*12,000*	*16,000*
Estimated savings in wages pa.	*90,000*	*1,20,000*

Depreciation will be charged on straight line basis. The tax rate is 30%. Evaluate the alternatives according to:

(i) Average rate of return method, and

(ii) Present value index method assuming cost of capital being 10%.

(The present value of ₹ 1.00 @ 10% p.a. for 5 years is 3.79 and for 6 years is 4.354)

(8 Marks, November, 2011)

Answer

Working Notes:

Depreciation on Machine X = $\frac{1,50,000}{5} = ₹\ 30,000$

Depreciation on Machine Y = $\frac{2,40,000}{6} = ₹\ 40,000$

Particulars	Machine X (₹)	Machine Y (₹)
Annual Savings:		
Wages	90,000	1,20,000
Scrap	10,000	15,000
Total Savings (A)	**1,00,000**	**1,35,000**
Annual Estimated Cash Cost :		
Indirect Material	6,000	8,000
Supervision	12,000	16,000
Maintenance	7,000	11,000
Total Cash Cost (B)	**25,000**	**35,000**
Annual Cash Savings (A-B)	**75,000**	**1,00,000**
Less : Depreciation	30,000	40,000
Annual Savings Before Tax	45,000	60,000
Less : Tax @ 30%	13,500	18,000
Annual Savings/Profit (After Tax)	31,500	42,000
Add : Depreciation	30,000	40,000
Annual Cash Inflows	**61,500**	**82,000**

Evaluation of Alternatives

(i) Average Rate of Return Method (ARR)

$$\text{ARR} = \frac{\text{Average Annual Net Savings}}{\text{Average Investment}}$$

$$\text{Machine X} = \frac{31,500}{75,000} \times 100 = 42\%$$

$$\text{Machine Y} = \frac{42,000}{1,20,000} \times 100 = 35\%$$

Decision: *Machine X is better.*

[**Note:** *ARR can be computed alternatively taking initial investment as the basis for computation (ARR = Average Annual Net Income/Initial Investment). The value of ARR for Machines X and Y would then change accordingly as 21% and 17.5% respectively]*

(ii) Present Value Index Method

Present Value = Annual Cash Inflow x P.V. Factor @ 10%

Machine X = 61,500 x 3.79 = ₹ 2,33,085

Machine Y = 82,000 x 4.354

= ₹ 3,57,028

$$\text{P.V. Index} = \frac{\text{Present Value}}{\text{Investment}}$$

$$\text{Machine X} = \frac{2,33,085}{1,50,000} = 1.5539$$

$$\text{Machine Y} = \frac{3,57,028}{2,40,000} = 1.4876$$

Decision: *Machine X is better.*

Question 22

ANP Ltd. is providing the following information:

Annual cost of saving	*₹ 96,000*
Useful life	*5 years*
Salvage value	*zero*
Internal rate of return	*15%*
Profitability index	*1.05*

Table of discount factor:

Discount factor	*Years*					
	1	*2*	*3*	*4*	*5*	*Total*
15%	*0.870*	*0.756*	*0.658*	*0.572*	*0.497*	*3.353*
14%	*0.877*	*0.769*	*0.675*	*0.592*	*0.519*	*3.432*
13%	*0.886*	*0.783*	*0.693*	*0.614*	*0.544*	*3.52*

You are required to calculate:

(i) Cost of the project

(ii) Payback period

(iii) Net present value of cash inflow

(iv) Cost of capital. ***(8 Marks, May, 2012)***

Answer

(i) Cost of Project

At 15% internal rate of return (IRR), the sum of total cash inflows = cost of the project i.e initial cash outlay

Annual cost savings = ₹ 96,000

Useful life = 5 years

Considering the discount factor table @ 15%, cumulative present value of cash inflows for 5 years is 3.353

Hence, Total Cash inflows for 5 years for the Project is

96,000 x 3.353 = ₹ 3,21,888

Hence, Cost of the Project = ₹ 3,21,888

(ii) Payback Period

$$\text{Payback period} = \frac{\text{Cost of the Project}}{\text{Annual Cost Savings}} = \frac{₹\ 3,21,888}{96,000}$$

Payback Period = 3.353 years

(iii) Net Present Value (NPV)

NPV = Sum of Present Values of Cash inflows – Cost of the Project

= ₹ 3,37,982.40 – 3,21,888 = ₹ 16,094.40

Net Present Value = ₹ 16,094.40

(iv) Cost of Capital

$$\text{Profitability index} = \frac{\text{Sum of Discounted Cash inflows}}{\text{Cost of the Project}}$$

$$1.05 = \frac{\text{Sum of Discounted Cash inflows}}{3,21,888}$$

∴ Sum of Discounted Cash inflows = ₹ 3,37,982.40

Since, Annual Cost Saving = ₹ 96,000

$$\text{Hence, cumulative discount factor for 5 years} = \frac{₹\ 3,37,982.40}{96,000}$$

From the discount factor table, at discount rate of 13%, the cumulative discount factor for 5 years is 3.52

Hence, Cost of Capital = 13%

Question 23

SS Limited is considering the purchase of a new automatic machine which will carry out some operations which are at present performed by manual labour. NM-A_1 and NM-A_2, two alternative models are available in the market. The following details are collected:

		Machine	
		NM-A_1	*NM-A_2*
Cost of Machine	*(₹)*	*20,00,000*	*25,00,000*
Estimated working life		*5 Years*	*5 Years*
Estimated saving in direct wages per annum	*(₹)*	*7,00,000*	*9,00,000*
Estimated saving in scrap per annum	*(₹)*	*60,000*	*1,00,000*
Estimated additional cost of indirect material per annum	*(₹)*	*30,000*	*90,000*
Estimated additional cost of indirect labour per annum	*(₹)*	*40,000*	*50,000*
Estimated additional cost of repairs and maintenance per annum	*(₹)*	*45,000*	*85,000*

Depreciation will be charged on a straight line method. Corporate tax rate is 30 percent and expected rate of return may be 12 percent.

You are required to evaluate the alternatives by calculating the:

(i) Pay-back Period

(ii) Accounting (Average) Rate of Return; and

(iii) Profitability Index or P.V. Index (P.V. factor for ₹ 1 @ 12% 0.893; 0.797; 0.712; 0.636; 0.567; 0.507) ***(10 Marks, November, 2012)***

Answer

Evaluation of Alternatives

Working Notes:

Depreciation on Machine NM-A_1 = $\frac{20,00,000}{5}$

= 4,00,000

Depreciation on Machine NM-A_2 = $\frac{25,00,000}{5}$ = 5,00,000

Particulars	*Machine NM-A_1 (₹)*	*Machine NM-A_2 (₹)*
Annual Savings:		
Direct Wages	7,00,000	9,00,000
Scraps	60,000	1,00,000
Total Savings (A)	7,60,000	10,00,000
Annual Estimated Cash Cost :		
Indirect Material	30,000	90,000

Indirect Labour	40,000	50,000
Repairs and Maintenance	45,000	85,000
Total Cost (B)	1,15,000	2,25,000
Annual Cash Savings (A-B)	6,45,000	7,75,000
Less: Depreciation	4,00,000	5,00,000
Annual Savings before Tax	2,45,000	2,75,000
Less: Tax @ 30%	73,500	82,500
Annual Savings /Profits after tax	1,71,500	1,92,500
Add: Depreciation	4,00,000	5,00,000
Annual Cash Inflows	5,71,500	6,92,500

(i) Payback Period

$$\textbf{Machine NM – } A_1 = \frac{\text{Total Initial Capital Investment}}{\text{Annual expected after tax net cashflow}}$$

$$= \frac{20,00,000}{5,71,500} = 3.50 \text{ Years}$$

$$\textbf{Machine NM – } A_2 = \frac{25,00,000}{6,92,500} = \textbf{3.61 Years}$$

Decision: Machine NM-A_1 is better.

(ii) Accounting (Average) Rate of Return (ARR)

$$\textbf{ARR} = \frac{\text{Average Annual Net Savings}}{\text{Average investment}} \times 100$$

$$\textbf{Machine NM – } A_1 = \frac{1,71,500}{10,00,000} \times 100 = 17.15\%$$

$$\textbf{Machine NM – } A_2 = \frac{1,92,500}{12,50,000} \times 100 = 15.4\%$$

Decision: Machine NM-A_1 is better.

(Note: ARR may be computed alternatively by taking initial investment in the denominator.)

(iii) Profitability Index or P V Index

Present Value Cash Inflow = Annual Cash Inflow x PV factor at 12%

Machine NM-A_1 = 5, 71,500 x 3.605 = ₹ 20, 60,258

Machine NM-A_2 = 6, 92,500 x 3.605 = ₹ 24, 96,463

$$\textbf{PV Index} = \frac{\text{Present Value of Cash Inflow}}{\text{Investment}}$$

$$\textbf{Machine NM - A}_1 = \frac{20,60,258}{20,00,000} = 1.03$$

$$\textbf{Machine NM - A}_2 = \frac{24,96,463}{25,00,000} = 0.998 = 1.0 \text{ approx.}$$

Decision: Machine NM-A_1 is better.

Question 24

PQR Company Ltd. Is considering to select a machine out of two mutually exclusive machines. The company's cost of capital is 12 per cent and corporate tax rate is 30 per cent. Other information relating to both machines is as follows:

	Machine – I	*Machine – II*
Cost of Machine	*₹ 15,00,000*	*₹ 20,00,000*
Expected Life	*5 Yrs.*	*5 Yrs.*
Annual Income (Before Tax and Depreciation)	*₹ 6,25,000*	*₹ 8,75,000*

Depreciation is to be charged on straight line basis:

You are required to calculate:

(i) Discounted Pay Back Period

(ii) Net Present Value

(iii) Profitability Index

The present value factors of ₹ 1 @ 12% are as follows:

Year	*01*	*02*	*03*	*04*	*05*
PV factor @ 12%	*0.893*	*0.797*	*0.712*	*0.636*	*0.567*

(9 Marks, May, 2013)

Answer

Working Notes:

$$\text{Depreciation on Machine – I} = \frac{15,00,000}{5} = ₹ 3,00,000$$

Depreciation on Machine – II $= \frac{20,00,000}{5} = ₹\,4,00,000$

Particulars	Machine-I (₹)	Machine – II (₹)
Annual Income (before Tax and Depreciation)	6,25,000	8,75,000
Less: Depreciation	3,00,000	4,00,000
Annual Income (before Tax)	3,25,000	4,75,000
Less: Tax @ 30%	97,500	1,42,500
Annual Income (after Tax)	2,27,500	3,32,500
Add: Depreciation	3,00,000	4,00,000
Annual Cash Inflows	5,27,500	7,32,500

	Machine – I				Machine - II		
Year	PV of Re 1 @ 12%	Cash flow	PV	Cumulative PV	Cash flow	PV	Cumulative PV
1	0.893	5,27,500	4,71,058	4,71,058	7,32,500	6,54,123	6,54,123
2	0.797	5,27,500	4,20,418	8,91,476	7,32,500	5,83,803	12,37,926
3	0.712	5,27,500	3,75,580	12,67,056	7,32,500	5,21,540	17,59,466
4	0.636	5,27,500	3,35,490	16,02,546	7,32,500	4,65,870	22,25,336
5	0.567	5,27,500	2,99,093	19,01,639	7,32,500	4,15,328	26,40,664

(i) Discounted Payback Period

Machine – I

Discounted Payback Period $= 3 + \frac{(15,00,000 - 2,67,056)}{3,35,490}$

$= 3 + \frac{2,32,944}{3,35,490}$

$= 3 + 0.6943$

= 3.69 years or 3 years 8.28 months

Machine – II

Discounted Payback Period $= 3 + \frac{(20,00,000 - 17,59,466)}{4,65,870}$

$= 3 + \frac{2,40,534}{4,65,870}$

$= 3 + 0.5163$

= 3.52 years or 3 years 6.24 months

(ii) Net Present Value (NPV)

Machine – I
NPV = 19,01,639 -15,00,000 = ₹ 4,01,639
Machine – II
NPV = 26,40,664 – 20,00,000 = ₹ 6,40,664

(iii) Profitability Index

Machine – I

$$\text{Profitability Index} = \frac{19,01,639}{15,00,000} = 1.268$$

Machine – II

$$\text{Profitability Index} = \frac{26,40,664}{20,00,000} = 1.320$$

Conclusion:

Method	*Machine - I*	*Machine - II*	*Rank*
Discounted Payback Period	3.69 years	3.52 years	II
Net Present Value	₹4,01,639	₹6,40,664	II
Profitability Index	1.268	1.320	II

Question 25

APZ Limited is considering to select a machine between two machines 'A' and 'B'. The two machines have identical capacity, do exactly the same job, but designed differently.

Machine 'A' costs ₹ 8,00,000, having useful life of three years. It costs ₹ 1,30,000 per year to run.

Machine 'B' is an economy model costing ₹ 6,00,000, having useful life of two years. It costs ₹ 2,50,000 per year to run.

The cash flows of machine 'A' and 'B' are real cash flows. The costs are forecasted in rupees of constant purchasing power. Ignore taxes.

The opportunity cost of capital is 10%.

The present value factors at 10% are :

Year	t_1	t_2	t_3
$PVIF_{0.10,t}$	*0.9091*	*0.8264*	*0.7513*
$PVIFA_{0.10,2}$ = *1.7355*			
$PVIFA_{0.10,3}$ = *2.4868*			

Which machine would you recommend the company to buy? ***(8 Marks, November, 2013)***

Answer

Statement Showing Evaluation of Two Machines

Particulars	*Machine A*	*Machine B*
Purchase Cost (₹) : (i)	8,00,000	6,00,000
Life of Machines (in years)	3	2
Running Cost of Machine per year (₹) : (ii)	1,30,000	2,50,000
Cumulative PVF for 1-3 years @ 10% : (iii)	2.4868	-
Cumulative PVF for 1-2 years @ 10% : (iv)	-	1.7355
Present Value of Running Cost of Machines (₹): (v) = [(ii) x (iii)]	3,23,284	4,33,875
Cash Outflow of Machines (₹) : (vi) = (i) + (v)	11,23,284	10,33,875
Equivalent Present Value of Annual Cash Outflow [(vi) ÷ (iii)]	4,51,698.57 Or 4,51,699	5,95,721.69 Or 5,95,722

Recommendation: *APZ Limited should consider buying Machine A since its equivalent Cash outflow is less than Machine B.*

Question 26

FH Hospital is considering to purchase a CT-Scan machine. Presently the hospital is outsourcing the CT -Scan Machine and is earning commission of ₹ 15,000 per month (net of tax). The following details are given regarding the machine:

	₹
Cost of CT -Scan machine	*15,00,000*
Operating cost per annum (excluding Depreciation)	*2,25,000*
Expected revenue per annum	*7,90,000*
Salvage value of the machine (after 5 years)	*3,00,000*
Expected life of the machine	*5 years*

Assuming tax rate @ 30%, whether it would be profitable for the hospital to purchase the machine?

Give your recommendation under:

(i) Net Present Value Method, and

(ii) Profitability Index Method.

PV factors at 12% are given below:

Year	*1*	*2*	*3*	*4*	*5*
PV factor	*0.893*	*0.797*	*0.712*	*0.636*	*0.567*

(8 Marks, May, 2014)

Answer

Advise to the Hospital Management

Determination of Cash inflows	₹
Sales Revenue	7,90,000
Less: Operating Cost	2,25,000
	5,65,000
Less: Depreciation (15,00,000 – 3,00,000)/5	2,40,000
Net Income	3,25,000
Tax @ 30%	97,500
Earnings after Tax (EAT)	2,27,500
Add: Depreciation	2,40,000
Cash inflow after tax per annum	4,67,500
Less: Loss of Commission Income	1,80,000
Net Cash inflow after tax per annum	2,87,500
In 5th Year :	
New Cash inflow after tax	2,87,500
Add: Salvage Value of Machine	3,00,000
Net Cash inflow in year 5	5,87,500

Calculation of Net Present Value (NPV)

Year	*CFAT*	*PV Factor @10%*	*Present Value of Cash inflows*
1 to 4	2,87,500	3.038	8,73,425.00
5	5,87,500	0.567	3,33,112.50
			12,06,537.50
Less: Cash Outflows			15,00,000.00
	NPV		(2,93,462.50)

$$\text{Profitability Index} = \frac{\text{Sum of discounted cash inflows}}{\text{Present value of cash outflows}} = \frac{12,06,537.50}{15,00,000} = 0.804$$

Advise: Since the net present value is negative and profitability index is also less than 1, therefore, the hospital should not purchase the CT-Scan machine.

Question 27

What is 'Internal Rate of Return'? Explain. ***(4 Marks, November, 2014)***

Answer

Internal Rate of Return: It is that rate at which discounted cash inflows are equal to the discounted cash outflows. It can be stated in the form of a ratio as follows:

$$\frac{\text{Cash inflows}}{\text{Cash Outflows}} = 1$$

This rate is to be found by trial and error method. This rate is used in the evaluation of investment proposals. In this method, the discount rate is not known but the cash outflows and cash inflows are known.

In evaluating investment proposals, internal rate of return is compared with a required rate of return, known as cut-off rate. If it is more than cut-off rate the project is treated as acceptable; otherwise project is rejected.

7
Management of Working Capital

UNIT – I : MEANING, CONCEPT AND POLICIES OF WORKING CAPITAL

Question 1

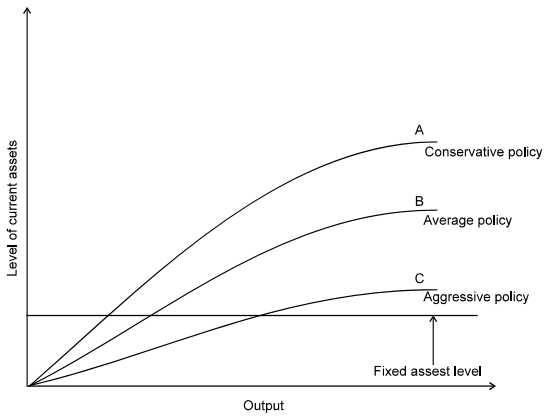
Discuss the liquidity vs. profitability issue in management of working capital.

(4 Marks, November, 2010)

Answer

Liquidity versus Profitability Issue in Management of Working Capital

Working capital management entails the control and monitoring of all components of working capital i.e. cash, marketable securities, debtors, creditors etc. Finance manager has to pay particular attention to the levels of current assets and their financing. To decide the level of financing of current assets, the risk return trade off must be taken into account. The level of current assets can be measured by creating a relationship between current assets and fixed assets. A firm may follow a conservative, aggressive or moderate policy.



A conservative policy means lower return and risk while an aggressive policy produces higher return and risk. The two important aims of the working capital management are profitability and solvency. A liquid firm has less risk of insolvency i.e. it will hardly experience a cash shortage or a stock out situation. However, there is a cost associated with maintaining a

sound liquidity position. So, to have a higher profitability the firm may have to sacrifice solvency and maintain a relatively low level of current assets.

Question 2

Discuss the estimation of working capital need based on operating cycle process.

(4 Marks, November, 2010)

Answer

Estimation of Working Capital Need based on Operating Cycle

One of the methods for forecasting working capital requirement is based on the concept of operating cycle. The determination of operating capital cycle helps in the forecast, control and management of working capital. The length of operating cycle is the indicator of performance of management. The net operating cycle represents the time interval for which the firm has to negotiate for Working Capital from its Bankers. It enables to determine accurately the amount of working capital needed for the continuous operation of business activities. The duration of working capital cycle may vary depending on the nature of the business.

In the form of an equation, the operating cycle process can be expressed as follows:

Operating Cycle = R + W + F +D – C

Where,

R = Raw material storage period.

W = Work-in-progress holding period.

F = Finished goods storage period.

D = Debtors collection period.

C = Credit period availed.

Question 3

XYZ Co. Ltd. is a pipe manufacturing company. Its production cycle indicates that materials are introduced in the beginning of the production cycle; wages and overhead accrue evenly throughout the period of the cycle. Wages are paid in the next month following the month of accrual. Work in process includes full units of raw materials used in the beginning of the production process and 50% of wages and overheads are supposed to be conversion costs. Details of production process and the components of working capital are as follows:

Production of pipes	*12,00,000 units*
Duration of the production cycle	*One month*
Raw materials inventory held	*One month consumption*
Finished goods inventory held for	*Two months*

Credit allowed by creditors	*One month*
Credit given to debtors	*Two months*
Cost price of raw materials	*₹ 60 per unit*
Direct wages	*₹ 10 per unit*
Overheads	*₹ 20 per unit*
Selling price of finished pipes	*₹ 100 per unit*

Required to calculate:

(i) The amount of working capital required for the company.

(ii) Its maximum permissible bank finance under all the three methods of lending norms as suggested by the Tandon Committee, assuming the value of core current assets: ₹ 1,00,00,00.

[Part (ii) is out of syllabus/removed from the syllabus of Financial Management]

(10 Marks, May, 2005)

Answer

(i)

		Amount in ₹
A – Current Assets		
(i)	Raw material inventory –(1 month)- 12,00,000 Uts × 60 × $\frac{1}{12}$	60,00,000
(ii)	Work in Progress – Production cycle 1 month	
	Raw material (added in the beginning) ₹ 60,00,000	
	Wages (12,00,000 × 10 × $\frac{1}{12}$) × 50% = 5,00,000	
	Overheads 20 × 10,00,000 × $\frac{1}{12}$ × 50% = 10,00,000	
	Total	75,00,000
(iii)	Finished goods (inventory held for 2 months)	
	Total Cost Material 60.00	1,80,00,000
	Labour 10.00	
	Overheads 20.00 =90 × 12,00,000 × $\frac{2}{12}$	
(iv)	Debtors for 2 months 12,00,000 × ₹ 90 × $\frac{2}{12}$	1,80,00,000
	Total current assets	4,95,00,000

B – Current liabilities	
(v) Creditors for Raw material – 01 month	
$7,20,00,000 \times \frac{1}{12}$	60,00,000
(vi) Creditors for wages	
$12,00,000 \times 10 \times \frac{1}{12}$	10,00,000
Total current liabilities	70,00,000
Net working capital	4,25,00,000

(ii) Computation of Maximum Permissible Bank Finance according to Tandon Committee Norms

1st Method

	₹
CAs	4,95,00,000
CLs	70,00,000
Working capital gap	4,25,00,000
Less 25% from long term sources	(1,06,25,000)
Max Permissible Bank Finance	3,18,75,000

2nd Method

	₹
Working capital gap	4,25,00,000
Less: 25% of CAs	(1,23,75,000)
MPBF	3,01,25,000

3rd Method

Total current assets – Core current assets = ₹ 4,95,00,000 – 1,00,00,000

= ₹ 3,95,00,000

	₹
Real current assets	3,95,00,000
Less: 25%	98,75,000
	2,96,25,000
Less: Current Liabilities	70,00,000
MPBF	2,26,25,000

Question 4

The following annual figures relate to MNP Limited:

Sales (at three months credit)	*₹ 90,00,000*
Materials consumed (suppliers extend one and half month's credit)	*₹ 22,50,000*
Wages paid (one month in arrear)	*₹ 18,00,000*
Manufacturing expenses outstanding at the end of the year (cash expenses are paid one month in arrear)	*₹ 2,00,000*
Total Administrative expenses for the year (cash expenses are paid one month in arrear)	*₹ 6,00,000*
Sales Promotion expenses for the year (paid quarterly in advance)	*₹ 12,00,000*

The company sells its products on gross-profit of 25% assuming depreciation as a part of cost of production. It keeps two month's stock of finished goods and one month's stock of raw materials as inventory. It keeps cash balance of ₹ 2,50,000.

Assume a 5% safety margin, work out the working capital requirements of the company on cash cost basis. Ignore work-in-progress. ***(6 Marks, May, 2004)***

Answer

Computation of Total Cash Cost:

	₹	₹
Sales		90,00,000
Less: Gross profit *(25% x sales revenue)*		22,50,000
Total Manufacturing cost (A)		67,50,000
Less: Material consumed cost	22,50,000	
Less: Wages paid	18,00,000	40,50,000
Manufacturing expenses		27,00,000
Less: Cash manufacturing expenses *(₹2,00,000 × 12)*		24,00,000
Depreciation: (B)		3,00,000
Total Manufacturing cost : (C) = (A) – (B)		64,50,000
Add: Administrative expenses		6,00,000
Add: Sales promotion expenses		12,00,000
Total cash cost of manufacturing and sales		82,50,000

Estimation of Current Assets :

	₹
Debtors *(Total cash cost × 3/12) or (₹ 82,50,000 × 3/12)*	20,62,500
Cash balance	2,50,000
Pre-paid sales promotion expenses	3,00,000
Raw materials stock *(Material consumed / 12) or (₹22,50,000 / 12)*	1,87,500
Finished goods stock *(Total cash cost x 2/12) or (₹ 64,50,000 x 2/12)*	10,75,000
Total Current Assets	38,75,000

Estimation of Current Liabilities:

Sundry creditors *Material cost* *(₹22,50,000 x 1.5 months / 12 months)*	2,81,250
Manufacturing expenses outstanding	2,00,000
Wages outstanding *(₹ 18,00,000 × 1/12 months)*	1,50,000
Administrative expenses outstanding *(₹6,00,000 × 1 month / 12 months)*	50,000
Total Current Liabilities	6,81,250
Working capital requirements : (CA – CL) *(On cash cost basis)*	31,93,750
Add: Safety Margin @ 5%	1,59,688
Total Working Capital	33,53,438

Question 5

A proforma cost sheet of a Company provides the following particulars:

	Amount per unit (₹)
Raw materials cost	*100*
Direct labour cost	*37.50*
Overheads cost	*75*

Total cost	*212.50*
Profit	*37.50*
Selling Price	*250*

The Company keeps raw material in stock, on an average for one month; work-in-progress, on an average for one week; and finished goods in stock, on an average for two weeks.

The credit allowed by suppliers is three weeks and company allows four weeks credit to its debtors. The lag in payment of wages is one week and lag in payment of overhead expenses is two weeks.

The Company sells one-fifth of the output against cash and maintains cash-in-hand and at bank put together at ₹37,500.

Required:

Prepare a statement showing estimate of Working Capital needed to finance an activity level of 1,30,000 units of production. Assume that production is carried on evenly throughout the year, and wages and overheads accrue similarly. Work-in-progress stock is 80% complete in all respects. ***(12 Marks, November, 2006)***

Answer

(a) Activity level: 1,30,000 units

Statement showing Estimate of Working Capital Needs

A.	Investment in Inventory:	
	Raw material inventory: 1 month $\left(1,30,000 \times \frac{4}{52} \times ₹\ 100\right)^{*}$	10,00,000
	WIP Inventory : 1 week $\left(1,30,000 \times \frac{1}{52} \times 0.80 \times 212.50\right)$	4,25,000
	Finished goods inventory: 2 weeks $\left(1,30,000 \times \frac{2}{52} \times 212.50\right)$	10,62,500
B.	Investment in Debtors: 4 weeks at cost $\left(1,30,000 \times \frac{4}{5} \times \frac{4}{52} \times 212.50\right)$	17,00,000
C.	Cash balance	37,500
D.	Investment in Current Assets (A + B + C)	42,25,000

E.	Current Liabilities:		
	Creditors : 3 weeks $\left(1{,}30{,}000 \times \frac{3}{52} \times 100\right)$	7,50,000	
	Deferred wages : 1 week $\left(1{,}30{,}000 \times \frac{1}{52} \times 37.50\right)$	93,750	
	Deferred overheads : 2 weeks $\left(1{,}30{,}000 \times \frac{2}{52} \times 75\right)$	3,75,000	12,18,750
	Net Working Capital Needs		30,06,250

** For calculation purposes, 4 weeks has been considered as equivalent to a month.*

Question 6

A newly formed company has applied to the Commercial Bank for the first time for financing its working capital requirements. The following information is available about the projections for the current year:

	Per unit
Elements of cost:	*(₹)*
Raw material	*40*
Direct labour	*15*
Overhead	*30*
Total cost	*85*
Profit	*15*
Sales	*100*

Other information:

Raw material in stock: average 4 weeks consumption, Work – in progress (completion stage, 50 per cent), on an average half a month. Finished goods in stock: on an average, one month.

Credit allowed by suppliers is one month.

Credit allowed to debtors is two months.

Average time lag in payment of wages is 1½ weeks and 4 weeks in overhead expenses.

Cash in hand and at bank is desired to be maintained at ₹ 50,000.

All Sales are on credit basis only.

Required:

(i) *Prepare statement showing estimate of working capital needed to finance an activity level of 96,000 units of production. Assume that production is carried on evenly throughout the year, and wages and overhead accrue similarly. For the calculation purpose 4 weeks may be taken as equivalent to a month and 52 weeks in a year.*

(ii) *From the above information calculate the maximum permissible bank finance by all the three methods for working capital as per Tandon Committee norms; assume the core current assets constitute 25% of the current assets.*

[Part (ii) is out of syllabus/removed from the syllabus of Financial Management]

(8 Marks, November, 2007)

Answer

Calculation of Working Capital Requirement

(A) Current Assets

			₹
(i)	Stock of material for 4 weeks (96,000 × 40 × 4/52)		2,95,385
(ii)	Work in progress for ½ month or 2 weeks		
	Material (96,000 × 40 × 2/52) .50	73,846	
	Labour (96,000 × 15 × 2/52) .50	27,692	
	Overhead (96,000 × 30 × 2/52) .50	55,385	1,56,923
(iii)	Finished stock (96,000 × 85 × 4/52)		6,27,692
(iv)	Debtors for 2 months (96,000 × 85 × 8/52)		12,55,385
	Cash in hand or at bank		50,000
	Investment in Current Assets		23,85,385

(B) Current Liabilities

(i)	Creditors for one month (96,000 × 40 × 4/52)		2,95,385
(ii)	Average lag in payment of expenses		
	Overheads (96,000 × 30 × 4/52)	2,21,538	
	Labour (96,000 × 15 × 3/104)	41,538	2,63,076
	Current Liabilities		5,58,461
	Net working capital (A – B)		18,26,924

Minimum Permissible Bank Finance as per Tandon Committee

Method I : .75 (Current Assets – Current Liabilities)

.75 (23,85,385 – 5,58,461)

.75 (18,26,924) – 5,58,461 = ₹ 13,70,193

Method II : .75 × Current Assets – Current Liabilities

.75 × 23,85,385 – 5,58,461

17,89,039 – 5,58,461 = ₹ 12,30,578

Method III: .75 (Current Assets – CCA) – Current Liabilities

.75 (23,85,385 – 5,96,346) – 5,58,461

.75 (17,89,039) – 5,58,461

13,41,779 – 5,58,461 = ₹ 7,83,318

Question 7

MN Ltd. is commencing a new project for manufacture of electric toys. The following cost information has been ascertained for annual production of 60,000 units at full capacity:

		Amount per unit
		₹
Raw materials		*20*
Direct labour		*15*
Manufacturing overheads:		
	₹	
Variable	*15*	
Fixed	*10*	*25*
Selling and Distribution overheads:		
	₹	
Variable	*3*	
Fixed	*1*	*4*
Total cost		*64*
Profit		*16*
Selling price		*80*

In the first year of operations expected production and sales are 40,000 units and 35,000 units respectively. To assess the need of working capital, the following additional information is available:

(i)	*Stock of Raw materials……....3 months consumption.*
(ii)	*Credit allowable for debtors……..….1½ months.*
(iii)	*Credit allowable by creditors……4 months.*
(iv)	*Lag in payment of wages……...1 month.*
(v)	*Lag in payment of overheads……...½ month.*

(vi)	*Cash in hand and Bank is expected to be ₹ 60,000.*
(vii)	*Provision for contingencies is required @ 10% of working capital requirement including that provision.*

You are required to prepare a projected statement of working capital requirement for the first year of operations. Debtors are taken at cost. ***(9 Marks, November, 2008)***

Answer

Statement Showing Cost and Sales for the First Year

Annual Production Capacity	60,000 units
Production	40,000 units
Sales	35,000 units

Particulars	₹
Sales Revenue (₹ 80 × 35,000)	28,00,000
Cost of Production:	
Materials @ ₹ 20 per unit	8,00,000
Direct Labour @ ₹ 15 per unit	6,00,000
Manufacturing Overheads	
Variable @ ₹ 15 per unit	6,00,000
Fixed (based on production capacity 60,000 units × ₹ 10)	6,00,000
Cost of Production	26,00,000
Less: Closing Stock (40,000 – 35,000 = 5,000 units) $\left(₹ \frac{26,00,000}{40,000} \times 5,000 \text{ units}\right)$	3,25,000
Cost of Goods Sold	22,75,000
Add: Selling & Distribution Overheads	
Variable @ ₹ 3 × 35,000 units = 1,05,000	
Fixed (Re. 1 × 60,000 units) = 60,000	1,65,000
Cost of Sales	24,40,000
Profit	3,60,000

Statement Showing Working Capital Requirement

A.	**Current Assets**		₹
	Stock of Raw Materials	(₹ 8,00,000 × 3/12)	2,00,000
	Stock of Finished Goods		3,25,000
	Debtors at Cost	(₹ 24,40,000 × 3/24)	3,05,000
	Cash and Bank		60,000
	Total (A)		8,90,000
B.	**Current Liabilities**		
	Creditors for Materials	(₹ 10,00,000 × 4/12)	3,33,333
	Creditors for Expenses	(₹ 13,65,000 × 1/24)	56,875
	Outstanding Wages	(₹ 6,00,000 × 1/12)	50,000
	Total (B)		4,40,208
	Working Capital Requirement before Contingencies **(A – B)**		4,49,792
	Add: Provision for Contingencies (₹ 4,49,792 × 1/9)		49,977
	Estimated Working Capital Requirement		4,99,769

Workings Notes:

Purchase of Raw Material during the first year	₹
Raw Material consumed during the year	8,00,000
Add: Closing Stock of Raw Materials (3 months consumption)	2,00,000
	10,00,000
Less: Opening Stock of Raw Material	Nil
Purchases during the year	10,00,000

Question 8

The following figures and ratios are related to a company:

(i)	*Sales for the year (all credit)*	*₹ 30,00,000*
(ii)	*Gross Profit ratio*	*25 percent*
(iii)	*Fixed assets turnover (based on cost of goods sold)*	*1.5*
(iv)	*Stock turnover (based on cost of goods sold)*	*6*
(v)	*Liquid ratio*	*1 : 1*
(vi)	*Current ratio*	*1.5 : 1*
(vii)	*Debtors collection period*	*2 months*
(viii)	*Reserves and surplus to Share capital*	*0.6 : 1*
(ix)	*Capital gearing ratio*	*0.5*

(x) Fixed assets to net worth 1.20 : 1

You are required to prepare:

(a) Balance Sheet of the company on the basis of above details.

(b) The statement showing working capital requirement, if the company wants to make a provision for contingencies @ 10 percent of net working capital including such provision.

(15 Marks, May, 2010)

Answer

(a) Preparation of Balance Sheet of a Company

Working Notes:

(i) Cost of Goods Sold = Sales – Gross Profit (= 25% of Sales)
= ₹ 30,00,000 – ₹ 7,50,000
= ₹ 22,50,000

(ii) Closing Stock = Cost of Goods Sold / Stock Turnover
= ₹ 22,50,000/6
= ₹ 3,75,000

(iii) Fixed Assets = Cost of Goods Sold / Fixed Assets Turnover
= ₹ 22,50,000/1.5
= ₹ 15,00,000

(iv) Current Assets : Current Ratio = 1.5 and Liquid Ratio = 1
Stock = 1.5 – 1 = 0.5
Current Assets = Amount of Stock x 1.5/0.5
= ₹ 3,75,000 x 1.5/0.5 = ₹ 11,25,000

(v) Liquid Assets (Debtors and Cash)
= Current Assets – Stock
= ₹ 11,25,000 – ₹ 3,75,000
= ₹ 7,50,000

(vi) Debtors = Sales x Debtors Collection period /12
= ₹ 30,00,000 x 2 /12
= ₹ 5,00,000

(vii) Cash = Liquid Assets – Debtors
= ₹ 7,50,000 – ₹ 5,00,000 = ₹ 2,50,000

(viii) Net worth = Fixed Assets /1.2

= ₹ 15,00,000/1.2 = ₹ 12,50,000

(ix) Reserves and Surplus

Reserves and Share Capital = 0.6 + 1 = 1.6

Reserves and Surplus = ₹ 12,50,000 x 0.6/1.6

= ₹ 4,68,750

(x) Share Capital = Net worth – Reserves and Surplus

= ₹ 12,50,000 – ₹ 4,68,750

= ₹ 7,81,250

(xi) Current Liabilities = Current Assets/ Current Ratio

= ₹ 11,25,000/1.5 = ₹ 7,50,000

(xii) Long-term Debts

Capital Gearing Ratio = Long-term Debts / Equity Shareholders' Fund

Long-term Debts = ₹ 12,50,000 x 0.5 = ₹ 6,25,000

Balance Sheet of a Company

Liabilities	*Amount (₹)*	**Assets**	*Amount (₹)*
Equity Share Capital	7,81,250	Fixed Assets	15,00,000
Reserves and Surplus	4,68,750	Current Assets	
Long-term Debts	6,25,000	Stock	3,75,000
Current Liabilities	7,50,000	Debtors	5,00,000
		Cash	2,50,000
	26,25,000		26,25,000

(b) Statement Showing Working Capital Requirement

A.	**Current Assets**		
	Stock	3,75,000	
	Debtors	5,00,000	
	Cash	2,50,000	11,25,000
B.	**Current Liabilities**		7,50,000
	Working Capital before Provision (A – B)		3,75,000
Add:	Provision for Contingencies @ 10% of Working Capital including Provision i.e. 1/9th of Working Capital before Provision : 3,75,000 x 1/9		41,667
	Working Capital Requirement including Provision		4,16,667

Question 9

The management of MNP Company Ltd. is planning to expand its business and consults you to prepare an estimated working capital statement. The records of the company reveal the following annual information:

	₹
Sales –Domestic at one month's credit	*24,00,000*
Export at three month's credit (sales price 10% below domestic price)	*10,80,000*
Materials used (suppliers extend two months credit)	*9,00,000*
Lag in payment of wages – ½ month	*7,20,000*
Lag in payment of manufacturing expenses (cash) – 1 month	*10,80,000*
Lag in payment of Adm. Expenses – 1 month	*2,40,000*
Sales promotion expenses payable quarterly in advance	*1,50,000*
Income tax payable in four installments of which one falls in the next financial year	*2,25,000*

Rate of gross profit is 20%.

Ignore work-in-progress and depreciation.

The company keeps one month's stock of raw materials and finished goods (each) and believes in keeping ₹ 2,50,000 available to it including the overdraft limit of ₹ 75,000 not yet utilized by the company.

The management is also of the opinion to make 12% margin for contingencies on computed figure.

You are required to prepare the estimated working capital statement for the next year.

(16 Marks, May, 2011)

Answer

Preparation of Statement of Working Capital Requirement for MNP Company Ltd

Estimated Working Capital Statement

(A)	Current Assets in terms of Cash Costs	₹
	Debtors: Domestic Sales $\frac{1}{12}\times 19,20,000$	1,60,000
	Export Sales $\frac{3}{12}\times 9,60,000$	2,40,000
	Prepaid Sales promotion expenses	37,500
	Stock of Raw materials $\frac{1}{12}\times 9,00,000$	75,000

	Stock of finished goods $\frac{1}{12}\times 28,80,000$	2,40,000
	Cash at Bank and in Hand	1,75,000
	Total Current Assets	9,27,500
(B)	**Current Liabilities in terms of Cash Costs**	₹
	Creditors for:	
	Material $\frac{2}{12}\times 9,00,000$	1,50,000
	Wages $\frac{1}{24}\times 7,20,000$	30,000
	Manufacturing expenses $\frac{1}{12}\times 10,80,000$	90,000
	Administrative expenses $\frac{1}{12}\times 2,40,000$	20,000
	Income Tax Payable	56,250
	Total Current Liabilities	3,46,250
(C)		₹
	Net Current Assets (A – B)	5,81,250
	Add: 12% margin for contingencies	69,750
	Required Working Capital	6,51,000

Working Notes:

Cash cost of sales is calculated as under:	₹	₹
Domestic Sales	24,00,000	
Less: Gross profit @ 20%	4,80,000	19,20,000
Export Sales	10,80,000	
₹ $\frac{10,80,000\times 100}{90} = 12,00,000$ @10%	1,20,000	9,60,000
		28,80,000

Question 10

The Trading and Profit and Loss Account of Beta Ltd. for the year ended 31st March, 2011 is given below:

Particulars		Amount (₹)	Particulars (₹)		Amount (₹)
To Opening Stock:			By Sales (Credit)		20,00,000
Raw Materials	1,80,000		By Closing Stock:		
Work- in- progress	60,000		Raw Materials	2,00,000	
Finished Goods	2,60,000	5,00,000	Work-in-progress	1,00,000	
To Purchases (credit)		11,00,000	Finished Goods	3,00,000	6,00,000
To Wages		3,00,000			
To Production Expenses		2,00,000			
To Gross Profit c/d		5,00,000			
		26,00,000			26,00,000
To Administration Expenses		1,75,000	By Gross Profit b/s		5,00,000
To Selling Expenses		75,000			
To Net Profit		2,50,000			
		5,00,000			5,00,000

The opening and closing balances of debtors were ₹ 1,50,000 and ₹ 2,00,000 respectively whereas opening and closing creditors were ₹ 2,00,000 and ₹ 2,40,000 respectively.

You are required to ascertain the working capital requirement by operating cycle method.

(8 Marks, November, 2011)

Answer

Computation of Operating Cycle

(1) **Raw Material Storage Period (R)**

$$\text{Raw Material Storage Period (R)} = \frac{\text{Average Stock of Raw Material}}{\text{Daily Average Consumption of Raw material}}$$

$$= \frac{(1,80,000 + 200000)/2}{10,80,000/360} = 63.33 \text{ Days}$$

Raw Material Consumed = Opening Stock + Purchases – Closing Stock

= 1,80,000 + 11,00,000 – 2,00,000 = ₹10,80,000

(2) **Conversion/Work-in-Process Period (W)**

$$\text{Conversion/Processing Period} = \frac{\text{Average Stock of WIP}}{\text{Daily Average Production cost}}$$

$$= \frac{(60,000 + 1,00,000)/2}{15,40,000/360} = 18.7 \text{ days}$$

Production Cost:

Opening Stock of WIP	=	60,000
Add: Raw Material Consumed	=	10,80,000
Add: Wages	=	3,00,000
Add: Production Expenses	=	2,00,000
		16,40,000
Less: Closing Stock of WIP	=	1,00,000
Production Cost		15,40,000

(3) **Finished Goods Storage Period (F)**

$$\text{Finished Goods Storage Period} = \frac{\text{Average Stock of Finished Goods}}{\text{Daily Average Cost of Good Sold}}$$

$$= \frac{(2,60,000 + 3,00,000)/2}{15,00,000/360} = 67.19 \text{ Days}$$

Cost of Goods Sold	₹
Opening Stock of Finished Goods	2,60,000
Add: Production Cost	15,40,000
	18,00,000
Less: Closing Stock of Finished Goods	3,00,000
	15,00,000

(4) **Debtors Collection Period (D)**

$$\text{Debtors Collection Period} = \frac{\text{Average Debtors}}{\text{Daily Average Sales}} = \frac{(150000 + 200000)/2}{20,00,000/360} = 31.5 \text{ Days}$$

(5) **Creditors Payment Period (C)**

$$\text{Creditors Payment Period} = \frac{\text{Average Creditors}}{\text{Daily Average Purchase}}$$

$$= \frac{(2,00,000 + 2,40,000)/2}{11,00,000/360} = 72 \text{ Days}$$

(6) **Duration of Operating Cycle (O)**

O = R + W + F + D – C

= 63.33 + 18.7 + 67.19 + 31.5 – 72 = 108.72 days

Computation of Working Capital

(i) Number of Operating Cycles per Year

= 360/Duration Operating Cycle = 360/108.72 = 3.311

(ii) Total Operating Expenses

	₹
Total Cost of Production	15,00,000
Add: Administration Expenses	1,75,000
Selling Expenses	75,000
	17,50,000

(iii) Working Capital Required

$$\text{Working Capital Required} = \frac{\text{Total Operating Expenses}}{\text{Number of Operating Cycles per year}}$$

$$= \frac{17,50,000}{3.311} = ₹\ 5,28,541$$

[**Note:** For computational purposes, the above solution is based on 360 days a year. The solution can also be solved on the basis of 365 days a year. Work-in-process (W) can be computed alternatively taking Administration Expenses as part of Cost of Production. This would lead to further changes in figures of Finished Goods Storage Period, Duration of operating cycle, Number of operating cycles per year and amount of capital required.]

Question 11

STN Ltd. is a readymade garment manufacturing company. Its production cycle indicates that materials are introduced in the beginning of the production phase; wages and overhead accrue evenly throughout the period of cycle. The following figures for the 12 months ending 31st December 2011 are given.

Production of shirts	*54,000 units*
Selling price per unit	*₹ 200*
Duration of the production cycle	*1 month*
Raw material inventory held	*2 month's consumption*
Finished goods stock held for	*1 month*

Credit allowed to debtors is 1.5 months and credit allowed by creditors is 1 month.

Wages are paid in the next month following the month of accrual.

In the work-in-progress 50% of wages and overheads are supposed to be conversion costs.

The ratios of cost to sales price are-raw materials 60% direct wages 10% and overheads 20%. Cash is to be held to the extent of 40% of current liabilities and safety margin of 15% will be maintained.

Calculate amount of working capital required for the company on a cash cost basis.

(8 Marks, May, 2012)

Answer

Computation of Amount of Working Capital required on a Cash Cost basis

Working Notes:

1. Raw material inventory: The cost of materials for the whole year is 60% of the Sales value.

   Hence it is 54,000 units x ₹ 200 x $\frac{60}{100}$ = ₹ 64,80,000. The monthly consumption of raw material would be ₹ 5,40,000. Raw material requirements would be for two months; hence raw materials in stock would be ₹ 10,80,000.

2. Debtors: Total Cash Cost of Sales = 97,20,000 x $\frac{1.5}{12}$ = ₹ 12,15,000

3. Work-in-process: (Each unit of production is expected to be in process for one month).

		₹
(a)	Raw materials in work-in-process (being one month's raw material requirements)	5,40,000
(b)	Labour costs in work-in-process (It is stated that it accrues evenly during the month. Thus, on the first day of each month it would be zero and on the last day of month the work-in-process would include one month's labour costs. On an average therefore, it would be equivalent to ½ of the month's labour costs)	45,000
(c)	Overheads (For ½ month as explained above) Total work-in-process	90,000 6,75,000

4. Finished goods inventory:

	(1 month's cost of production)	
	Raw materials	5,40,000
	Labour	90,000
	Overheads	1,80,000
		8,10,000

5. Creditors: Suppliers allow a one month's credit period. Hence, the average amount of creditors would be ₹ 5,40,000 being one month's purchase of raw materials.

6. Direct Wages payable: The direct wages for the whole year is 54,000 units × ₹ 200 x 10% = 10,80,000. The monthly direct wages would be 90,000 (10,80,000 ÷12). Hence, wages payable would be ₹ 90,000.

Statement of Working Capital Required

	₹	₹
Current Assets		
Raw materials inventory (Refer to working note 1)	10,80,000	
Debtors (Refer to working note 2)	12,15,000	
Working–in-process (Refer to working note 3)	6,75,000	
Finished goods inventory (Refer to working note 4)	8,10,000	
Cash	2,52,000	40,32,000
Current Liabilities		
Creditors (Refer to working note 5)	5,40,000	
Direct wages payable (Refer to working note 6)	90,000	6,30,000
Estimated working capital requirements (before safety margin of 15%)		34,02,000
Add: Safety margin of 15%		5,10,300
Estimated Working Capital Requirements		39,12,300

Question 12

The following information is provided by the DPS Limited for the year ending 31st March, 2013.

Raw material storage period	*55 days*
Work-in-progress conversion period	*18 days*
Finished Goods storage period	*22 days*
Debt collection period	*45 days*
Creditors' payment period	*60 days*
Annual Operating cost	*₹ 21,00,000*
(Including depreciation of ₹ 2,10,000)	
[1 year = 360 days]	

You are required to calculate:

(i) Operating Cycle period.

(ii) Number of Operating Cycle in a year.

(iii) Amount of working capital required for the company on a cash cost basis.

(iv) The company is a market leader in its product, there is virtually no competitor in the market. Based on a market research it is planning to discontinue sales on credit and deliver products based on pre-payments. Thereby, it can reduce its working capital requirement substantially.

What would be the reduction in working capital requirement due to such decision?

(8 Marks, May, 2013)

Answer

(i) Calculation of Operating Cycle Period

Operating Cycle Period = R + W + F + D – C

= 55 + 18 + 22 + 45 – 60 = 80 days

(ii) Number of Operating Cycle in a Year

$$= \frac{360}{\text{Operating Cycle Period}}$$

$$= \frac{360}{80} = 4.5$$

(iii) Amount of Working Capital Required

$$= \frac{\text{Annual Operating Cost}}{\text{Number of Operating Cycle}}$$

$$= \frac{18,90,000}{4.5} = 4,20,000$$

(iv) Reduction in Working Capital

Operating Cycle Period = R + W + F – C

= 55 + 18 + 22 – 60= 35

Amount of Working Capital Required $= \frac{18,90,000}{360} \times 35 = 1,83,750$

Reduction in Working Capital = 4,20,000 – 1,83,750 = 2,36,250

Question 13

Black Limited has furnished the following cost sheet:

	₹/Per Unit
Raw Material	*98*
Direct Labour	*53*
Factory Overhead (Includes depreciation of ₹ 15 per unit at budgeted level of activity)	*88*
Total Cost	***239***
Profit	*43*
Selling Price	***282***

Additional Information:

(i)	*Average raw material in stock*	*3 weeks*
(ii)	*Average work-in-progress (% of completion with respect to Material- 75% Labour & Overhead - 70%)*	*2 weeks*
(iii)	*Finished goods in stock*	*4 weeks*
(iv)	*Credit allowed to debtors*	*2½ weeks*
(v)	*Credit allowed by creditors*	*3½ weeks*
(vi)	*Time lag in payments of labour*	*2 weeks*
(vii)	*Time lag in payments of factory overheads*	*1½ weeks*
(viii)	*Company sells, 25% of the output against cash*	
(ix)	*Cash in hand and bank is desired to be maintained*	*₹ 2,25,000*
(x)	*Provision for contingencies is required @ 4% of working capital requirement including that provision.*	

You may assume that production is carried on evenly throughout the year and labour and factory overheads accrue similarly.

You are required to prepare a statement showing estimate of working capital needed to finance a budgeted activity level of 1,04,000 units of production. Finished stock, debtors and overhead are taken at cash cost. ***(8 Marks, May, 2014)***

Answer

Statement of Estimation of Working Capital Needs

	Current Assets	₹
I	**Investment in Inventory**	
	(i) Raw material Inventory $= 1,04,000 \times \frac{3}{52} \times$ ₹ 98	5,88,000
	(ii) Work-in-Process Inventory	

	Material $= 1,04,000 \times \frac{2}{52} \times 0.75 \times 98 = 2,94,000$	
	Labour and Overheads Cost (other than depreciation) $= 1,04,000 \times \frac{2}{52} \times 0.70 \times 126 = 3,52,800$	6,46,800
	(iii) Finished Goods Inventory (Cash Cost) $= 1,04,000 \times \frac{4}{52} \times 224$	17,92 ,000
II	**Investment in Debtors (Cash Cost)** $= 1,04,000 \times \frac{2.5}{52} \times 0.75 \times 224$	8,40,000
III	**Cash Balance**	2,25 ,000
	Investment in Current Assets	40,91,800

	Current Liabilities and Deferred Payment	**₹**
(i)	Creditors $= 1,04,000 \times \frac{3.5}{52} \times 98$	6,86,000
(ii)	Wages outstanding $= 1,04,000 \times \frac{2}{52} \times 53$	2,12,000
(iii)	Overheads outstanding (cash cost) $= 1,04,000 \times \frac{1.5}{52} \times 73$	2,19,000
	Total Deferred Payments	11,17,000
	Net Working Capital (Current assets – Non-interest bearing current liabilities) = 40,91,800 – 11,17,000	29,74,800
	Add: Provision for Contingencies @ 4 percent (₹ 29,74,800 × 1/24)	1,23 ,950
	Working Capital Requirement including Provision	30,98,750

(**Note**: For calculation purpose, 4 weeks maybe taken as equivalent to a month and 52 weeks in a year.)

UNIT – II : TREASURY AND CASH MANAGEMENT

Question 1

Write short note on William J. Baumal vs. Miller-Orr cash management model.

(3 Marks; 4 Marks, May, 2004; May 2011)

Answer

William J Baumal vs Miller- Orr Cash Management Model: According to William J Baumal's Economic order quantity model optimum cash level is that level of cash where the carrying costs and transactions costs are the minimum. The carrying costs refer to the cost of holding cash, namely, the interest foregone on marketable securities. The transaction costs refer to the cost involved in getting the marketable securities converted into cash. This happens when the firm falls short of cash and has to sell the securities resulting in clerical, brokerage, registration and other costs.

The optimim cash balance according to this model will be that point where these two costs are equal. The formula for determining optimum cash balance is:

$$C = \sqrt{\frac{2U \times P}{S}}$$

Where,

C = Optimum cash balance

U = Annual (monthly) cash disbursements

P = Fixed cost per transaction

S = Opportunity cost of one rupee p.a. (or p.m)

Miller-Orr cash management model is a net cash flow stochastic model. This model is designed to determine the time and size of transfers between an investment account and cash account. In this model control limits are set for cash balances. These limits may consist of h as upper limit, z as the return point, and zero as the lower limit.

When the cash balances reach the upper limit, the transfer of cash equal to h-z is invested in marketable securities account. When it touches the lower limit, a transfer from marketable securities account to cash account is made. During the period when cash balance stays between (h,z) and (z, o) i.e high and low limits no transactions between cash and marketable securities account is made. The high and low limits of cash balance are set up on the basis of fixed cost associated with the securities transactions, the opportunity cost of holding cash and the degree of likely fluctuations in cash balances. These limits satisfy the demands for cash at the lowest possible total costs.

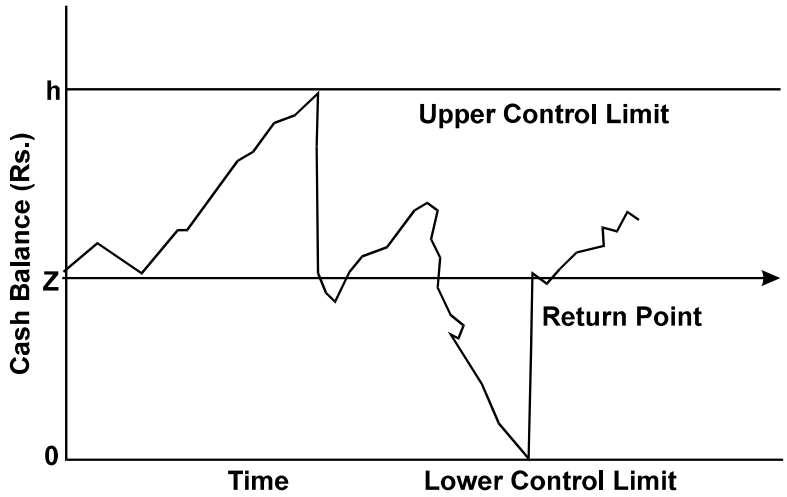
Question 2

Discuss Miller-Orr Cash Management model. ***(2 Marks, November, 2005)***

Answer

Miller – Orr Cash Management Model

According to this model the net cash flow is completely stochastic. When changes in cash balance occur randomly, the application of control theory serves a useful purpose. The Miller – Orr model is one of such control limit models. This model is designed to determine the time and size of transfers between an investment account and cash account. In this model control limits are set for cash balances. These limits may consist of 'h' as upper limit, 'z' as the return point and zero as the lower limit.



MILLER-ORR CASH MANAGEMENT MODEL

When the cash balance reaches the upper limit, the transfer of cash equal to 'h – z' is invested in marketable securities account. When it touches the lower limit, a transfer from marketable securities account to cash account is made. During the period when cash balance stays between (h, z) and (z, 0) i.e. high and low limits, no transactions between cash and marketable securities account is made. The high and low limits of cash balance are set up on the basis of fixed cost associated with the securities transaction, the opportunities cost of holding cash and degree of likely fluctuations in cash balances. These limits satisfy the demands for cash at the lowest possible total costs. The formula for calculation of the spread between the control limits is:

$$\text{Spread} = 3\left(\frac{3/4 \times \text{Transaction Cost} \times \text{Variance of Cashflows}}{\text{Interest rate}}\right)^{1/3}$$

And, the return point can be calculated using the formula:

$$\text{Return point} = \text{Lower limit} + \frac{\text{Spread}}{3}$$

Question 3

Explain briefly the functions of Treasury Department. ***(3 Marks, May, 2008 & June, 2009)***

Answer

The functions of treasury department management is to ensure proper usage, storage and risk management of liquid funds so as to ensure that the organisation is able to meet its obligations, collect its receivables and also maximize the return on its investments. Towards this end the treasury function may be divided into the following:

(i) Cash Management: The efficient collection and payment of cash both inside the organization and to third parties is the function of treasury department. Treasury normally manages surplus funds in an investment portfolio.

(ii) Currency Management: The treasury department manages the foreign currency risk exposure of the company. It advises on the currency to be used when invoicing overseas sales. It also manages any net exchange exposures in accordance with the company policy.

(iii) Fund Management: Treasury department is responsible for planning and sourcing the company's short, medium and long-term cash needs. It also participates in the decision on capital structure and forecasts future interest and foreign currency rates.

(iv) Banking: Since short-term finance can come in the form of bank loans or through the sale of commercial paper in the money market, therefore, treasury department carries out negotiations with bankers and acts as the initial point of contact with them.

(v) Corporate Finance: Treasury department is involved with both acquisition and disinvestment activities within the group. In addition, it is often responsible for investor relations.

Question 4

State the advantage of Electronic Cash Management System. ***(4 Marks, May, 2013)***

Answer

Advantages of Electronic Cash Management System

(i) Significant saving in time.

(ii) Decrease in interest costs.

(iii) Less paper work.

(iv) Greater accounting accuracy.

(v) More control over time and funds.

(vi) Supports electronic payments.

(vii) Faster transfer of funds from one location to another, where required.

(viii) Speedy conversion of various instruments into cash.

(ix) Making available funds wherever required, whenever required.

(x) Reduction in the amount of 'idle float' to the maximum possible extent.

(xi) Ensures no idle funds are placed at any place in the organization.

(xii) It makes inter-bank balancing of funds much easier.

(xiii) It is a true form of centralised 'Cash Management'.

(xiv) Produces faster electronic reconciliation.

(xv) Allows for detection of book-keeping errors.

(xvi) Reduces the number of cheques issued.

(xvii) Earns interest income or reduce interest expense.

(Note:** Students may answer any four of the above advantages**).

Question 5

What is Virtual Banking? State its advantages. ***(4 Marks, November, 2013)***

Answer

Virtual Banking and its Advantages

Virtual banking refers to the provision of banking and related services through the use of information technology without direct recourse to the bank by the customer.

The advantages of virtual banking services are as follows:

- Lower cost of handling a transaction.
- The increased speed of response to customer requirements.
- The lower cost of operating branch network along with reduced staff costs leads to cost efficiency.
- Virtual banking allows the possibility of improved and a range of services being made available to the customer rapidly, accurately and at his convenience.

(Note:** Students may answer any two of the above advantages.**)

Question 6

'Management of marketable securities is an integral part of investment of cash.' Comment.

(4 Marks, November, 2013)

Answer

*"**Management of Marketable Securities is an Integral Part of Investment of Cash**"*

Management of marketable securities is an integral part of investment of cash as it serves both the purposes of liquidity and cash, provided choice of investment is made correctly. As the working capital needs are fluctuating, it is possible to invest excess funds in some short term securities, which can be liquidated when need for cash is felt. The selection of securities should be guided by three principles namely safety, maturity and marketability.

Question 7

A firm maintains a separate account for cash disbursement. Total disbursements are ₹ 2,62,500 per month. Administrative and transaction cost of transferring cash to disbursement account is ₹ 25 per transfer. Marketable securities yield is 7.5% per annum.

Determine the optimum cash balance according to William J Baumol model.

(3 Marks, June, 2009)

Answer

Determination of Optimal Cash Balance according to William J. Baumol Model

The formula for determining optimum cash balance is:

$$C = \sqrt{\frac{2U \times P}{S}}$$

$$C = \sqrt{\frac{2 \times 2,62,500 \times 12 \times 25}{0.075}}$$

$$= \sqrt{\frac{15,75,00,000}{0.075}}$$

$$= \sqrt{2,10,00,00,000}$$

Optimum Cash Balance, C, = ₹ 45,826

Question 8

The following details are forecasted by a company for the purpose of effective utilization and management of cash:

(i) Estimated sales and manufacturing costs:

Year and month 2010	Sales ₹	Materials ₹	Wages ₹	Overheads ₹
April	4,20,000	2,00,000	1,60,000	45,000
May	4,50,000	2,10,000	1,60,000	40,000
June	5,00,000	2,60,000	1,65,000	38,000
July	4,90,000	2,82,000	1,65,000	37,500
August	5,40,000	2,80,000	1,65,000	60,800
September	6,10,000	3,10,000	1,70,000	52,000

(ii) Credit terms:

- *Sales – 20 percent sales are on cash, 50 percent of the credit sales are collected next month and the balance in the following month.*
- *Credit allowed by suppliers is 2 months.*
- *Delay in payment of wages is ½ (one-half) month and of overheads is 1 (one) month.*

(iii) Interest on 12 percent debentures of ₹ 5,00,000 is to be paid half-yearly in June and December.

(iv) Dividends on investments amounting to ₹ 25,000 are expected to be received in June, 2010.

(v) A new machinery will be installed in June, 2010 at a cost of ₹ 4,00,000 which is payable in 20 monthly installments from July, 2010 onwards.

(vi) Advance income-tax, to be paid in August, 2010, is ₹ 15,000.

(vii) Cash balance on 1st June, 2010 is expected to be ₹ 45,000 and the company wants to keep it at the end of every month around this figure. The excess cash (in multiple of thousand rupees) is being put in fixed deposit.

You are required to prepare monthly Cash budget on the basis of above information for four months beginning from June, 2010. ***(7 Marks, May, 2010)***

Answer

Preparation of Monthly Cash Budget

Cash Budget for four months from June, 2010 to September, 2010

Particulars	June (₹)	July (₹)	August (₹)	September (₹)
Opening Balance	45,000	45,500	45,500	45,000
Receipts:				
Cash Sales	1,00,000	98,000	1,08,000	1,22,000
Collection from debtors	3,48,000	3,80,000	3,96,000	4,12,000

Dividends	25,000	-	-	-
Total (A)	5,18,000	5,23,500	5,49,500	5,79,000
Payments:				
Creditors for Materials	2,00,000	2,10,000	2,60,000	2,82,000
Wages	1,62,500	1,65,000	1,65,000	1,67,500
Overheads	40,000	38,000	37,500	60,800
Instalment for Machine	-	20,000	20,000	20,000
Interest on Debentures	30,000	-	-	-
Advance Tax	-	-	15,000	-
Total (B)	4,32,500	4,33,000	4,97,500	5,30,300
Surplus (A – B)	85,500	90,500	52,000	48,700
Fixed Deposits	40,000	45,000	7,000	3,000
Closing Balance	45,500	45,500	45,000	45,700

Working Notes:

(1) Cash Sales and Collection from Debtors:

Month	*Total Sales (₹)*	*Cash Sales (₹)*	*Credit Sales (₹)*	*Collection from Debtors*			
				June (₹)	*July (₹)*	*Aug. (₹)*	*Sept. (₹)*
April, 2010	4,20,000	84,000	3,36,000	1,68,000	-	-	-
May, 2010	4,50,000	90,000	3,60,000	1,80,000	1,80,000	-	-
June, 2010	5,00,000	1,00,000	4,00,000	-	2,00,000	2,00,000	-
July, 2010	4,90,000	98,000	3,92,000	-	-	1,96,000	1,96,000
Aug., 2010	5,40,000	1,08,000	4,32,000	-	-	-	2,16,000
Sept., 2010	6,10,000	1,22,000	4,88,000	-	-	-	-
			Total	3,48,000	3,80,000	3,96,000	4,12,000

(2) Payment of Wages

June = 80,000 + 82,500 = 1,62,500;

July = 82,500 + 82,500 = 1,65,000;

Aug. = 82,500 + 82,500 = 1,65,000; and

Sept.= 82,500 + 85,000 = 1,67,500.

(**Note:** *It has been assumed that the company wants to keep minimum cash balance of ₹45,000.)*

Question 8

Explain the Lock Box System. ***(2 Marks, May, 2014)***

Answer

Lock Box System: Another means to accelerate the flow of funds is a lock box system. The purpose of lock box system is to eliminate the time between the receipts of remittances by the company and deposited in the bank. A lock box arrangement usually is on regional basis which a company chooses according to its billing patterns.

Question 9

Explain four kinds of float with reference to management of cash. ***(4 Marks, November, 2014)***

Answer

Four Kinds of Float with reference to Management of Cash

The four kinds of float are:

(i) *Billing Float:* The time between the sale and the mailing of the invoice is the billing float.

(ii) *Mail Float:* This is the time when a cheque is being processed by post office, messenger service or other means of delivery.

(iii) *Cheque processing float:* This is the time required for the seller to sort, record and deposit the cheque after it has been received by the company.

(iv) *Bank processing float:* This is the time from the deposit of the cheque to the crediting of funds in the seller's account.

UNIT – III : MANAGEMENT OF INVENTORY

Question 1

The demand for a certain product is random. It has been estimated that the monthly demand of the product has a normal distribution with a mean of 390 units. The unit price of product is ₹ 25. Ordering cost is ₹ 40 per order and inventory carrying cost is estimated to be 35 per cent per year.

Required:

Calculate Economic Order Quantity (EOQ). ***(2 Marks, November, 2007)***

Answer

Calculation of Economic Order Quantity (EOQ)

The mean of monthly demand = 390 units, Annual demand (A) = 390 × 12 = 4,680 units

Ordering cost (O) = ₹ 40 per order, Cost per unit = ₹ 25.

Inventory carrying cost of one unit (CC) = ₹ 25 × 35% = ₹ 8.75

$$EOQ = \sqrt{\frac{2AO}{CC}}$$

$$= \sqrt{2 \times 4{,}680 \times \frac{40}{8.75}} = 206.85 \text{ or } 207 \text{ units}$$

UNIT – IV : MANAGEMENT OF RECEIVABLES

Question 1

Explain the 'Ageing Schedule' in the context of monitoring of receivables.

(3 Marks, November, 2004)

Answer

Ageing Schedule: An important means to get an insight into the collection pattern of debtors is the preparation of their 'Ageing Schedule'. Receivables are classified according to their age from the date of invoicing e.g. 0 – 30 days, 31 – 60 days, 61 – 90 days, 91 – 120 days and more. The ageing schedule can be compared with earlier month's figures or the corresponding month of the earlier year.

This classification helps the firm in its collection efforts and enables management to have a close control over the quality of individual accounts. The ageing schedule can be compared with other firms also.

Question 2

Explain briefly the accounts receivable systems. ***(2 Marks, May, 2010)***

Answer

Accounts Receivable Systems

Manual systems of recording the transactions and managing receivables are cumbersome and costly. The automated receivable management systems automatically update all the accounting records affected by a transaction. This system allows the application and tracking of receivables and collections to store important information for an unlimited number of customers and transactions, and accommodate efficient processing of customer payments and adjustments.

Question 3

A firm is considering offering 30-day credit to its customers. The firm likes to charge them an annualized rate of 24%. The firm wants to structure the credit in terms of a cash discount for immediate payment. How much would the discount rate have to be?

(4 Marks, November, 2004)

Answer

Interest @ 24% pa for a period of 30 days (year 365 days) = $0.24 \times \frac{30}{365} = 0.019726$ ie

1.9726 %.

Hence the principal of ₹ 1 , including the interest after 30 days will become 1.019726.

The present value as on zero date will be $\frac{1}{1.019726}$ = 0.980656

Hence discount which can be offered to receivables as on zero date = 1 – 0.980656 =

0.019344 i.e. 1.93%.

Question 4

A Company has sales of ₹ 25,00,000. Average collection period is 50 days, bad debt losses are 5% of sales and collection expenses are ₹ 25,000. The cost of funds is 15%. The Company has two alternative Collection Programmes:

	Programme I	*Programme II*
Average Collection Period reduced to	*40 days*	*30 days*
Bad debt losses reduced to	*4% of sales*	*3% of sales*
Collection Expenses	*₹ 50,000*	*₹ 80,000*

Evaluate which Programme is viable. ***(6 Marks, May, 2006)***

Answer

(a) Evaluation of Alternative Collection Programmes

	Present Programme	*1st Programme*	*2nd Programme*
	₹	*₹*	*₹*
Sales revenues	25,00,000	25,00,000	25,00,000
Average collection period (days)	50	40	30
Receivables (₹)	3,42,466 $\left(25,00,000 \times \frac{50}{365}\right)$	2,73,973	2,05,479
Reduction in receivables from present level (₹)	–	68,493	1,36,987
Savings in interest @ 15% p.a. (A)	–	₹ 10,274	₹ 20,548
% of bad debt loss	5%	4%	3%
Amount (₹)	1,25,000	1,00,000	75,000
Reduction in bad debts			

from present level (B)	–	25,000	50,000
Incremental benefits from present level (C) = (A) + (B)	–	35,274	₹ 70,548
Collection expenses (₹)	25,000	50,000	80,000
Incremental collection expenses from present level (D)	–	25,000	55,000
Increment net benefit (C – D)	–	₹ 10,274	₹ 15,548

Conclusion: From the analysis it is apparent that Programme I has a benefit of ₹ 10,274 and Programme II has a benefit of ₹ 15,548 over present level. Whereas Programme II has a benefit of ₹ 5,274 more than Programme I. Thus, benefits accrue at a diminishing rate and hence Programme II is more viable.

[Note: *In the above solution, 1 year = 365 days has been assumed. Alternatively, some candidates may give the solution on the basis 1 year = 360 days. In that case, the figures calculated for the different Programmes would be different from the figures given in the above solution. But the final conclusion regarding viability of the Programme would remain the same. In absence of cost of sales, sales has been taken for the purpose of calculating investment cost in receivables.****]***

Question 5

The turnover of PQR Ltd. is ₹ 120 lakhs of which 75 per cent is on credit. The variable cost ratio is 80 per cent. The credit terms are 2/10, net 30. On the current level of sales, the bad debts are 1 per cent. The company spends ₹ 1,20,000 per annum on administering its credit sales. The cost includes salaries of staff who handle credit checking, collection etc. These are avoidable costs. The past experience indicates that 60 per cent of the customers avail of the cash discount, the remaining customers pay on an average 60 days after the date of sale.

The Book debts (receivable) of the company are presently being financed in the ratio of 1 : 1 by a mix of bank borrowings and owned funds which cost per annum 15 per cent and 14 per cent respectively.

A factoring firm has offered to buy the firm's receivables. The main elements of such deal structured by the factor are:

(i) Factor reserve, 12 per cent

(ii) Guaranteed payment, 25 days

(iii) Interest charges, 15 per cent, and

(iv) Commission 4 per cent of the value of receivables.

Assume 360 days in a year.

What advice would you give to PQR Ltd. - whether to continue with the in house management of receivables or accept the factoring firm's offer? ***(8 Marks, May, 2007)***

Answer

In-house Decision

	₹
Cash discount (₹ 90 lakhs × .60 × .02)	1,08,000
Bad debts losses (90,00,000 × .01)	90,000
Administration cost	1,20,000
Cost of funds in receivables*	1,08,750
	4,26,750

*Average collection period (10 × .6) + (60 days × .40) = 30 days

Average investments in debtors = $\frac{90}{12} = 7.5$ lakhs

Cost of Bank funds $\left(₹ 7.5 \times \frac{1}{2} \times .15\right)$	56,250
Cost of Owned funds $\left(₹ 7.5 \times \frac{1}{2} \times .14\right)$	52,500
	1,08,750

Offer Alternative

Factoring commission (₹ 90 lakhs × .04)	3,60,000
Interest charges .88(90 lakhs – 3,60,000) = 76,03,200 × .15 × $\frac{25}{360}$	79,200
Cost of owned funds invested in receivables (90,00,000 – 76,03,200) × .14 × $\frac{25}{360}$	13,580
	4,52,780

Decision: *PQR should not go for the factoring alternative as the cost of factoring is more.*

Cost of In-house Decision	4,26,750
Cost of Factoring Firm	4,52,780
Net loss	(26,030)

Question 6

A firm has a total sales of ₹ 12,00,000 and its average collection period is 90 days. The past experience indicates that bad debt losses are 1.5% on sales. The expenditure incurred by the firm in administering receivable collection efforts are ₹ 50,000. A factor is prepared to buy the firm's receivables by charging 2% commission. The factor will pay advance on receivables to the firm at an interest rate of 16% p.a. after withholding 10% as reserve. Calculate effective cost of factoring to the firm. Assume 360 days in a year. ***(3 Marks, June, 2009)***

Answer

Computation of Effective Cost of Factoring

Average level of Receivables = 12,00,000 × 90/360	3,00,000
Factoring Commission = 3,00,000 × 2/100	6,000
Factoring Reserve = 3,00,000 × 10/100	30,000
Amount Available for Advance = ₹ 3,00,000-(6,000+30,000)	2,64,000
Factor will deduct his interest @ 16% :-	
Interest $= \frac{₹\ 2,64,000 \times 16 \times 90}{360 \times 100}$ = ₹ 10,560	

Advance to be paid = ₹ 2,64,000 – ₹ 10,560 = ₹ 2,53,440

Annual Cost of Factoring to the Firm:	₹
Factoring Commission (₹ 6,000 × 360/90)	24,000
Interest Charges (₹ 10,560 × 360/90)	42,240
Total	66,240
Firm's Savings on taking Factoring Service:	₹
Cost of Administration Saved	50,000
Cost of Bad Debts (₹ 12,00,000 x 1.5/100) avoided	18,000
Total	68,000
Net Benefit to the Firm (` 68,000 – ₹ 66,240)	1,760

Effective Cost of Factoring = $\frac{₹\ 66,240 \times 100}{2,53,440}$	26.136%

Effective Cost of Factoring = 26.136%

Question 7

RST Limited is considering relaxing its present credit policy and is in the process of evaluating two proposed polices. Currently, the firm has annual credit sales of ₹ 225 lakhs and accounts receivable turnover ratio of 5 times a year. The current level of loss due to bad debts is ₹ 7,50,000. The firm is required to give a return of 20% on the investment in new accounts receivables. The company's variable costs are 60% of the selling price. Given the following information, which is a better option?

	Present Policy	*Policy Option I*	*Policy Option II*
Annual credit sales(₹)	*225*	*275*	*350*
Accounts receivable turnover ratio	*5*	*4*	*3*
Bad debt losses (₹)	*7.5*	*22.5*	*47.5*

(8 Marks, November, 2010)

Answer

Evaluation of Credit Policies for RST Ltd

		Amount in ₹ Lakhs	
	Present Policy	*Policy Option I*	*Policy Option II*
Annual Credit Sales	225	275	350
Accounts Receivable Turnover	5 times	4 times	3 times
Average Collection period (12/Accounts Receivable Turnover)	2.4 months	3 months	4 months
Average Level of Accounts Receivables (Annual Credit Sales/Accounts Receivable Turnover)	45	68.75	116.67
Marginal Increase in Investment in Receivables less Profit Margin	-	14.25	28.75
Marginal Increase in Sales	-	50	75
Profit on Marginal Increase in Sales (40%)	-	20	30
Marginal Increase in Bad Debt Losses	-	15	25
Net Gain	-	5	5

Required Return on Marginal Investment @ 20%	-	2.85	5.75
Surplus (Deficit) after Required Rate of Return	-	2.15	(0.75)

Advise: *It is clear from the foregoing analysis that the Policy Option I has a surplus of ₹ 2.15 lakhs whereas Option II shows a deficit of ₹ 0.75 lakhs on the basis of 20% return. Hence, Policy Option I is better.*

Question 8

The Marketing Manager of XY Ltd. is giving a proposal to the Board of Directors of the company that an increase in credit period allowed to customers from the present one month to two months will bring a 25% increase in sales volume in the next year.

The following operational data of the company for the current year are taken from the records of the company:

	₹
Selling price	*21 p.u.*
Variable cost	*14 p.u.*
Total cost	*18 p.u.*
Sales value	*18,90,000*

The Board, by forwarding the above proposal and data requests you to give your expert opinion on the adoption of the new credit policy in next year subject to a condition that the company's required rate of return on investments is 40%. ***(8 Marks, May, 2011)***

Answer

Advise regarding Change in Credit Policy

Working Notes:

(1)	Present Sales Value	₹ 18,90,000
	Present Selling Price per unit	₹ 21
	∴ Present Sales Volume	$= \frac{18,90,000}{21}$ = 90,000 units
	Expected increase in Sales Volume	= 25%
	∴ Expected Sales Volume in next year	= 90,000 + 25%
		= 90,000 + 22,500
		= 1,12,500 units
(2)		₹
	Present total cost (90,000 × 18)	16,20,000

	Add: Variable cost on additional Sales (22,500 × 14)	3,15,000
	∴ Total cost of future sales	19,35,000
	∴ Average cost per unit	$\frac{19,35,000}{1,12,500}$ = ₹ 17.2
(3)		₹
	Cost of Sale (1,12,500 × 17.2)	19,35,000
	Average collection period	= 2 months
	∴ Average Investment in receivables in the proposed credit policy	$\frac{19,35,000}{12} \times 2$ = 3,22,500
(4)		₹
	Additional Investment in receivables	$= 3,22,500 - \left(\frac{90,000 \times 18}{12}\right)$
		= 3,22,500–1,35,000
		= ₹ 1,87,500
(5)	Contribution from additional sales	= (21 – 14) 22,500
		= ₹ 1,57,500
(6)	Return on additional investments in receivables	$\frac{1,57,500}{1,87,500} \times 100$
		= 84%

Advise: *Since the expected rate of return on additional investment in receivables (84%) is more than the required rate of return (40%), the proposed increase in credit period from one month to two months should be accepted and implemented in the next year.*

Question 9

A new customer with 10% risk of non-payment desires to establish business connections with you. He would require 1.5 month of credit and is likely to increase your sales by ₹ 1,20,000 p.a. Cost of sales amounted to 85% of sales. The tax rate is 30%. Should you accept the offer if the required rate of return is 40% (after tax)? ***(5 Marks, November, 2011)***

Answer

Evaluation of Credit to New Customer

A. Profit on Additional Sales

Increase in Annual Sales	1,20,000
Less: Cost of Sales being 85%	1,02,000
	18,000

Less: Bad Debts Loss (10% on sales)	12,000
Profit before Tax	6,000
Less: Tax @ 30%	1,800
Net Profit after Tax	4,200
B. Opportunity Cost of Investment in Receivables (12,750 x 40)	5,100
C. Net Benefit/Loss (A-B)	(900)

Decision: *Since the estimated profit after tax on additional sales ₹ 4200 is less than the required return on additional investment of ₹ 5,100 in receivables, hence the offer should not be accepted.*

Working Notes:

(i) Receivables Turnover = $\frac{12}{1.5}$ = 8 Times

(ii) Average Investment in Receivables

$$= \frac{\text{Cost of Sales}}{\text{Receivables Turnover}} = \frac{1,02,000}{8} = ₹\ 12,750$$

(iii) Opportunity Cost of Funds Blocked = 12,750 x 40/100 = 5,100

Question 10

A company is presently having credit sales of ₹ 12 lakh. The existing credit terms are 1/10, net 45 days and average collection period is 30 days. The current bad debts loss is 1.5%. In order to accelerate the collection process further as also to increase sales, the company is contemplating liberalization of its existing credit terms to 2/10, net 45 days. It is expected that sales are likely to increase by 1/3 of existing sales, bad debts increase to 2% of sales and average collection period to decline to 20 days. The contribution to sales ratio of the company is 22% and opportunity cost of investment in receivables is 15 percent (pre-tax). 50 per cent and 80 percent of customers in terms of sales revenue are expected to avail cash discount under existing and liberalization scheme respectively. The tax rate is 30%.

Should the company change its credit terms? (Assume 360 days in a year). ***(5 Marks, May, 2012)***

Answer

Evaluation of Credit Policy

Working Notes:

(i) Calculation of Cash Discount

Cash Discount = Total credit sales × % of customers who take up discount × Rate

Present Policy = $\frac{12,00,000 \times 50 \times .01}{100}$ = ₹ 6,000

Proposed Policy = 16,00,000 × 0.80 × 0.02 = ₹ 25,600

(ii) Opportunity Cost of Investment in Receivables

Present Policy = 9,36,000 × (30/360) × (70% of 15)/100 = 78,000 × 10.5/100 = ₹ 8,190

Proposed Policy = 12,48,000 × (20/360) × 10.50/100 = ₹ 7,280

Statement showing Evaluation of Credit Policies

Particulars	Present Policy	Proposed Policy
Credit Sales	12,00,000	16,00,000
Variable Cost @ 78% of sales	9,36,000	12,48,000
Bad Debts @ 1.5% and 2%	18,000	32,000
Cash Discount	6,000	25,600
Profit before tax	2,40,000	2,94,400
Tax @ 30%	72,000	88,320
Profit after Tax	1,68,000	2,06,080
Opportunity Cost of Investment in Receivables	8,190	7,280
Net Profit	1,59,810	1,98,800

Advise*: Proposed policy should be adopted since the net benefit is increased by (₹ 1,98,800 – 1,59,810) ₹ 38,990.*

Question 11

PTX Limited is considering a change in its present credit policy. Currently it is evaluating two policies. The company is required to give a return of 20% on the investment in new accounts receivables. The company's variable costs are 70% of the selling price. Information regarding present and proposed policies is as follows:

	Present Policy	*Policy Option 1*	*Policy Option 2*
Annual Credit Sales (₹)	*30,00,000*	*42,00,000*	*45,00,000*
Debtors turnover ratio	*4 times*	*3 times*	*2.4 times*
Loss due to bad debts	*3% of sales*	*5% of sales*	*6% of sales*

Note: Return on investment in new accounts receivable is based on cost of investment in debtors.

Which option would you recommend? ***(8 Marks, November, 2013)***

Answer

Statement of Evaluation of Credit Policies of PTX Limited (based on Total Cost Approach)

	Present Policy	Policy Option I	Policy Option II
Sales Revenue	30,00,000	42,00,000	4,50,0000
Less: Variable Cost @70%	21,00,000	29,40,000	31,50,000
Contribution	9,00,000	12,60,000	13,50,000
Less: Other Relevant Costs			
Bad Debt Losses	(90,000)	(2,10,000)	(2,70,000)
Investment Cost (VC ÷ DTR) × 20%	(1,05,000)	(1,96,000)	(2,62,500)
Profit	7,05,000	8,54,000	8,17,500

Recommendation: *PTX Limited is advised to adopt Policy Option I.*

(**Note**: In the above solution, investment in accounts receivable is based on total cost of goods sold on credit. Since fixed costs are not given in the problem, therefore, it is assumed that there are no fixed costs and investment in receivables is determined with reference to variable costs only. The above solution may alternatively be worked out on the basis of incremental approach. However, the recommendation would remain the same.)

Question 12

PQR Ltd. having an annual sales of ₹ 30 lakhs, is re-considering its present collection policy. At present, the average collection period is 50 days and the bad debt losses are 5% of sales. The company is incurring an expenditure of ₹ 30,000 on account of collection of receivables.

The alternative policies are as under:

	Alternative I	***Alternative II***
Average Collection Period	*40 days*	*30 days*
Bad Debt Losses	*4% of sales*	*3% of sales*
Collection Expenses	*₹ 60,000*	*₹ 95,000*

Evaluate the alternatives on the basis of incremental approach and state which alternative is more beneficial. ***(8 Marks, November, 2014)***

Answer

Evaluation of Alternative Collection Programmes

	Present Policy	*Alternative I*	*Alternative II*
	₹	₹	₹
Sales Revenues	30,00,000	30,00,000	30,00,000
Average Collection Period (ACP) (days)	50	40	30
Receivables (₹) $\left(\text{Sales} \times \frac{\text{ACP}}{360}\right)$	4,16,667	3,33,333	2,50,000
Reduction in Receivables from Present Level (₹)	–	83,334	1,66,667
Savings in Interest @ 10% p.a. **(A)**	–	₹ 8,333	₹ 16,667
% of Bad Debt Loss	5%	4%	3%
Amount (₹)	1,50,000	1,20,000	90,000
Reduction in Bad Debts from Present Level **(B)**	–	30,000	60,000
Incremental Benefits from Present Level **(C) = (A) + (B)**	–	38,333	76,667
Collection Expenses (₹)	30,000	60,000	95,000
Incremental Collection Expenses from Present Level **(D)**	–	30,000	65,000
Incremental Net Benefit **(C – D)**	–	₹ 8,333	₹ 11,667

Conclusion: From the analysis it is apparent that Alternative I has a benefit of ₹ 8,333 and Alternative II has a benefit of ₹ 11,667 over present level. Alternative II has a benefit of ₹ 3,334 more than Alternative I. Hence Alternative II is more viable.

*(**Note:** In absence of Cost of Sales, sales has been taken for purpose of calculating investment in receivables. Cost of Funds has been assumed to be 10%. 1 year = 360 days.)*

UNIT – V : MANAGEMENT OF PAYABLES (CREDITORS)

No questions asked from this unit.

UNIT – VI: FINANCING OF WORKING CAPITAL

Question 1

Enumerate the various forms of bank credit in financing the working capital of a business organization. ***(2 Marks, May, 2010)***

Answer

Forms of Bank Credit

The various forms of bank credit in financing the working capital of a business organisation are:

(a) Cash credit;

(b) Bank overdraft;

(c) Bills discounting;

(d) Bill acceptance;

(e) Line of credit;

(f) Letter of credit; and

(g) Bank guarantees.

Question 2

What are the forms of bank credit? ***(4 Marks, November, 2012)***

Answer

Forms of Bank Credit

Some of the forms of bank credit are:

(i) *Short Term Loans*: In a loan account, the entire advance is disbursed at one time either in cash or by transfer to the current account of the borrower. It is a single advance and given against securities like shares, government securities, life insurance policies and fixed deposit receipts, etc.

(ii) *Overdraft:* Under this facility, customers are allowed to withdraw in excess of credit balance standing in their Current Account. A fixed limit is therefore granted to the borrower within which the borrower is allowed to overdraw his account.

(iii) *Clean Overdrafts:* Request for clean advances are entertained only from parties which are financially sound and reputed for their integrity. The bank has to rely upon the personal security of the borrowers.

(iv) *Cash Credits*: Cash Credit is an arrangement under which a customer is allowed an advance up to certain limit against credit granted by bank. Interest is not charged on the full amount of the advance but on the amount actually availed of by him.

(v) *Advances against goods:* Goods are charged to the bank either by way of pledge or by way of hypothecation. Goods include all forms of movables which are offered to the bank as security.

(vi) *Bills Purchased/Discounted:* These advances are allowed against the security of bills which may be clean or documentary.

Usance bills maturing at a future date or sight are discounted by the banks for approved parties. The borrower is paid the present worth and the bank collects the full amount on maturity.

(vii) *Advance against documents of title to goods:* A document becomes a document of title to goods when its possession is recognised by law or business custom as possession of the goods like bill of lading, dock warehouse keeper's certificate, railway receipt, etc. An advance against the pledge of such documents is an advance against the pledge of goods themselves.

(viii) *Advance against supply of bills:* Advances against bills for supply of goods to government or semi-government departments against firm orders after acceptance of tender fall under this category. It is this debt that is assigned to the bank by endorsement of supply bills and executing irrevocable power of attorney in favour of the banks for receiving the amount of supply bills from the Government departments.

(**Note**: *Students may answer any four of the above forms of bank credit.*)

Question 3

Explain the Concentration Banking. ***(2 Marks, May, 2014)***

Answer

Concentration Banking: In concentration banking the company establishes a number of strategic collection centres in different regions instead of a single collection centre at the head office. This system reduces the period between the time a customer mails in his remittances and the time when they become spendable funds with the company. Payments received by the different collection centers are deposited with their respective local banks which in turn transfer all surplus funds to the concentration bank of head office.

Question 4

State the different types of Packing Credit. ***(4 Marks, November, 2014)***

Answer

Different Types of Packing Credit

Packing credit may be of the following types:

(i) ***Clean Packing credit****:* This is an advance made available to an exporter only on production of a firm export order or a letter of credit without exercising any charge or control over raw material or finished goods. It is a clean type of export advance. Each

proposal is weighted according to particular requirements of the trade and credit worthiness of the exporter. A suitable margin has to be maintained. Also, Export Credit Guarantee Corporation (ECGC) cover should be obtained by the bank.

(ii) ***Packing credit against hypothecation of goods****:* Export finance is made available on certain terms and conditions where the exporter has pledgeable interest and the goods are hypothecated to the bank as security with stipulated margin. At the time of utilising the advance, the exporter is required to submit alongwith the firm export order or letter of credit, relative stock statements and thereafter continue submitting them every fortnight and whenever there is any movement in stocks.

(iii) ***Packing credit against pledge of goods****:* Export finance is made available on certain terms and conditions where the exportable finished goods are pledged to the banks with approved clearing agents who will ship the same from time to time as required by the exporter. The possession of the goods so pledged lies with the bank and is kept under its lock and key.

(iv) ***E.C.G.C. guarantee:*** Any loan given to an exporter for the manufacture, processing, purchasing, or packing of goods meant for export against a firm order qualifies for the packing credit guarantee issued by Export Credit Guarantee Corporation.

(v) ***Forward exchange contract****:* Another requirement of packing credit facility is that if the export bill is to be drawn in a foreign currency, the exporter should enter into a forward exchange contact with the bank, thereby avoiding risk involved in a possible change in the rate of exchange.

(Note: *Students may answer any four of the above packing credits*).

APPENDIX

Future value interest factor of ₹1 per period at i% for n periods, FVIF(i,n).

(The Compound Sum of One Rupee)

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
1	1.010	1.020	1.030	1.040	1.050	1.060	1.070	1.080	1.090	1.100
2	1.020	1.040	1.061	1.082	1.103	1.124	1.145	1.166	1.188	1.210
3	1.030	1.061	1.093	1.125	1.158	1.191	1.225	1.260	1.295	1.331
4	1.041	1.082	1.126	1.170	1.216	1.262	1.311	1.360	1.412	1.464
5	1.051	1.104	1.159	1.217	1.276	1.338	1.403	1.469	1.539	1.611
6	1.062	1.126	1.194	1.265	1.340	1.419	1.501	1.587	1.677	1.772
7	1.072	1.149	1.230	1.316	1.407	1.504	1.606	1.714	1.828	1.949
8	1.083	1.172	1.267	1.369	1.477	1.594	1.718	1.851	1.993	2.144
9	1.094	1.195	1.305	1.423	1.551	1.689	1.838	1.999	2.172	2.358
10	1.105	1.219	1.344	1.480	1.629	1.791	1.967	2.159	2.367	2.594
11	1.116	1.243	1.384	1.539	1.710	1.898	2.105	2.332	2.580	2.853
12	1.127	1.268	1.426	1.601	1.796	2.012	2.252	2.518	2.813	3.138
13	1.138	1.294	1.469	1.665	1.886	2.133	2.410	2.720	3.066	3.452
14	1.149	1.319	1.513	1.732	1.980	2.261	2.579	2.937	3.342	3.797
15	1.161	1.346	1.558	1.801	2.079	2.397	2.759	3.172	3.642	4.177
16	1.173	1.373	1.605	1.873	2.183	2.540	2.952	3.426	3.970	4.595
17	1.184	1.400	1.653	1.948	2.292	2.693	3.159	3.700	4.328	5.054
18	1.196	1.428	1.702	2.026	2.407	2.854	3.380	3.996	4.717	5.560
19	1.208	1.457	1.754	2.107	2.527	3.026	3.617	4.316	5.142	6.116
20	1.220	1.486	1.806	2.191	2.653	3.207	3.870	4.661	5.604	6.727
25	1.282	1.641	2.094	2.666	3.386	4.292	5.427	6.848	8.623	10.835
30	1.348	1.811	2.427	3.243	4.322	5.743	7.612	10.063	13.268	17.449
35	1.417	2.000	2.814	3.946	5.516	7.686	10.677	14.785	20.414	28.102
40	1.489	2.208	3.262	4.801	7.040	10.286	14.974	21.725	31.409	45.259
50	1.645	2.692	4.384	7.107	11.467	18.420	29.457	46.902	74.358	117.391

Contd.....

Period	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	1.110	1.120	1.130	1.140	1.150	1.160	1.170	1.180	1.190	1.200
2	1.232	1.254	1.277	1.300	1.323	1.346	1.369	1.392	1.416	1.440
3	1.368	1.405	1.443	1.482	1.521	1.561	1.602	1.643	1.685	1.728
4	1.518	1.574	1.630	1.689	1.749	1.811	1.874	1.939	2.005	2.074
5	1.685	1.762	1.842	1.925	2.011	2.100	2.192	2.288	2.386	2.488
6	1.870	1.974	2.082	2.195	2.313	2.436	2.565	2.700	2.840	2.986
7	2.076	2.211	2.353	2.502	2.660	2.826	3.001	3.185	3.379	3.583
8	2.305	2.476	2.658	2.853	3.059	3.278	3.511	3.759	4.021	4.300
9	2.558	2.773	3.004	3.252	3.518	3.803	4.108	4.435	4.785	5.160
10	2.839	3.106	3.395	3.707	4.046	4.411	4.807	5.234	5.695	6.192
11	3.152	3.479	3.836	4.226	4.652	5.117	5.624	6.176	6.777	7.430
12	3.498	3.896	4.335	4.818	5.350	5.936	6.580	7.288	8.064	8.916
13	3.883	4.363	4.898	5.492	6.153	6.886	7.699	8.599	9.596	10.699
14	4.310	4.887	5.535	6.261	7.076	7.988	9.007	10.147	11.420	12.839
15	4.785	5.474	6.254	7.138	8.137	9.266	10.539	11.974	13.590	15.407
16	5.311	6.130	7.067	8.137	9.358	10.748	12.330	14.129	16.172	18.488
17	5.895	6.866	7.986	9.276	10.761	12.468	14.426	16.672	19.244	22.186
18	6.544	7.690	9.024	10.575	12.375	14.463	16.879	19.673	22.901	26.623
19	7.263	8.613	10.197	12.056	14.232	16.777	19.748	23.214	27.252	31.948
20	8.062	9.646	11.523	13.743	16.367	19.461	23.106	27.393	32.429	38.338
25	13.585	17.000	21.231	26.462	32.919	40.874	50.658	62.669	77.388	95.396
30	22.892	29.960	39.116	50.950	66.212	85.850	111.065	143.371	184.675	237.376
35	38.575	52.800	72.069	98.100	133.176	180.314	243.503	327.997	440.701	590.668
40	65.001	93.051	132.782	188.884	267.864	378.721	533.869	750.378	1,051.668	1,469.772
50	184.565	289.002	450.736	700.233	1,083.657	1,670.704	2,566.215	3,927.357	5,988.914	9,100.438

Present value interest factor of Re 1 per period at i% for n periods, PVIF(i,n).

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
1	0.990	0.980	0.971	0.962	0.952	0.943	0.935	0.926	0.917	0.909
2	0.980	0.961	0.943	0.925	0.907	0.890	0.873	0.857	0.842	0.826
3	0.971	0.942	0.915	0.889	0.864	0.840	0.816	0.794	0.772	0.751
4	0.961	0.924	0.888	0.855	0.823	0.792	0.763	0.735	0.708	0.683
5	0.951	0.906	0.863	0.822	0.784	0.747	0.713	0.681	0.650	0.621
6	0.942	0.888	0.837	0.790	0.746	0.705	0.666	0.630	0.596	0.564
7	0.933	0.871	0.813	0.760	0.711	0.665	0.623	0.583	0.547	0.513
8	0.923	0.853	0.789	0.731	0.677	0.627	0.582	0.540	0.502	0.467
9	0.914	0.837	0.766	0.703	0.645	0.592	0.544	0.500	0.460	0.424
10	0.905	0.820	0.744	0.676	0.614	0.558	0.508	0.463	0.422	0.386
11	0.896	0.804	0.722	0.650	0.585	0.527	0.475	0.429	0.388	0.350
12	0.887	0.788	0.701	0.625	0.557	0.497	0.444	0.397	0.356	0.319
13	0.879	0.773	0.681	0.601	0.530	0.469	0.415	0.368	0.326	0.290
14	0.870	0.758	0.661	0.577	0.505	0.442	0.388	0.340	0.299	0.263
15	0.861	0.743	0.642	0.555	0.481	0.417	0.362	0.315	0.275	0.239
16	0.853	0.728	0.623	0.534	0.458	0.394	0.339	0.292	0.252	0.218
17	0.844	0.714	0.605	0.513	0.436	0.371	0.317	0.270	0.231	0.198
18	0.836	0.700	0.587	0.494	0.416	0.350	0.296	0.250	0.212	0.180
19	0.828	0.686	0.570	0.475	0.396	0.331	0.277	0.232	0.194	0.164
20	0.820	0.673	0.554	0.456	0.377	0.312	0.258	0.215	0.178	0.149
25	0.780	0.610	0.478	0.375	0.295	0.233	0.184	0.146	0.116	0.092
30	0.742	0.552	0.412	0.308	0.231	0.174	0.131	0.099	0.075	0.057
35	0.706	0.500	0.355	0.253	0.181	0.130	0.094	0.068	0.049	0.036
40	0.672	0.453	0.307	0.208	0.142	0.097	0.067	0.046	0.032	0.022
50	0.608	0.372	0.228	0.141	0.087	0.054	0.034	0.021	0.013	0.009

Contd….

Period	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	0.901	0.893	0.885	0.877	0.870	0.862	0.855	0.847	0.840	0.833
2	0.812	0.797	0.783	0.769	0.756	0.743	0.731	0.718	0.706	0.694
3	0.731	0.712	0.693	0.675	0.658	0.641	0.624	0.609	0.593	0.579
4	0.659	0.636	0.613	0.592	0.572	0.552	0.534	0.516	0.499	0.482
5	0.593	0.567	0.543	0.519	0.497	0.476	0.456	0.437	0.419	0.402
6	0.535	0.507	0.480	0.456	0.432	0.410	0.390	0.370	0.352	0.335
7	0.482	0.452	0.425	0.400	0.376	0.354	0.333	0.314	0.296	0.279
8	0.434	0.404	0.376	0.351	0.327	0.305	0.285	0.266	0.249	0.233
9	0.391	0.361	0.333	0.308	0.284	0.263	0.243	0.225	0.209	0.194
10	0.352	0.322	0.295	0.270	0.247	0.227	0.208	0.191	0.176	0.162
11	0.317	0.287	0.261	0.237	0.215	0.195	0.178	0.162	0.148	0.135
12	0.286	0.257	0.231	0.208	0.187	0.168	0.152	0.137	0.124	0.112
13	0.258	0.229	0.204	0.182	0.163	0.145	0.130	0.116	0.104	0.093
14	0.232	0.205	0.181	0.160	0.141	0.125	0.111	0.099	0.088	0.078
15	0.209	0.183	0.160	0.140	0.123	0.108	0.095	0.084	0.074	0.065
16	0.188	0.163	0.141	0.123	0.107	0.093	0.081	0.071	0.062	0.054
17	0.170	0.146	0.125	0.108	0.093	0.080	0.069	0.060	0.052	0.045
18	0.153	0.130	0.111	0.095	0.081	0.069	0.059	0.051	0.044	0.038
19	0.138	0.116	0.098	0.083	0.070	0.060	0.051	0.043	0.037	0.031
20	0.124	0.104	0.087	0.073	0.061	0.051	0.043	0.037	0.031	0.026
25	0.074	0.059	0.047	0.038	0.030	0.024	0.020	0.016	0.013	0.010
30	0.044	0.033	0.026	0.020	0.015	0.012	0.009	0.007	0.005	0.004
35	0.026	0.019	0.014	0.010	0.008	0.006	0.004	0.003	0.002	0.002
40	0.015	0.011	0.008	0.005	0.004	0.003	0.002	0.001	0.001	0.001
50	0.005	0.003	0.002	0.001	0.001	0.001	0.000	0.000	0.000	0.000

Future value interest factor of an ordinary annuity of Re 1 per period at i% for n periods, FVIFA(i,n). (The Compound Value of an Annuity of One Rupee)

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
1	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2	2.010	2.020	2.030	2.040	2.050	2.060	2.070	2.080	2.090	2.100
3	3.030	3.060	3.091	3.122	3.153	3.184	3.215	3.246	3.278	3.310
4	4.060	4.122	4.184	4.246	4.310	4.375	4.440	4.506	4.573	4.641
5	5.101	5.204	5.309	5.416	5.526	5.637	5.751	5.867	5.985	6.105
6	6.152	6.308	6.468	6.633	6.802	6.975	7.153	7.336	7.523	7.716
7	7.214	7.434	7.662	7.898	8.142	8.394	8.654	8.923	9.200	9.487
8	8.286	8.583	8.892	9.214	9.549	9.897	10.260	10.637	11.028	11.436
9	9.369	9.755	10.159	10.583	11.027	11.491	11.978	12.488	13.021	13.579
10	10.462	10.950	11.464	12.006	12.578	13.181	13.816	14.487	15.193	15.937
11	11.567	12.169	12.808	13.486	14.207	14.972	15.784	16.645	17.560	18.531
12	12.683	13.412	14.192	15.026	15.917	16.870	17.888	18.977	20.141	21.384
13	13.809	14.680	15.618	16.627	17.713	18.882	20.141	21.495	22.953	24.523
14	14.947	15.974	17.086	18.292	19.599	21.015	22.550	24.215	26.019	27.975
15	16.097	17.293	18.599	20.024	21.579	23.276	25.129	27.152	29.361	31.772
16	17.258	18.639	20.157	21.825	23.657	25.673	27.888	30.324	33.003	35.950
17	18.430	20.012	21.762	23.698	25.840	28.213	30.840	33.750	36.974	40.545
18	19.615	21.412	23.414	25.645	28.132	30.906	33.999	37.450	41.301	45.599
19	20.811	22.841	25.117	27.671	30.539	33.760	37.379	41.446	46.018	51.159
20	22.019	24.297	26.870	29.778	33.066	36.786	40.995	45.762	51.160	57.275
25	28.243	32.030	36.459	41.646	47.727	54.865	63.249	73.106	84.701	98.347
30	34.785	40.568	47.575	56.085	66.439	79.058	94.461	113.28	136.31	164.49
35	41.660	49.994	60.462	73.652	90.320	111.43	138.24	172.32	215.71	271.02
40	48.886	60.402	75.401	95.026	120.80	154.76	199.64	259.06	337.88	442.59
50	64.463	84.579	112.80	152.67	209.35	290.34	406.53	573.77	815.08	1,163.9

Contd….

Period	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2	2.110	2.120	2.130	2.140	2.150	2.160	2.170	2.180	2.190	2.200
3	3.342	3.374	3.407	3.440	3.473	3.506	3.539	3.572	3.606	3.640
4	4.710	4.779	4.850	4.921	4.993	5.066	5.141	5.215	5.291	5.368
5	6.228	6.353	6.480	6.610	6.742	6.877	7.014	7.154	7.297	7.442
6	7.913	8.115	8.323	8.536	8.754	8.977	9.207	9.442	9.683	9.930
7	9.783	10.089	10.405	10.730	11.067	11.414	11.772	12.142	12.523	12.916
8	11.859	12.300	12.757	13.233	13.727	14.240	14.773	15.327	15.902	16.499
9	14.164	14.776	15.416	16.085	16.786	17.519	18.285	19.086	19.923	20.799
10	16.722	17.549	18.420	19.337	20.304	21.321	22.393	23.521	24.709	25.959
11	19.561	20.655	21.814	23.045	24.349	25.733	27.200	28.755	30.404	32.150
12	22.713	24.133	25.650	27.271	29.002	30.850	32.824	34.931	37.180	39.581
13	26.212	28.029	29.985	32.089	34.352	36.786	39.404	42.219	45.244	48.497
14	30.095	32.393	34.883	37.581	40.505	43.672	47.103	50.818	54.841	59.196
15	34.405	37.280	40.417	43.842	47.580	51.660	56.110	60.965	66.261	72.035
16	39.190	42.753	46.672	50.980	55.717	60.925	66.649	72.939	79.850	87.442
17	44.501	48.884	53.739	59.118	65.075	71.673	78.979	87.068	96.022	105.93
18	50.396	55.750	61.725	68.394	75.836	84.141	93.406	103.74	115.27	128.12
19	56.939	63.440	70.749	78.969	88.212	98.603	110.28	123.41	138.17	154.74
20	64.203	72.052	80.947	91.025	102.44	115.38	130.03	146.63	165.42	186.69
25	114.41	133.33	155.62	181.87	212.79	249.21	292.10	342.60	402.04	471.98
30	199.02	241.33	293.20	356.79	434.75	530.31	647.44	790.95	966.71	1,181.9
35	341.59	431.66	546.68	693.57	881.17	1,120.7	1,426.5	1,816.7	2,314.2	2,948.3
40	581.83	767.09	1,013.7	1,342.0	1,779.1	2,360.8	3,134.5	4,163.2	5,529.8	7,343.9
50	1,668.8	2,400.0	3,459.5	4,994.5	7,217.7	10,436	15,090	21,813	31,515	45,497

Present value interest factor of an (ordinary) annuity of Re 1 per period at i% for n periods, PVIFA(i,n).

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
1	0.990	0.980	0.971	0.962	0.952	0.943	0.935	0.926	0.917	0.909
2	1.970	1.942	1.913	1.886	1.859	1.833	1.808	1.783	1.759	1.736
3	2.941	2.884	2.829	2.775	2.723	2.673	2.624	2.577	2.531	2.487
4	3.902	3.808	3.717	3.630	3.546	3.465	3.387	3.312	3.240	3.170
5	4.853	4.713	4.580	4.452	4.329	4.212	4.100	3.993	3.890	3.791
6	5.795	5.601	5.417	5.242	5.076	4.917	4.767	4.623	4.486	4.355
7	6.728	6.472	6.230	6.002	5.786	5.582	5.389	5.206	5.033	4.868
8	7.652	7.325	7.020	6.733	6.463	6.210	5.971	5.747	5.535	5.335
9	8.566	8.162	7.786	7.435	7.108	6.802	6.515	6.247	5.995	5.759
10	9.471	8.983	8.530	8.111	7.722	7.360	7.024	6.710	6.418	6.145
11	10.368	9.787	9.253	8.760	8.306	7.887	7.499	7.139	6.805	6.495
12	11.255	10.575	9.954	9.385	8.863	8.384	7.943	7.536	7.161	6.814
13	12.134	11.348	10.635	9.986	9.394	8.853	8.358	7.904	7.487	7.103
14	13.004	12.106	11.296	10.563	9.899	9.295	8.745	8.244	7.786	7.367
15	13.865	12.849	11.938	11.118	10.380	9.712	9.108	8.559	8.061	7.606
16	14.718	13.578	12.561	11.652	10.838	10.106	9.447	8.851	8.313	7.824
17	15.562	14.292	13.166	12.166	11.274	10.477	9.763	9.122	8.544	8.022
18	16.398	14.992	13.754	12.659	11.690	10.828	10.059	9.372	8.756	8.201
19	17.226	15.678	14.324	13.134	12.085	11.158	10.336	9.604	8.950	8.365
20	18.046	16.351	14.877	13.590	12.462	11.470	10.594	9.818	9.129	8.514
25	22.023	19.523	17.413	15.622	14.094	12.783	11.654	10.675	9.823	9.077
30	25.808	22.396	19.600	17.292	15.372	13.765	12.409	11.258	10.274	9.427
35	29.409	24.999	21.487	18.665	16.374	14.498	12.948	11.655	10.567	9.644
40	32.835	27.355	23.115	19.793	17.159	15.046	13.332	11.925	10.757	9.779
50	39.196	31.424	25.730	21.482	18.256	15.762	13.801	12.233	10.962	9.915

Contd….

Period	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	0.901	0.893	0.885	0.877	0.870	0.862	0.855	0.847	0.840	0.833
2	1.713	1.690	1.668	1.647	1.626	1.605	1.585	1.566	1.547	1.528
3	2.444	2.402	2.361	2.322	2.283	2.246	2.210	2.174	2.140	2.106
4	3.102	3.037	2.974	2.914	2.855	2.798	2.743	2.690	2.639	2.589
5	3.696	3.605	3.517	3.433	3.352	3.274	3.199	3.127	3.058	2.991
6	4.231	4.111	3.998	3.889	3.784	3.685	3.589	3.498	3.410	3.326
7	4.712	4.564	4.423	4.288	4.160	4.039	3.922	3.812	3.706	3.605
8	5.146	4.968	4.799	4.639	4.487	4.344	4.207	4.078	3.954	3.837
9	5.537	5.328	5.132	4.946	4.772	4.607	4.451	4.303	4.163	4.031
10	5.889	5.650	5.426	5.216	5.019	4.833	4.659	4.494	4.339	4.192
11	6.207	5.938	5.687	5.453	5.234	5.029	4.836	4.656	4.486	4.327
12	6.492	6.194	5.918	5.660	5.421	5.197	4.988	4.793	4.611	4.439
13	6.750	6.424	6.122	5.842	5.583	5.342	5.118	4.910	4.715	4.533
14	6.982	6.628	6.302	6.002	5.724	5.468	5.229	5.008	4.802	4.611
15	7.191	6.811	6.462	6.142	5.847	5.575	5.324	5.092	4.876	4.675
16	7.379	6.974	6.604	6.265	5.954	5.668	5.405	5.162	4.938	4.730
17	7.549	7.120	6.729	6.373	6.047	5.749	5.475	5.222	4.990	4.775
18	7.702	7.250	6.840	6.467	6.128	5.818	5.534	5.273	5.033	4.812
19	7.839	7.366	6.938	6.550	6.198	5.877	5.584	5.316	5.070	4.843
20	7.963	7.469	7.025	6.623	6.259	5.929	5.628	5.353	5.101	4.870
25	8.422	7.843	7.330	6.873	6.464	6.097	5.766	5.467	5.195	4.948
30	8.694	8.055	7.496	7.003	6.566	6.177	5.829	5.517	5.235	4.979
35	8.855	8.176	7.586	7.070	6.617	6.215	5.858	5.539	5.251	4.992
40	8.951	8.244	7.634	7.105	6.642	6.233	5.871	5.548	5.258	4.997
50	9.042	8.304	7.675	7.133	6.661	6.246	5.880	5.554	5.262	4.999