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CA GAURAV JAIN

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11 All India Ranks & 750+ Exemptions

Nov. 2015



Shreshtha Tayal

AIR 20

Roll No. 141557

68 Marks

(AIR/CA/CS 20th)

May 2015



Shailee Chaudhary

AIR 1

Roll No. 130814

88 Marks

Nov. 2014



Anish Gupta

AIR 22

Roll No. 188172

68 Marks

Nov. 2015



Payal Bansal

AIR 27

Roll No. 137808

70 Marks

May 2014



Pravesh Khandelwal

AI 2nd Highest

Roll No. 125761

85 Marks

May 2017



Naman Jain

Roll No. 133759

94 Marks

Nov. 2013



Nishant Gupta

AIR 17

Roll No. 162871

77 Marks

Nov. 2014



Keshav Goel

AIR 18

Roll No. 132485

83 Marks

May 2016



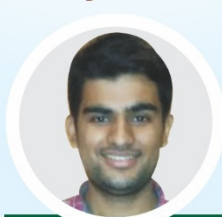
Harsh Garg

AIR 17

Roll No. 408489

74 Marks

May 2016



Kunal Somani

AIR 14

Roll No. 438272

88 Marks

May 2016



Prashu Goyal

AIR 36

Roll No. 480693

81 Marks

11 All India Ranks & 750+ Exemptions



Lakshay Gupta
Roll No. 438484
Scored 85 Marks in SFM



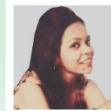
Vinod Gupta
Roll No. 428103
Scored 81 Marks in SFM



Paras Khurana
Roll No. 443280
Scored 79 Marks in SFM



Vidhu Sah
Roll No. 496735
Scored 78 Marks in SFM



Swati Mundra
Roll No. 438473
Scored 77 Marks in SFM



Divy Sethi
Roll No. 496393
Scored 77 Marks in SFM



Ayush Agarwal
Roll No. 432340
Scored 77 Marks in SFM



Tarun Surekha
Roll No. 505367
Scored 75 Marks in SFM



Taraana Talwar
Roll No. 425330
Scored 75 Marks in SFM



Rocky Jangid
Roll No. 492274
Scored 73 Marks in SFM



Priyanka Mittal
Roll No. 439304
Scored 73 Marks in SFM



Mayank Chaudhary
Roll No. 431909
Scored 73 Marks in SFM



Ankit Jain
Roll No. 434716
Scored 73 Marks in SFM



Rashika Jain
Roll No. 506933
Scored 72 Marks in SFM



Niklesh Agarwal
Roll No. 439441
Scored 71 Marks in SFM



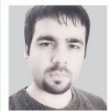
Sejal Goel
Roll No. 458947
Scored 71 Marks in SFM



Anuskh Kapoor
Roll No. 437438
Scored 71 Marks in SFM



Deepak Singh
Roll No. 438860
Scored 69 Marks in SFM



Akhil Madaan
Roll No. 509731
Scored 69 Marks in SFM



Sumeet Jha
Roll No. 443674
Scored 68 Marks in SFM



Sameer Kapoor
Roll No. 443674
Scored 68 Marks in SFM



Madhu Pokharel
Roll No. 435039
Scored 67 Marks in SFM



Amit Kr. Keshwani
Roll No. 426690
Scored 66 Marks in SFM



Sumit Jain
Roll No. 439441
Scored 65 Marks in SFM



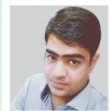
Heena Mohla
Roll No. 479329
Scored 65 Marks in SFM



Aradhana Shankar
Roll No. 437452
Scored 65 Marks in SFM



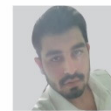
Akshay Uppal
Roll No. 428968
Scored 65 Marks in SFM



Sumit Pandia
Roll No. 418602
Scored 63 Marks in SFM



Ankit Kumar
Roll No. 438304
Scored 63 Marks in SFM



Nishant Grover
Roll No. 435237
Scored 63 Marks in SFM



Manish Wahi
Roll No. 435120
Scored 63 Marks in SFM



Madhvi Agarwal
Roll No. 435120
Scored 61 Marks in SFM



Anurag Sehgal
Roll No. 496967
Scored 61 Marks in SFM



Parth Agarwal
Roll No. 481646
Scored 60 Marks in SFM



Abhishek Jain
Roll No. 430463
Scored 60 Marks in SFM



Ankur Ahuja
Roll No. 118704
Scored 81 Marks in SFM



Shubham Bansal
Roll No. 126553
Scored 77 Marks in SFM



Vipul Kohli
Roll No. 119771
Scored 76 Marks in SFM



Samyak Jain
Roll No. 117279
Scored 75 Marks in SFM



Nikhil Dangri
Roll No. 123182
Scored 73 Marks in SFM



Akshay Gupta
Roll No. 143242
Scored 73 Marks in SFM



Nitish Jain
Roll No. 127328
Scored 72 Marks in SFM



Divya Goel
Roll No. 137646
Scored 72 Marks in SFM



Bikash Thakur
Roll No. 128998
Scored 72 Marks in SFM



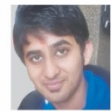
Abhilasha Gupta
Roll No. 127225
Scored 72 Marks in SFM



Preeti Gupta
Roll No. 121546
Scored 70 Marks in SFM



Anish Munjal
Roll No. 121546
Scored 70 Marks in SFM



Mudit Goel
Roll No. 121971
Scored 70 Marks in SFM



Naman Jain
Roll No. 122733
Scored 70 Marks in SFM



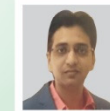
Shweta Banger
Roll No. 128945
Scored 69 Marks in SFM



Asif
Roll No. 128643
Scored 69 Marks in SFM



Ayushi Agarwal
Roll No. 133383
Scored 69 Marks in SFM



Nitin Singhal
Roll No. 117341
Scored 68 Marks in SFM



Kapil Manchanda
Roll No. 181015
Scored 68 Marks in SFM



Arvind Kuliya
Roll No. 123719
Scored 68 Marks in SFM



Ankur Gulati
Roll No. 123917
Scored 68 Marks in SFM



Nishant Bhardwaj
Roll No. 115215
Scored 68 Marks in SFM



Hemant Mittal
Roll No. 127430
Scored 67 Marks in SFM



Ayushi Jain
Roll No. 128689
Scored 67 Marks in SFM



Ankur Raheja
Roll No. 125015
Scored 67 Marks in SFM



Markshishir Matenja
Roll No. 118975
Scored 66 Marks in SFM



Alisha Aggarwal
Roll No. 128822
Scored 65 Marks in SFM



Pooja Gupta
Roll No. 126143
Scored 64 Marks in SFM



Tarun Mehrotra
Roll No. 121906
Scored 64 Marks in SFM



Anand Kankani
Roll No. 129791
Scored 63 Marks in SFM



Ratan Bhaduria
Roll No. 125331
Scored 63 Marks in SFM



Rohit Rathi
Roll No. 125015
Scored 62 Marks in SFM



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Best result in Delhi NCR 60+ Exemptions



Naman Jain
Roll No. 133759
Scored **94** Marks in SFM

Many congratulations to my shining Star **Naman Jain**
for Scored **94** marks (Roll No. 133759 NRO 0336585) in CA Final SFM



Ashish Srivastava
Roll No. 139873
Scored **87** Marks in SFM



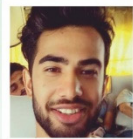
Mandeep Sheoran
Roll No. 116856
Scored **85** Marks in SFM



Priya Mittal
Roll No. 143857
Scored **81** Marks in SFM



Vibhor Gupta
Roll No. 134496
Scored **78** Marks in SFM



Aakash Gupta
Roll No. 129975
Scored **78** Marks in SFM



Shubham Bansal
Roll No. 144692
Scored **76** Marks in SFM



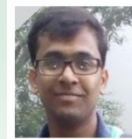
Shishir Agarwal
Roll No. 134713
Scored **76** Marks in SFM



Rahul Kanojia
Roll No. 130808
Scored **76** Marks in SFM



Ayush Rustagi
Roll No. 148226
Scored **76** Marks in SFM



Vikalp Agarwal
Roll No. 182919
Scored **75** Marks in SFM



Vaishali Gupta
Roll No. 125020
Scored **75** Marks in SFM



Arpit Singh Chaudhary
Roll No. 109538
Scored **75** Marks in SFM



Saurabh Goswami
Roll No. 131998
Scored **74** Marks in SFM



Navdeep Rastogi
Roll No. 138706
Scored **74** Marks in SFM



Saurabh Gupta
Roll No. 147915
Scored **73** Marks in SFM



Rohit Goel
Roll No. 119653
Scored **73** Marks in SFM



Lokesh Garg
Roll No. 197464
Scored **73** Marks in SFM



Jyoti Goyal
Roll No. 197967
Scored **73** Marks in SFM



Suraj kumar
Roll No. 127638
Scored **72** Marks in SFM



Tarun Gulati
Roll No. 208542
Scored **70** Marks in SFM



Rahul Talwar
Roll No. 134011
Scored **70** Marks in SFM



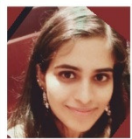
Nitin Kumar
Roll No. 130158
Scored **70** Marks in SFM



Aakriti Jain
Roll No. 133732
Scored **70** Marks in SFM



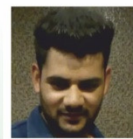
Saurav Pandit
Roll No. 107206
Scored **68** Marks in SFM



Prachi Singh
Roll No. 197694
Scored **68** Marks in SFM



Aditya Wadhwa
Roll No. 143621
Scored **68** Marks in SFM



Dheeraj Sharma
Roll No. 139999
Scored **67** Marks in SFM



Bhuvan Grover
Roll No. 208068
Scored **67** Marks in SFM



Rajneesh Verma
Roll No. 193208
Scored **65** Marks in SFM



Divyansh Jain
Roll No. 168563
Scored **65** Marks in SFM



Anjali Asha Jain
Roll No. 130360
Scored **64** Marks in SFM



Sunil Kashyap
Roll No. 130446
Scored **62** Marks in SFM



Bhuvi Ahuja
Scored **60** Marks in SFM



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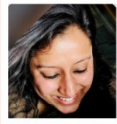


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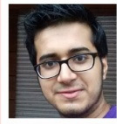
Best result in Delhi NCR 70+ Exemptions



Siddharth Jain
Roll No. 427097
Scored 85 Marks in SFM



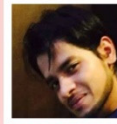
Anushka
Roll No. 0
Scored 82 Marks in SFM



Akash Balodi
Roll No. 429693
Scored 81 Marks in SFM



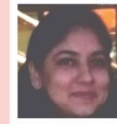
Vishesh
Roll No. 442460
Scored 79 Marks in SFM



Mohit Aggarwal
Roll No. 426786
Scored 79 Marks in SFM



Prateek Mittal
Roll No. 442994
Scored 78 Marks in SFM



Bhumika Vohra
Roll No. 428186
Scored 77 Marks in SFM



Praveen Goyal
Roll No. 464137
Scored 76 Marks in SFM



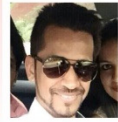
Himanshu Khurana
Roll No. 442687
Scored 75 Marks in SFM



Ashish Kr. Shukla
Roll No. 426898
Scored 75 Marks in SFM



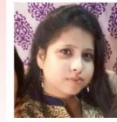
Neetu Rani
Roll No. 437454
Scored 74 Marks in SFM



Deepak Sardana
Roll No. 443510
Scored 74 Marks in SFM



Surmit Singh
Roll No. 0
Scored 73 Marks in SFM



Kanika Garg
Roll No. 433227
Scored 73 Marks in SFM



Samridhi Chanana
Roll No. 424331
Scored 72 Marks in SFM



Rakesh Kr. Thakur
Roll No. 426946
Scored 72 Marks in SFM



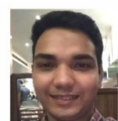
Himanshu Aggarwal
Roll No. 432897
Scored 72 Marks in SFM



Ritu Sachdeva
Roll No. 427387
Scored 71 Marks in SFM



Ritika Raheja
Roll No. 442437
Scored 71 Marks in SFM



Mohd. M. J. Ansari
Roll No. 443584
Scored 71 Marks in SFM



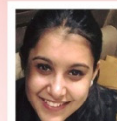
Aayush Kr. Jain
Roll No. 438696
Scored 71 Marks in SFM



Yogita Jain
Roll No. 442986
Scored 70 Marks in SFM



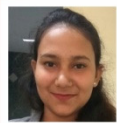
Nidhi Kansal
Roll No. 444601
Scored 70 Marks in SFM



Harshita Monga
Roll No. 434152
Scored 70 Marks in SFM



Nitesh Kumar
Roll No. 438153
Scored 69 Marks in SFM



Zainab
Roll No. 437492
Scored 66 Marks in SFM



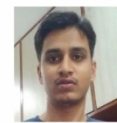
Rohit Kumar
Roll No. 432384
Scored 66 Marks in SFM



Pridhi Khanna
Roll No. 442997
Scored 66 Marks in SFM



Monika Singh
Roll No. 425482
Scored 66 Marks in SFM



Aditya
Roll No. 434127
Scored 66 Marks in SFM



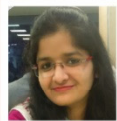
Aakash Agarwal
Roll No. 444427
Scored 66 Marks in SFM



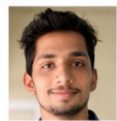
Pankaj Gaur
Roll No. 442669
Scored 65 Marks in SFM



Tushar Agarwal
Roll No. 429795
Scored 64 Marks in SFM



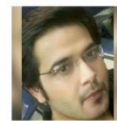
Kirti Goyal
Roll No. 433989
Scored 64 Marks in SFM



Aadarsh Pratap
Roll No. 406363
Scored 64 Marks in SFM



Pooja Garg
Roll No. 432401
Scored 63 Marks in SFM



Varun Grover
Roll No. 439026
Scored 63 Marks in SFM



Tanveer Akhtar
Roll No. 439038
Scored 63 Marks in SFM



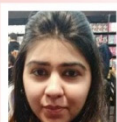
Harshit Gupta
Roll No. 433051
Scored 63 Marks in SFM



Himanshu Garg
Roll No. 480402
Scored 62 Marks in SFM



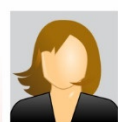
Aditi Dadhichi
Roll No. 495051
Scored 62 Marks in SFM



Kimi Pawha
Roll No. 434021
Scored 61 Marks in SFM



Yonish Kumar
Roll No. 432139
Scored 61 Marks in SFM



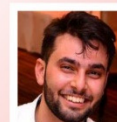
Shivani Aggarwal
Roll No. 433594
Scored 61 Marks in SFM



Prateek Joshi
Roll No. 419092
Scored 61 Marks in SFM



Pallavi Singhal
Roll No. 424452
Scored 61 Marks in SFM



Gaurav Chauhan
Roll No. 437530
Scored 61 Marks in SFM



Anu Jain
Roll No. 436813
Scored 61 Marks in SFM



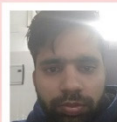
Yashank Garg
Roll No. 0
Scored 60 Marks in SFM



Shivansh Garg
Roll No. 444199
Scored 60 Marks in SFM



Nisha Gupta
Roll No. 442675
Scored 60 Marks in SFM



Mohit Singh
Roll No. 438616
Scored 60 Marks in SFM



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Best result in Delhi NCR 50+ Exemptions



Sumit Yadav
Roll No. 189797
Scored **90** Marks in SFM



Kashish Kalra
Roll No. 254642
Scored **88** Marks in SFM



Mehtab Hussain
Roll No. 251393
Scored **86** Marks in SFM



Anshuman Goel
Roll No. 251622
Scored **82** Marks in SFM



Vrinda
Roll No. 252079
Scored **81** Marks in SFM



Kapil Bansal
Roll No. 139911
Scored **77** Marks in SFM



Vaibhav Goel
Roll No. —
Scored **77** Marks in SFM



Babita Verma
Roll No. 251095
Scored **76** Marks in SFM



Suraj Sharma
Roll No. 251648
Scored **75** Marks in SFM



Bhavesh Singla
Roll No. 160679
Scored **75** Marks in SFM



Kuldeep Chandila
Roll No. 140225
Scored **72** Marks in SFM



Sanjeev Ranjan
Roll No. 131131
Scored **72** Marks in SFM



Kanupriya Maheshwari
Roll No. 251897
Scored **72** Marks in SFM



Dhruv Rao
Roll No. 140135
Scored **71** Marks in SFM



Raju Ranjan Bihari
Roll No. 124186
Scored **70** Marks in SFM



Anuraag Gupta
Roll No. 131961
Scored **70** Marks in SFM



Aman Mehta
Roll No. 131989
Scored **69** Marks in SFM



Aayushi Mishra
Roll No. 125600
Scored **69** Marks in SFM



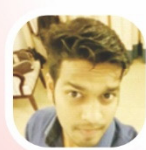
Astha Sharma
Roll No. 251642
Scored **68** Marks in SFM



Mayur Goel
Roll No. 185672
Scored **67** Marks in SFM



Anuj Verma
Roll No. 251618
Scored **66** Marks in SFM



Manish Kumar
Roll No. 125238
Scored **66** Marks in SFM



Monika
Roll No. 250933
Scored **66** Marks in SFM



Rishu Jain
Roll No. 131371
Scored **65** Marks in SFM



Kshitij Goel
Roll No. 130288
Scored **65** Marks in SFM



Garima Nagpal
Roll No. 139753
Scored **64** Marks in SFM



Neha Chaudhary
Roll No. 129634
Scored **63** Marks in SFM



Piyush Bhatia
Roll No. 132065
Scored **63** Marks in SFM



Rachna Tomar
Roll No. 251315
Scored **63** Marks in SFM



Ratnesh Awasthi
Roll No. 134164
Scored **62** Marks in SFM



Gaurav Chauhan
Roll No. 134869
Scored **61** Marks in SFM



Hitesh Nayar
Roll No. 174315
Scored **61** Marks in SFM



Vaardan Kapur
Roll No. 252079
Scored **61** Marks in SFM



Rupesh Pandey
Roll No. 189724
Scored **60** Marks in SFM



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RESULT



5th time in a row **50 + Exemptions in CA-FINAL SFM**
 by **Shining Stars of Arihant CA**

#These are not Rank Holders



Omkar Nath
Roll No. 327219



Gaurav Sharma
Roll No. 389995



Himanshu Jain
Roll No. 326303



Udit Kumar
Roll No. 328554



Jyotsana
Roll No. 331581



Ashish Shrestha
Roll No. 357422



Anmol Garg
Roll No. 335687



Sharvan
Roll No. 3801028



Bharkha Garg
Roll No. 335527



Shubham Goyal
Roll No. 388760



Uday Katyal
Roll No. 380096



Karan Saluja
Roll No. 368192



Mohit Kapoor
Roll No. 356821



Sahil Dhingra
Roll No. 331248



Jigeesha Chadha
Roll No. 324085



Ankit Kumar Sharma
Roll No. 331995



Abhishek Kaushal
Roll No. 331995



Deepali Gupta
Roll No. 321807



Piyush Kumar Sinha
Roll No. 504276



Shivam Kansal
Roll No. 310035



Rajesh Kumar
Roll No. 406095



Himanshu Gupta
Roll No. 331248



Akshya Rastogi
Roll No. 803800



Vishal Dalmia
Roll No. 327833



Gunjan Audichya
Roll No. 322836



Neelam Rohani
Roll No. 329014



Ravi Raman Verma
Roll No. 327383



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Anuj Verma
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Lehar Khanna
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Dhannyameri Raju
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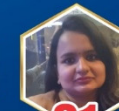
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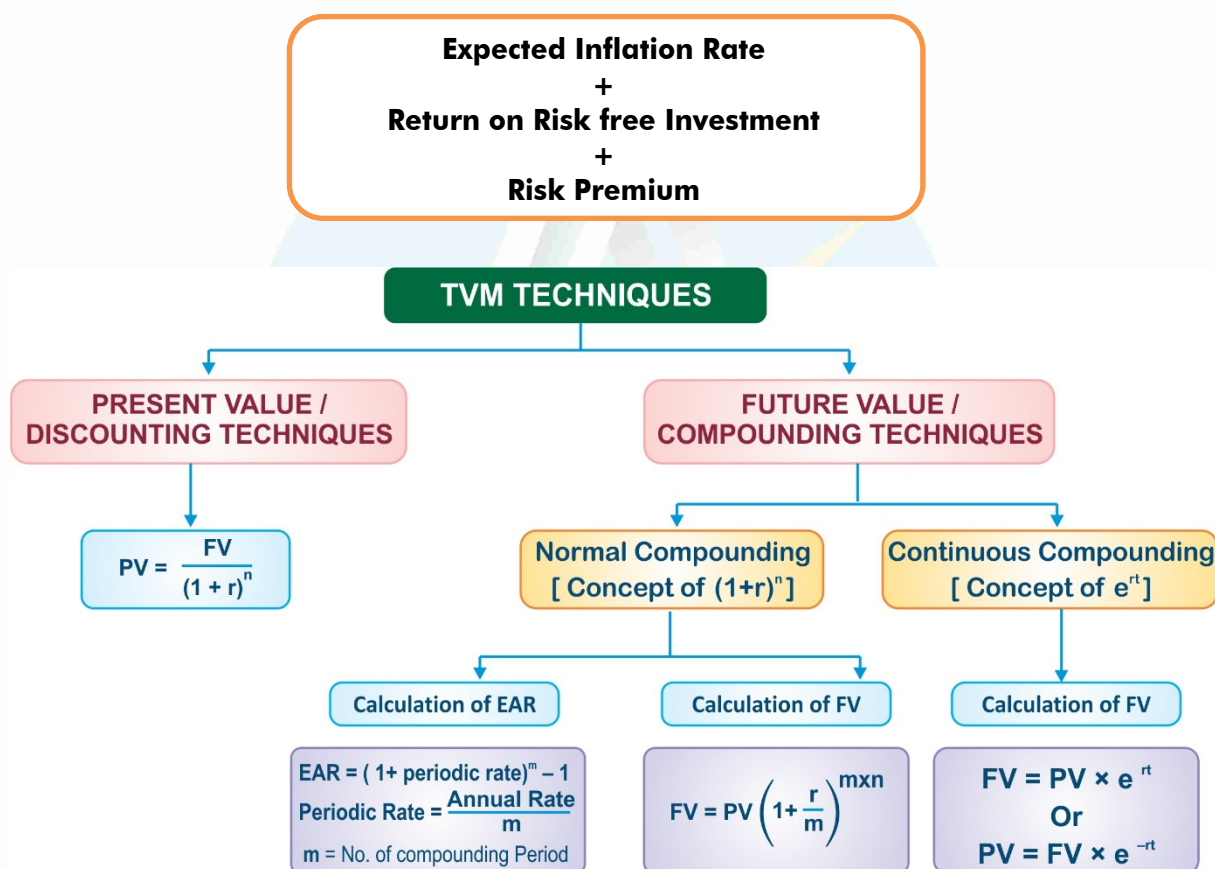
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CHAPTER ONE

TIME VALUE OF MONEY

LOS 1 : INTRODUCTION

- ❖ Time value of Money is the first and the most important chapter of Finance.
- ❖ Anything connected with Finance is based on the **"TIME VALUE OF MONEY"**
- ❖ ₹ 100 today is Not Equal to ₹ 100 a year later.
- ❖ Three Factors determines the Time Value of Money:



LOS 2 : FUTURE VALUE OF A SINGLE CASH FLOW

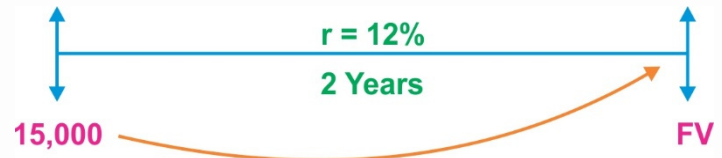
$$FV = PV \times (1 + r)^n$$

Example:

You invest ₹ 15,000 for two years that pays you 12% p.a. how much will you have at the end of two years?

**Solution:**

$$\begin{aligned} FV &= PV \times (1 + r)^n \\ &= 15,000 \times (1 + 0.12)^2 \\ &= 18,816 \end{aligned}$$

**LOS 3 : PRESENT VALUE OF A SINGLE CASH FLOW**

$$FV = PV \times (1 + r)^n \text{ or } PV = \frac{FV}{(1+r)^n}$$

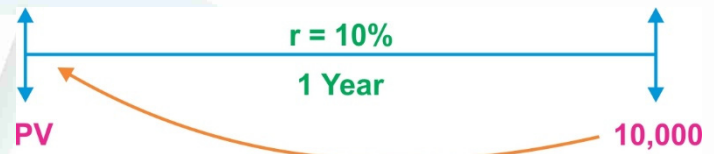
Example:

You need ₹ 10,000 for buying a mobile next year. You can earn 10% on your money. How much do you need to invest today?

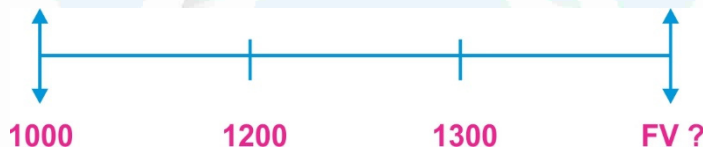
Solution:

$$\begin{aligned} FV &= 10,000 \\ r &= 10\% \\ n &= 1 \text{ year} \end{aligned}$$

$$PV = \frac{FV}{(1+r)^n} \Rightarrow \frac{10,000}{(1+0.10)^1} \Rightarrow 9090.91$$

**LOS 4 : FUTURE VALUE OF A MULTIPLE UNEQUAL CASH FLOW****Example:**

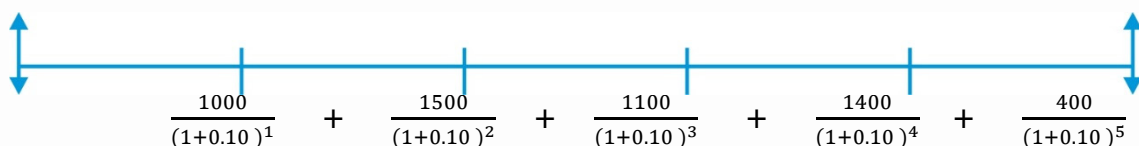
Suppose you receive ₹ 1000 today, another ₹ 1200 a year later and ₹ 1300 two year later. How much will you have three years from today? Interest Rate @ 10%

Solution:

$$\begin{aligned} 1000 \times (1 + 0.10)^3 &= 1331 \\ 1200 \times (1 + 0.10)^2 &= 1452 \\ 1300 \times (1 + 0.10)^1 &= 1430 \\ &= \underline{4213} \end{aligned}$$

LOS 5 : PRESENT VALUE OF A MULTIPLE UNEQUAL CASH FLOW**Example:**

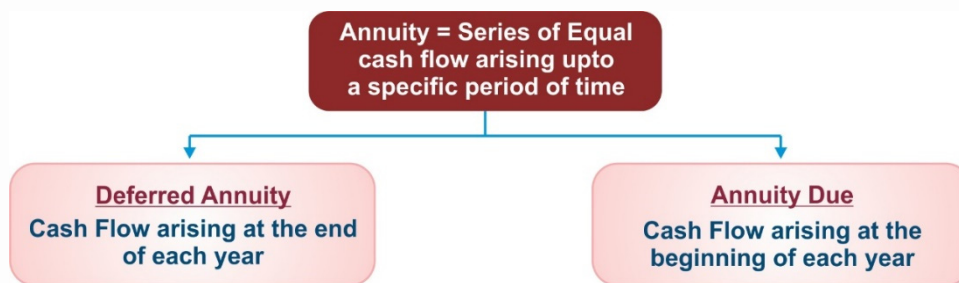
Mr. X receives ₹ 1000, 1500, 1100, 1400 & 400 at the end of year 1, 2, 3, 4 & 5. Rate = 10%, Calculate PV.



$$PV = 4179.30$$



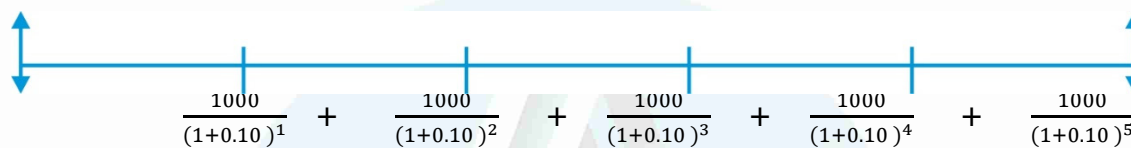
LOS 6 : PRESENT VALUE OF A MULTIPLE EQUAL CASH FLOW (PERIOD DEFINED)



a) Present Value of Multiple Equal Cash Flow (Period Defined) :- (at the end of each year)

Example:

Mr. X will receive ₹ 1000 at the end of each year upto 5 years, Rate = 10%. Find Present Value.



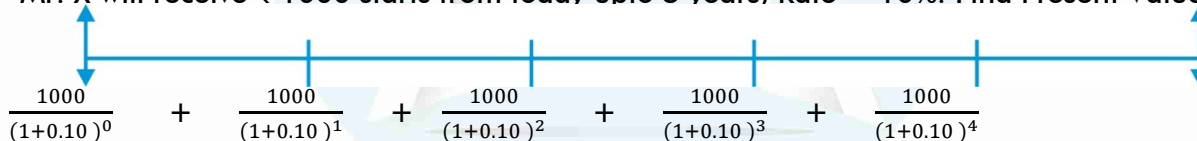
Or

$$PV = 1000 [PVAF @ 10\% \text{ for } 5 \text{ years}] \Rightarrow 1000 \times 3.791 \Rightarrow 3791$$

b) Present Value of Multiple Equal Cash Flow (Period Defined) :- (at the Beginning of each year)

Example:

Mr. X will receive ₹ 1000 starts from today upto 5 years, Rate = 10%. Find Present Value.



Or

$$PV = 1000 [1 + PVAF @ 10\%, (5 - 1) \text{ years}]$$

$$= 1000 \times [1 + 3.17] \Rightarrow 4170$$

Note: If question is silent always assume Deferred Annuity.

LOS 7 : PRESENT VALUE OF EQUAL CASH FLOW UPTO INFINITY (PERPETUITY/ INDEFINITE): (SERIES OF EQUAL CASH FLOW ARISING UPTO INFINITE OR FOREVER)

$$PV = \frac{\text{Annual Cash Flow}}{\text{Discount Rate}}$$

Example:

Mr. X will receive ₹ 1000 at the end of each year upto infinity, Rate = 10%. Find Present Value.

Solution:

$$PV = \frac{1000}{0.10} \Rightarrow 10,000$$



LOS 8: PRESENT VALUE OF GROWING CASH FLOW UPTO INFINITY (GROWING PERPETUITY)

$$PV = \frac{CF_1}{\text{Discount Rate} - \text{Growth Rate}}$$

Where CF_1 = Cash Flow at the end of year 1.

Example:

Mr. X will receive ₹ 1000 at the end of year 1, thereafter cash flow will grow by 8% every year upto infinity, Rate = 10%. Find Present Value.

Solution:

$$PV = \frac{1000}{0.10 - 0.08} \Rightarrow 50,000$$



QUESTION 1:

You need a sum of ₹ 1,00,000 at the end of 10 years. You know that the best you can do is to deposit some lump sum amount today at 6% rate of interest or to make equal payments into a bank account, starting a year from now on which you can earn 6% interest. Find out

- What amount to be deposited today or
- What amount must be deposited annually?

(Compound value factor and compound value factor of annuity of Re. 1 for 10 year @ 6% is 1.791 and 13.181 respectively).

QUESTION 2:

Mr. X took a loan of ₹30,00,000 lakh to purchase an asset from a financial institution at 14% interest per year. The amount has to be repaid in 10 equal annual instalments. Calculate the instalment amount.

QUESTION 3:

Calculate if ₹10,00,000 is invested at interest rate of 12% per annum, what is the amount after 3 years if the compounding of interest is done?

- Annually
- Semi-annually
- Quarterly

QUESTION 4:

A is 22 years old, recently joined a new job, wants to plan a tour to Europe after the end of 5 years. The Europe tour will cost ₹ 5,00,000, for this purpose she wants to invest a annually in mutual fund which will pay an average return of 12% p.a.

Required:

- Find out the annual investment to be made in the mutual fund.

QUESTION 5:

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?

QUESTION 6:

A doctor is planning to buy an X-Ray machine for his hospital. He has two options- either purchase it by making a cash payment of ₹ 5 lakhs or six equal annual installments of ₹ 1,02,500 totalling to ₹ 6,15,000. Which option do you suggest to the doctor assuming the rate of return is 12 %? Present value of annuity of Re. 1 at 12 percent rate of discount for six years is 4.111.

QUESTION 7:

Ajay invested ₹ 50,000 in a 6-month Term Deposit on 1st April, 2020 earning 7% interest compounded quarterly. On October 1st, 2020, the said Term Deposit matured, so, he added enough additional money to invest in another 6-month Term Deposit for ₹ 60,000 earning 9% compounded monthly.

- How much additional amount did the person invest on October 1st?
- What was the maturity value of his Time Deposit on April 1, 2021?
- How much total interest was earned?

QUESTION 8:

Mr. K has taken a personal loan from a commercial bank of ₹3,00,000 for one year at 18% p.a. It has to pay the loan amount in equal monthly installments (EMIs). Compute the EMI amount to be paid per month and the total interest that would be paid upto the end of sixth month.



NOTES



CHAPTER TWO

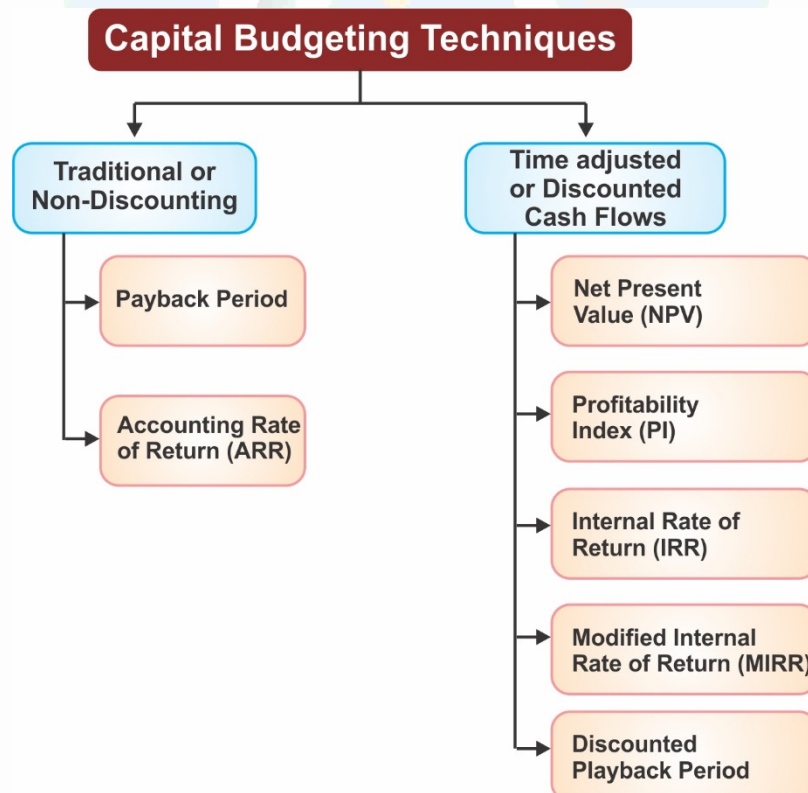
INVESTMENT DECISIONS

LOS 1: INTRODUCTION

- ❖ Capital Budgeting is the process of **IDENTIFYING & EVALUATING** capital projects i.e. projects where the cash flows to the firm will be received over a period longer than a year.
- ❖ Any corporate decisions with an **IMPACT ON FUTURE EARNINGS** can be examined using capital budgeting framework.
- ❖ Categories of Capital Budgeting Projects:
 - a) Replacement projects to maintain the business
 - b) Replacement projects for cost reduction
 - c) Expansion projects
 - d) New product or market development/Diversification decisions
 - e) Mandatory projects

Types of Capital Budgeting Proposals:

- a) **Mutually Exclusive Proposals:** when acceptance of one proposal implies the automatic rejection of the other proposal.
- b) **Complementary Proposals/Contingent decisions:** when the acceptance of one proposal implies the acceptance of other proposal complementary to it, rejection of one implies rejection of all complementary proposals.
- c) **Independent Proposals/Accept-Reject decisions:** when the acceptance/rejection of one proposal doesn't affect the acceptance/rejection of other proposal.





LOS 2: NET PRESENT VALUE (NPV)

$$\text{NPV} = \text{PV of Cash Inflows} - \text{PV of Cash Outflows}$$

Decision: If NPV is

+ve	Accept the project- increase shareholder's wealth
-ve	Reject the project-decrease shareholder's wealth
Zero	Indifferent-No effect on shareholder's wealth

$$\text{NPV} = -\text{CF}_0 + \frac{\text{CF}_1}{(1+k)^1} + \frac{\text{CF}_2}{(1+k)^2} + \dots + \frac{\text{CF}_n}{(1+k)^n}$$

Where,

CF_0 = the initial investment outlay.

CF_t = after- tax cash flow at time t

K = required rate of return for project.

	Total Fund Approach / Overall Project Approach
Discount Rate	K_0
Initial Cash Outflow	Total Cost of New Asset Add: Installation / Set-up Cost Add: Investment in Working Capital
Operating Cash Inflows (CFAT)	Future Cash flows after tax
Terminal Cash flows	SV adjusted for Tax Release of Working Capital
NPV	NPV of a project

Calculation of Future Cash Flows (CFAT)

Sale Price Per Unit	xxx
Less : Variable Cost Per Unit	xxx
Contribution Per Unit	xxx
× No. of Unit	xxx
Total Contribution	xxx
Less : Fixed Cost Excluding Depreciation	xxx
EBDIT	xxx
Less : Depreciation	xxx
Annual PBT	xxx
Less : Tax	xxx
Annual PAT	xxx
Add : Depreciation	xxx
CFAT	xxx

Note 1 : Treatment of Depreciation

➤ $[\text{EBDIT} - \text{Depreciation}] [1 - \text{Tax Rate}] + \text{Depreciation}$

Or

➤ $\text{EBDIT} (1 - \text{Tax Rate}) + \text{Tax saving on Depreciation}$



Note 2 : Treatment of Interest Cost / Finance Cost

- Finance Cost are already reflected in the Projects required rate of return / WACC / K_0 .
- This shows that Interest on Long Term Loans as well as its Tax Saving is already considered by K_0 .

Note 3 : Treatment of Working Capital

		Time
Introduction of Working Capital	Outflow	Year 0
Release of Working Capital	Inflow	End of project Life

- Working Capital should never be adjusted for tax as it is a balance sheet item. Working capital is also not subject to depreciation.

Note 4 : Treatment of Tax

If we have loss in a particular year, there are two adjustments

1. **Set-off** : assumed the firm as other profitable business, Loss in a year generate tax savings in that year.
2. **Carry Forward** : The company has an individual business or a new business having no other operations, loss in a year will be carried forward to future years for the purpose of Set-off.

Note 5 : Key Points to Remember

1. Decisions are based on cash flows, not accounting income:
 - Consider INCREMENTAL CASH FLOWS, the change in cash flows that will occur if the project is undertaken.
2. Sunk costs should not be included in the analysis.
 - These costs are not effected by the accept/reject decisions. Eg. Consulting fees paid to a marketing research firm to estimate demand for a new product prior to a decision on the project.
3. Externities / Cannibalization
 - When considering the full implication of a new project, loss in sales of existing products should be taken into account & also consider positive effects on sale of a firm's other product line.
4. Cash flows are based on Opportunity Costs.
 - Opportunity costs should be included in projects costs.
5. The timing of cash flows is important.
 - Cash flows received earlier are worth more than cash flows to be received later.
6. Cash flows are analyzed on an after-tax basis.

Note 6 : Treatment of Subsidy for charging Depreciation.

Alternative 1 (Preferred by CA Institute)

Claim Depreciation on the full cost of asset.

Alternative 2

Claim Depreciation on Net Amount of Asset

LOS 3 : PROFITABILITY INDEX (PI) / BENEFIT COST RATIO / DESIRABILITY FACTOR / PRESENT VALUE INDEX

Where different investment proposals each involving different initial investments and cash inflows

$$PI = \frac{PV \text{ of Cash InFlows}}{CF_0 \text{ or Present value of Outflows}}$$

CF_0 = Initial Cash Out Flows

Note:

$NPV = -CF_0 + PV \text{ of future Cash In Flows}$



$CF_0 + NPV = PV$ of Future Cash In Flows

If NPV is given, then

Add Initial outlay in NPV to get, PV of Cash inflows.

Decision:

If NPV is Positive, the PI will be greater than one.

If NPV is Negative, the PI will be Less than one.

Rule:

If

$PI > 1$	Accept the project
$PI < 1$	Reject the project
$PI = 1$	Indifferent

LOS 4: SIMPLE PAY-BACK PERIOD METHOD (PBP)

The pay-back period (PBP) is the number of years it takes to recover the initial cost of an investment. It is the period at which total cash inflows from the project equals to the cost of investment in the project.

Case I: When Cash inflows are Constant/ equal

$$\text{Pay-back Period} = \frac{\text{Total Initial Capital Investment}}{\text{Annual Expected after tax net Cash Inflow}}$$

Case II: When Cash inflows are unequal

Steps Involved:

- Determine the initial investment of the project.
- Determine the CFAT from the project for various years.
- Compute the cumulative CFAT at the end of each year.

$$\text{Pay-back Period} = \text{Full years until recovery} + \frac{\text{Unrecovered Cost}}{\text{Cash Flow during next Year}}$$

Decision:

Shorter the PBP, better the project.

Drawback:

PBP does not take into account the time value of money and cash flows beyond the payback period.

Benefit:

The main benefit of the pay-back period is that it is a good measure of project liquidity.

LOS 5: DISCOUNT PAY-BACK PERIOD

- ❖ The discounted payback period uses the present value (PV) of project's estimated Cash flows.
- ❖ It is the number of years it takes a project to recover its initial investment in present value terms.
- ❖ Discounted pay-back period must be greater than simple pay-back period.

LOS 6: PAYBACK RECIPROCAL

It is the reciprocal of Payback Period. It is computed as :

$$\text{Pay-back Reciprocal} = \frac{\text{Annual Expected after tax net Cash Inflow}}{\text{Total Initial Capital Investment}}$$

The Payback Reciprocal is considered to be an approximation of the Internal Rate of Return, if:

- The life of the project is at least twice the payback period, and
- The Project generates equal amount of the annual cash inflows.



Example:

A project with an initial investment of ₹ 50 lakhs and life of 10 years, generates CFAT of ₹10 lakhs per annum. Its Payback Reciprocal will be $\frac{10 \text{ lakhs}}{20 \text{ lakhs}} = 20\%$.

LOS 6: IRR TECHNIQUES (INTERNAL RATE OF RETURN)

- ❖ IRR is the discount rate that makes the PV of a project's estimated cash inflows equal to the PV of the project's estimated cash outflows.
- ❖ i.e. IRR is the discount rate that makes the following relationship:

$$PV(\text{Inflows}) = PV(\text{Outflows})$$

- IRR is also the discount rate for which the NPV of a project is equal to ZERO.

$$IRR = \text{Lower Rate} + \frac{\text{Lower Rate NPV}}{\text{Lower Rate NPV} - \text{Higher Rate NPV}} \times \text{Difference in Rate (HR-LR)}$$

How to find the starting rate for calculation of IRR:

Step 1: Calculate Fake Pay-back period:

$$\text{Fake Pay-back Period} = \frac{\text{Initial Investment}}{\text{Average Annual Cash Flow}}$$

Step 2: Locate the above figure in Present Value Annuity Factor Table and take this discount rate to start the calculation of IRR.

Accept/Reject Criteria:

IRR > Cost of Capital	Accept the Proposal
IRR = Cost of Capital	Indifferent
IRR < Cost of Capital	Reject the Proposal

LOS 7: ACCOUNTING RATE OF RETURN

$$ARR = \frac{\text{Average Annual Net Profit}}{\text{Initial Investment}}$$

Note:

$$\text{Average Net Profit} = \frac{NP_1 + NP_2 + NP_3 + \dots + NP_n}{n}$$

1. It ignores time value of money.
2. It takes into account accounting profits rather than cash flows.

LOS 8: NET PROFITABILITY INDEX OR NET PI

$$\text{Net PI} = \frac{NPV}{\text{Initial Investment} / \text{Present Value of Outflows}}$$

Decision: Higher the Better.

Techniques		For Independent Project	For Mutually Exclusive Projects
Non-Discounted	Pay Back	(i) When Payback period ≤ Maximum Acceptable Payback period: Accepted	Project with least Payback period should be selected



		(ii) When Payback period \geq Maximum Acceptable Payback period: Rejected	
	Accounting Rate of Return (ARR)	(i) When ARR \geq Minimum Acceptable Rate of Return: Accepted (ii) When ARR \leq Minimum Acceptable Rate of Return: Rejected	Project with the maximum ARR should be selected.
Discounted	Net Present Value (NPV)	(i) When NPV $>$ 0: Accepted (ii) When NPV $<$ 0: Rejected	Project with the highest positive NPV should be selected
	Profitability Index(PI)	(i) When PI $>$ 1: Accepted (ii) When PI $<$ 1: Rejected	When Net Present Value is same project with highest PI should be selected
	Internal Rate of Return (IRR)	(i) When IRR $>$ K: Accepted (ii) When IRR $<$ K: Rejected	Project with the maximum IRR should be selected

LOS 9 : MODIFIED NPV/ IRR

- ❖ When Cost of Capital & Re-investment rate are separately given, then we calculate Modified NPV.
- ❖ **Modified IRR:** It is the discount rate at which Modified NPV is Zero.

$$\text{i.e. Modified NPV} = \frac{\text{Terminal Value}}{(1 + K_0)^n} - \text{PV of Cash Outflow}$$

$$\text{'or' PV of cash outflow} = \frac{\text{Terminal Value}}{(1 + K_0)^n}$$

LOS 10 : CAPITAL RATIONING

- ❖ Capital rationing is the situation under which company is not able to undertake all +ve NPV projects due to lack of funds.
- ❖ Firm must prioritize its capital expenditure with the goal of achieving the maximum increase in value for shareholders.
- ❖ If the firm has unlimited access to capital, the firm can undertake all projects with +ve NPV.

Divisible Projects

Those projects which can be taken in parts

E.g. Construction of Flats.

Indivisible Projects

Those projects which cannot be taken in parts

E.g. Construction of Ship.

Case I: Divisible Project

Steps Involved:

Step 1: Calculate NPV of each project.

Step 2: Identify whether capital rationing exists.

Step 3: Calculate Net Profitability Index or Profitability Index (PI) for each project.

Step 4: Rank the project

Step 5: Allocate money according to rank.

Case II: Indivisible Project

Steps Involved:

Step 1: Calculate NPV of each project.

Step 2: Identify whether capital rationing exists.

Step 3: Take possible combinations of projects taking into consideration limitation of funds.

Step 4: Select that combination which gives highest NPV.



QUESTION 1 :

ABC Ltd is evaluating the purchase of a new project with a depreciable base of ₹ 1,00,000; expected economic life of 4 years and change in earnings before taxes and depreciation of ₹ 45,000 in year 1, ₹ 30,000 in year 2, ₹ 25,000 in year 3 and ₹ 35,000 in year 4. Assume straight-line depreciation and a 20% tax rate. You are required to compute relevant cash flows.

QUESTION 2 :

Suppose a project requiring an investment of ₹ 10,00,000 yields profit after tax and depreciation as follows:

Year	Profit after tax and depreciation (in ₹)
1	50,000
2	75,000
3	1,25,000
4	1,30,000
5	80,000
Total	4,60,000

Suppose further that at the end of 5 years, the plant and machinery of the project can be sold for ₹80,000. Calculate the Average rate of return

QUESTION 3 :

Compute the net present value for a project with a net investment of ₹ 1,00,000 and the following cash flows if the company's cost of capital is 10%? Net cash flows for year one is ₹ 55,000; for year two is ₹80,000 and for year three is ₹ 15,000. [PVIF @ 10% for three years are 0.909, 0.826 and 0.751]

QUESTION 4 :

ABC Ltd is a small company that is currently analyzing capital expenditure proposals for the purchase of equipment; the company uses the net present value technique to evaluate projects. The capital budget is limited to 500,000 which ABC Ltd believes is the maximum capital it can raise. The initial investment and projected net cash flows for each project are shown below. The cost of capital of ABC Ltd is 12%. You are required to compute the NPV of the different projects.

	Project A	Project B	Project C	Project D
Initial Investment	200,000	190,000	250,000	210,000
Project Cash Inflows				
Year 1	50,000	40,000	75,000	75,000
2	50,000	50,000	75,000	75,000
3	50,000	70,000	60,000	60,000
4	50,000	75,000	80,000	40,000
5	50,000	75,000	100,000	20,000

QUESTION 5 :

Suppose we have three projects involving discounted cash outflow of ₹5,50,000, ₹75,000 and ₹1,00,20,000 respectively. Suppose further that the sum of discounted cash inflows for these projects are ₹ 6,50,000, ₹ 95,000 and ₹1,00,30,000 respectively. Calculate the desirability factors for the three projects.

QUESTION 6 :

A Ltd. is evaluating a project involving an outlay of ₹ 10,00,000 resulting in an annual cash inflow of ₹ 2,50,000 for 6 years. Assuming salvage value of the project is zero determine the IRR of the project.

QUESTION 7 :

Calculate the internal rate of return of an investment of ₹ 1,36,000 which yields the following cash inflows:

Year	Cash Inflows (in ₹)
1	30,000
2	40,000



3	60,000
4	30,000
5	20,000

QUESTION 8 :

A company proposes to install machine involving a capital cost of ₹ 3,60,000. The life of the machine is 5 years and its salvage value at the end of the life is nil. The machine will produce the net operating income after depreciation of ₹ 68,000 per annum. The company's tax rate is 45%.

The Net Present Value factors for 5 years are as under:

Discounting rate :	14	15	16	17	18
Cumulative factor :	3.43	3.35	3.27	3.20	3.13

You are required to calculate the internal rate of return of the proposal.

QUESTION 9 :

An investment of ₹ 1,36,000 yields the following cash inflows (profits before depreciation but after tax). Determine MIRR considering 8% cost of capital.

Year	₹.
1	30,000
2	40,000
3	60,000
4	30,000
5	20,000
	1,80,000

QUESTION 10 :

Suppose there are two Project A and Project B are under consideration.

The cash flows associated with these projects are as follows:

Year	Project A	Project B
0	(1,00,000)	(3,00,000)
1	50,000	1,40,000
2	60,000	1,90,000
3	40,000	1,00,000

Assuming Cost of Capital equal to 10% which project should be accepted as per NPV Method and IRR Method.

QUESTION 11 :

Suppose ABC Ltd. is considering two Project X and Project Y for investment.

The cash flows associated with these projects are as follows:

Year	Project X	Project Y
0	(2,50,000)	(3,00,000)
1	2,00,000	50,000
2	1,00,000	1,00,000
3	50,000	3,00,000

Assuming Cost of Capital be 10%, which project should be accepted as per NPV Method and IRR Method.

QUESTION 12 :

Shiva Limited is planning its capital investment programme for next year. It has five projects all of which give a positive NPV at the company cut-off rate of 15 percent, the investment outflows and present values being as follows:

Project	Investment	NPV @ 15%
	₹ 000	₹ 000
A	(50)	15.4
B	(40)	18.7



C	(25)	10.1
D	(30)	11.2
E	(35)	19.3

The company is limited to a capital spending of ₹1,20,000.

You are required to optimise the returns from a package of projects within the capital spending limit. The projects are independent of each other and are divisible (i.e., part-project is possible).

QUESTION 13 :

R plc is considering to modernize its production facilities and it has two proposals under consideration. The expected cash flows associated with these project and their NPV as per discounting rate of 12% and IRR is as follows:

Year	Project A (£)	Project B(£)
0	(40,00,000)	(20,00,000)
1	8,00,000	7,00,000
2	14,00,000	13,00,000
3	13,00,000	12,00,000
4	12,00,000	
5	11,00,000	
6	10,00,000	
NPV @12%	6,49,094	5,15,488
IRR	17.47%	25.20%

Which project should R plc accept?

QUESTION 14 :

Alpha Company is considering the following investment projects:

Project	Cash Flows(₹)			
	C0	C1	C2	C3
A	-10,000	+10,000		
B	-10,000	+7,500	+7,500	
C	-10,000	+2,000	+4,000	+12,000
D	-10,000	+10,000	+3,000	+3,000

- Rank the projects according to each of the following methods: (i) Payback, (ii) ARR, (iii) IRR and (iv) NPV, assuming discount rates of 10 and 30 per cent.
- Assuming the projects are independent, which one should be accepted? If the projects are mutually exclusive, which project is the best?

QUESTION 15 :

The expected cash flows of three projects are given below. The cost of capital is 10 per cent.

- Calculate the payback period, net present value, internal rate of return and accounting rate of return of each project. b) Show the rankings of the projects by each of the four methods.

Period	Project A ₹	Project B ₹	Project C ₹
0	(5,000)	(5,000)	(5,000)
1	900	700	2,000
2	900	800	2,000
3	900	900	2,000
4	900	1,000	1,000
5	900	1,100	
6	900	1,200	
7	900	1,300	
8	900	1,400	
9	900	1,500	
10	900	1,600	

**QUESTION 16 :**

Lockwood Limited wants to replace its old machine with a new automatic machine. Two models A and B are available at the same cost of ₹ 5 lakhs each. Salvage value of the old machine is ₹ 1 lakh. The utilities of the existing machine can be used if the company purchases A. Additional cost of utilities to be purchased in that case are ₹ 1 lakh. If the company purchases B then all the existing utilities will have to be replaced with new utilities costing ₹ 2 lakhs. The salvage value of the old utilities will be ₹ 0.20 lakhs. The earnings after taxation are expected to be:

Project	(cash in-flows of)		
	A ₹	B ₹	P.V. Factor @ 15%
1	1,00,000	2,00,000	0.87
2	1,50,000	2,10,000	0.76
3	1,80,000	1,80,000	0.66
4	2,00,000	1,70,000	0.57
5	1,70,000	40,000	0.50
Salvage Value at the end of Year 5	50,000	60,000	

The targeted return on capital is 15%. You are required to

- Compute, for the two machines separately, net present value, discounted payback period and desirability factor and
- Advice which of the machines is to be selected?

QUESTION 17 :

Hindlever Company is considering a new product line to supplement its range line. It is anticipated that the new product line will involve cash investments of ₹7,00,000 at time 0 and ₹ 10,00,000 in year 1. After-tax cash inflows of ₹ 2,50,000 are expected in year 2, ₹ 3,00,000 in year 3, ₹ 3,50,000 in year 4 and ₹ 4,00,000 each year thereafter through year 10. Although the product line might be viable after year 10, the company prefers to be conservative and end all calculations at that time.

- If the required rate of return is 15 per cent, what is the net present value of the project? Is it acceptable?
- What would be the case if the required rate of return were 10 per cent?
- What is its internal rate of return?
- What is the project's payback period?

QUESTION 18 :

Elite Cooker Company is evaluating three investment situations: (1) produce a new line of aluminum skillets, (2) expand its existing cooker line to include several new sizes, and (3) develop a new, higher-quality line of cookers. If only the project in question is undertaken, the expected present values and the amounts of investment required are:

Project	Investment required	Present value of Future Cash-Flows
	₹	₹
1	2,00,000	2,90,000
2	1,15,000	1,85,000
3	2,70,000	4,00,000

If projects 1 and 2 are jointly undertaken, there will be no economies; the investments required and present values will simply be the sum of the parts. With projects 1 and 3, economies are possible in investment because one of the machines acquired can be used in both production processes. The total investment required for projects 1 and 3 combined is ₹4,40,000. If projects 2 and 3 are undertaken, there are economies to be achieved in marketing and producing the products but not in investment. The expected present value of future cash flows for projects 2 and 3 is ₹ 6,20,000. If all three projects are undertaken simultaneously, the economies noted will still hold. However, a ₹ 1,25,000 extension on the plant will be necessary, as space is not available for all three projects. Which project or projects should be chosen?



QUESTION 19 :

Cello Limited is considering buying a new machine which would have a useful economic life of five years, a cost of ₹ 1,25,000 and a scrap value of ₹ 30,000, with 80 per cent of the cost being payable at the start of the project and 20 per cent at the end of the first year. The machine would produce 50,000 units per annum of a new project with an estimated selling price of ₹ 3 per unit. Direct costs would be ₹ 1.75 per unit and annual fixed costs, including depreciation calculated on a straight-line basis, would be ₹ 40,000 per annum.

In the first year and the second year, special sales promotion expenditure, not included in the above costs, would be incurred, amounting to ₹ 10,000 and ₹ 15,000 respectively.

Evaluate the project using the NPV method of investment appraisal, assuming the company's cost of capital to be 10 percent.

QUESTION 20 :

A company proposes to install a machine involving a Capital Cost of ₹72,00,000. The life of the machine is 5 years and its salvage value at the end of the life is nil. The machine will produce the net operating income after depreciation of ₹13,60,000 per annum. The Company's tax rate is 35%.

The Net Present Value factors for 5 years are as under:

Discounting Rate (%):	14	15	16	17	18	19
Cumulative factor:	3.43	3.35	3.27	3.20	3.13	3.06

You are required to calculate the internal rate of return of the proposal.

QUESTION 21 :

A company wants to invest in a machinery that would cost ₹ 1,00,000 at the beginning of year 1. It is estimated that the net cash inflows from operations will be ₹ 36,000 per annum for 3 years, if the company opts to service a part of the machine at the end of year 1 at ₹ 20,000. In such a case, the scrap value at the end of year 3 will be ₹ 25,000. However, if the company decides not to service the part, then it will have to be replaced at the end of year 2 at ₹ 30,800. But in this case, the machine will work for the 4th year also and get operational cash inflow of ₹ 36,000 for the 4th year. It will have to be scrapped at the end of year 4 at ₹ 18,000.

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 ₹ 10,000 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 0.5645).

QUESTION 22 :

Ae Bee Cee Ltd. is planning to invest in machinery, for which it has to make a choice between the two identical machines, in terms of Capacity, 'X' and 'Y'. Despite being designed differently, both machines do the same job. Further, details regarding both the machines are given below:

Particulars	Machine 'X'	Machine 'Y'
Purchase Cost of the Machine (₹)	15,00,000	10,00,000
Life (years)	3	2
Running cost per year (₹)	4,00,000	6,00,000

The opportunity cost of capital is 9%.

You are required to:

IDENTIFY the machine the company should buy?

The present value (PV) factors at 9% are:

Year	t1	t2	t3
PVIF _{0.09,t}	0.917	0.842	0.772

**QUESTION 23 :**

A company is considering the proposal of taking up a new project which requires an investment of ₹ 800 lakh on machinery and other assets. The project is expected to yield the following earnings (before depreciation and taxes) over the next five years:

Year	Earnings (₹ in lakh)
1	320
2	320
3	360
4	360
5	300

The cost of raising the additional capital is 12% and assets have to be depreciated at 20% on 'Written down Value' basis. The scrap value at the end of the five years' period may be taken as zero. Income-tax applicable to the company is 40%.

You are required to calculate the net present value of the project and advise the management to take appropriate decision. Also calculate the Internal Rate of Return of the Project.

Note: Present value of Re. 1 at different rates of interest are as follows:

Year	10%	12%	14%	16%	20%
1	0.91	0.89	0.88	0.86	0.83
2	0.83	0.80	0.77	0.74	0.69
3	0.75	0.71	0.67	0.64	0.58
4	0.68	0.64	0.59	0.55	0.48
5	0.62	0.57	0.52	0.48	0.40

QUESTION 24 :

A large profit making company is considering the installation of a machine to process the waste produced by one of its existing manufacturing process to be converted into a marketable product. At present, the waste is removed by a contractor for disposal on payment by the company of ₹ 150 lacs per annum for the next four years. The contract can be terminated upon installation of the aforesaid machine on payment of a compensation of ₹90 lacs before the processing operation starts. This compensation is not allowed as deduction for tax purposes.

The machine required for carrying out the processing will cost ₹ 600 lacs to be financed by a loan repayable in 4 equal installments commencing from the end of year 1. The interest rate is 14% per annum. At the end of the 4th year, the machine can be sold for ₹ 20 lacs and the cost of dismantling and removal will be ₹ 45 lacs.

Sales and direct costs of the product emerging from waste processing for 4 years are estimated as under:

	(₹ In Lakhs)			
Year	1	2	3	4
Sales	966	966	1,254	1,254
Material consumption	90	120	255	255
Wages	255	255	255	300
Other expenses	120	135	162	210
Factory overheads	165	180	330	435
Depreciation (as per income tax rules)	150	114	84	63

Initial stock of materials required before commencement of the processing operations is ₹ 60 lacs at the start of year 1. The stock levels of materials to be maintained at the end of year 1, 2 and 3 will be ₹165 lacs and the stocks at the end of year 4 will be nil. The storage of materials will utilise space which would otherwise have been rented out for ₹30 lacs per annum. Labour costs include wages of 40 workers, whose transfer to this process will reduce idle time payments of ₹ 45 lacs in the year 1 and ₹ 30 lacs in the year 2. Factory overheads include apportionment of general factory overheads except to the extent of insurance charges of ₹ 90 lacs per annum payable on this venture. The company's tax rate is 30%. Present value factors for four years are as under:



Year	1	2	3	4
Present value factors @14%	0.877	0.769	0.674	0.592

Advise the management on the desirability of installing the machine for processing the waste. All calculations should form part of the answer.

QUESTION 25 :

A company has to make a choice between two projects namely A and B. The initial capital outlay of two Projects are ₹1,35,00,000 and ₹2,40,00,000 respectively for A and B. There will be no scrap value at the end of the life of both the projects. The opportunity Cost of Capital of the company is 16%. The annual incomes are as under:

Year	Project A	Project B	Discounting factor @ 16%
1	–	60,00,000	0.862
2	30,00,000	84,00,000	0.743
3	1,32,00,000	96,00,000	0.641
4	84,00,000	1,02,00,000	0.552
5	84,00,000	90,00,000	0.476

You are required to calculate for each project:

- Discounted payback period
- Profitability index
- Net present value.

QUESTION 26 :

Shiv 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:

Year	Existing Machine (80,000 units)	New Machine (1,00,000 units)	Unit cost (₹) 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:

- Estimate net present value of the replacement decision.
- Estimate the internal rate of return of the replacement decision.
- Should Company go ahead with the replacement decision? Suggest.

Year (t)	t1	t2	t3	t4	t5
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

QUESTION 27 :

Xavly Ltd. has a machine which has been in operation for 3 years. Its remaining estimated useful life is 8 years with no salvage value in the end. Its current market value is ₹ 2,00,000. The company is considering a proposal to purchase a new model of machine to replace the existing machine. The relevant information's are as follows:

	Existing Machine	New Machine
Cost of machine	₹ 3,30,000	₹ 10,00,000
Estimated life	11 years	8 years
Salvage value	Nil	₹ 40,000
Annual output	30,000 units	75,000 units
Selling price per unit	₹ 15	₹ 15
Annual operating hours	3,000	3,000
Material cost per unit	₹ 4	₹ 4
Labour cost per hour*	₹ 40	₹ 70
Indirect cash cost per annum	₹ 50,000	₹ 65,000

The company uses written down value of depreciation @ 20% and it has several other machines in the block of assets. The Income tax rate is 30 per cent and Xavly Ltd. does not make any investment, if it yields less than 12 per cent.

ADVISE Xavly Ltd. whether the existing machine should be replaced or not.

PV factors @12%:

Year	1	2	3	4	5
PVF	0.893	0.797	0.712	0.636	0.567

QUESTION 28 :

XYZ Ltd. is planning to introduce a new product with a project life of 8 years. Initial equipment cost will be ₹3.5 crores. Additional equipment costing ₹25,00,000 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 ₹2,50,000. A working capital of ₹ 40,00,000 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 ₹240 per unit is expected and variable expenses will amount to 60% of sales revenue. Fixed cash operating costs will amount ₹36,00,000 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

QUESTION 29 :

NavJeevani hospital is considering to Purchase a diagnostic machine costing ₹2,00,000. The projected life of the machine is 8 years and has an expected salvage value of ₹18,000 at the end of 8 years. The annual operating cost of the machine is ₹22,500. It is expected to generate revenues of ₹1,20,000 per year for

eight years. Presently, the hospital is outsourcing the diagnostic work and is earning commission income of ₹ 36,000 per annum; net of taxes. Tax Rate is 30%.

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

QUESTION 30 :

PQR Company Ltd. Is considering to Select a machine out of two mutually exclusive machines.

The company's cost of capital is 15 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	₹ 30,00,000	₹ 40,00,000
Expected life	10 Yrs.	10 Yrs.
Annual Income (Before Tax and Depreciation)	₹ 12,50,000	₹ 17,50,000

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 @ 15% are as follows:

Year	01	02	03	04	05
PV factor @ 12%	0.870	0.756	0.658	0.572	0.497

QUESTION 31 :

X Limited is considering to purchase of new plant worth ₹ 80,00,000. The expected net cash flows after taxes and before depreciation are as follows:

Year	Net Cash Flows
	₹
1	14,00,000
2	14,00,000
3	14,00,000
4	14,00,000
5	14,00,000
6	16,00,000
7	20,00,000
8	30,00,000
9	20,00,000
10	8,00,000

The rate of cost of capital is 10%.

You are required to calculate:

- (i) Pay-back period
- (ii) Net present value at 10% discount factor
- (iii) Profitability index at 10% discount factor
- (iv) Internal rate or return with the help of 10% and 15% discount factor

The following present Value table is given for you:



Year	Present value of ₹ 1 at 10% discount rate	Present value of ₹ 1 at 15% discount rate
1	.909	.870
2	.826	.756
3	.751	.658
4	.683	.572
5	.621	.497
6	.564	.432
7	.513	.376
8	.467	.327
9	.424	.284
10	.386	.247

QUESTION 32 :

Suppose MVA Ltd. is considering two Project A and Project B for investment. The cash flows associated with these projects are as follows:

Year	Project A (₹)	Project B (₹)
0	(5,00,000)	(5,00,000)
1	7,50,000	2,00,000
2	0	2,00,000
3	0	7,00,000

Assuming Cost of Capital equal to 12%, ANALYSE which project should be accepted as per NPV Method and IRR Method?

QUESTION 33 :

HMR Ltd. is considering replacing a manually operated old machine with a fully automatic new machine. The old machine had been fully depreciated for tax purpose but has a book value of ₹ 2,40,000 on 31st March 2021. The machine has begun causing problems with breakdowns and it cannot fetch more than ₹ 30,000 if sold in the market at present. It will have no realizable value after 10 years. The company has been offered

₹ 1,00,000 for the old machine as a trade in on the new machine which has a price (before allowance for trade in) of ₹ 4,50,000. The expected life of new machine is 10 years with salvage value of ₹ 35,000. Further, the company follows straight line depreciation method but for tax purpose, written down value method depreciation @ 7.5% is allowed taking that this is the only machine in the block of assets.

Given below are the expected sales and costs from both old and new machine:

	Old machine (₹)	New machine (₹)
Sales	8,10,000	8,10,000
Material cost	1,80,000	1,26,250
Labour cost	1,35,000	1,10,000
Variable overhead	56,250	47,500
Fixed overhead	90,000	97,500
Depreciation	24,000	41,500
PBT	3,24,750	3,87,250
Tax @ 30%	97,425	1,16,175
PAT	2,27,325	2,71,075

From the above information, ANALYSE whether the old machine should be replaced or not if required rate of return is 10%? Ignore capital gain tax.

PV factors @ 10%:

Year	1	2	3	4	5	6	7	8	9	10
PVF	0.909	0.826	0.751	0.683	0.621	0.564	0.513	0.467	0.424	0.386



QUESTION 34 :

XYZ Ltd. is presently all equity financed. The directors of the company have been evaluating investment in a project which will require ₹ 270 lakhs capital expenditure on new machinery. They expect the capital investment to provide annual cash flows of ₹ 42 lakhs indefinitely which is net of all tax adjustments. The discount rate which it applies to such investment decisions is 14% net.

The directors of the company believe that the current capital structure fails to take advantage of tax benefits of debt and propose to finance the new project with undated perpetual debt secured on the company's assets. The company intends to issue sufficient debt to cover the cost of capital expenditure and the after tax cost of issue.

The current annual gross rate of interest required by the market on corporate undated debt of similar risk is 10%. The after tax costs of issue are expected to be ₹ 10 lakhs. Company's tax rate is 30%.

You are **REQUIRED** to:

- (i) Calculate the adjusted present value of the investment,
- (ii) Calculate the adjusted discount rate and
- (iii) Explain the circumstances under which this adjusted discount rate may be used to evaluate future investments.

QUESTION 35 :

Following data has been available for a capital project: Annual cash inflows ₹ 1,00,000

Useful life 4 years

Salvage value 0

Internal rate of return 12%

Profitability index 1.064

You are required to **CALCULATE** the following for this project:

- (i) Cost of project
- (ii) Cost of capital
- (iii) Net present value
- (iv) Payback period

PV factors at different rates are given below:

Discount factor	12%	11%	10%	9%
1 year	0.893	0.901	0.909	0.917
2 year	0.797	0.812	0.826	0.842
3 year	0.712	0.731	0.751	0.772
4 year	0.636	0.659	0.683	0.708

QUESTION 36 :

A & Co. is contemplating whether to replace an existing machine or to spend money on overhauling it. A & Co. currently pays no taxes. The replacement machine costs ₹ 90,000 now and requires maintenance of ₹ 10,000 at the end of every year for eight years. At the end of eight years it would have a salvage value of ₹ 20,000 and would be sold. The existing machine requires increasing amounts of maintenance each year and its salvage value falls each year as follows:

Year	Maintenance (₹)	Salvage (₹)
Present	0	40,000
1	10,000	25,000
2	20,000	15,000
3	30,000	10,000
4	40,000	0

The opportunity cost of capital for A & Co. is 15%.

REQUIRED:

When should the company replace the machine?



(Note: Present value of an annuity of Re. 1 per period for 8 years at interest rate of 15% : 4.4873; present value of Re. 1 to be received after 8 years at interest rate of 15% : 0.3269).

QUESTION 37 :

A chemical company is presently paying an outside firm ₹ 1 per gallon to dispose off the waste resulting from its manufacturing operations. At normal operating capacity, the waste is about 50,000 gallons per year.

After spending ₹ 60,000 on research, the company discovered that the waste could be sold for ₹ 10 per gallon if it was processed further. Additional processing would, however, require an investment of ₹ 6,00,000 in new equipment, which would have an estimated life of 10 years with no salvage value. Depreciation would be calculated by straight line method.

Except for the costs incurred in advertising ₹ 20,000 per year, no change in the present selling and administrative expenses is expected, if the new product is sold. The details of additional processing costs are as follows:

Variable : ₹ 5 per gallon of waste put into process.

Fixed : (Excluding Depreciation) ₹ 30,000 per year.

There will be no losses in processing, and it is assumed that the total waste processed in a given year will be sold in the same year. Estimates indicate that 50,000 gallons of the product could be sold each year.

The management when confronted with the choice of disposing off the waste or processing it further and selling it, seeks your ADVICE. Which alternative would you recommend? Assume that the firm's cost of capital is 15% and it pays on an average 50% Tax on its income.

You should consider Present value of Annuity of ₹ 1 per year @ 15% p.a. for 10 years as 5.019.

QUESTION 38 :

MTR Limited is considering buying a new machine which would have a useful economic life of five years, at a cost of ₹25,00,000 and a scrap value of ₹3,00,000, with 80 per cent of the cost being payable at the start of the project and 20 per cent at the end of the first year. The machine would produce 75,000 units per annum of a new product with an estimated selling price of ₹300 per unit. Direct costs would be ₹285 per unit and annual fixed costs, including depreciation calculated on a straight-line basis, would be ₹8,40,000 per annum.

In the first year and the second year, special sales promotion expenditure, not included in the above costs, would be incurred, amounting to ₹1,00,000 and ₹1,50,000 respectively.

EVALUATE the project using the NPV method of investment appraisal, assuming the company's cost of capital to be 15 percent.

QUESTION 39 :

SL Ltd. has invested ₹1,000 lakhs in a project. The risk-free rate of return is 5%. Risk premium expected by the Management is 10%. The life of the project is 5 years. Following are the cash flows that are estimated over the life of the project.

Year	Cash flows (₹ in lakhs)
1	125
2	300
3	375
4	400
5	325

CALCULATE Net Present Value of the project based on Risk free rate and also on the basis of Risks adjusted discount rate.

QUESTION 40 :

The General Manager of Merry Ltd. is considering the replacement of five-year-old equipment. The company has to incur excessive maintenance cost of the equipment. The equipment has zero written down value. It can be modernized at a cost of ₹ 1,40,000 enhancing its economic life to 5 years. The equipment



could be sold for ₹ 30,000 after 5 years. The modernization would help in material handling and in reducing labour, maintenance & repairs costs.

The company has another alternative to buy a new machine at a cost of ₹ 3,50,000 with an economic life of 5 years and salvage value of ₹ 60,000. The new machine is expected to be more efficient in reducing costs of material handling, labour, maintenance & repairs, etc.

The annual cost are as follows:

	Existing Equipment (₹)	Modernization (₹)	New Machine (₹)
Wages & Salaries	45,000	35,500	15,000
Supervision	20,000	10,000	7,000
Maintenance	25,000	5,000	2,500
Power	30,000	20,000	15,000
	1,20,000	70,500	39,500

Assuming tax rate of 50% and required rate of return of 10%, should the company modernize the equipment or buy a new machine?

PV factor at 10% are as follows:

7B Year	1	2	3	4	5
PV factor	0.909	0.826	0.751	0.683	0.621

QUESTION 41 :

Door Ltd. is considering an investment of ₹ 4,00,000. This investment is expected to generate substantial cash inflows over the next five years. Unfortunately, the annual cash flows from this investment is uncertain, and the following profitability distribution has been established.

Annual Cash Flow (₹)	Probability
50,000	0.3
1,00,000	0.3
1,50,000	0.4

At the end of its 5 years life, the investment is expected to have a residual value of ₹40,000.

The cost of capital is 5%

- Calculate NPV under the three different scenarios.
- Calculate Expected Net Present Value.
- Advise Door Ltd. on whether the investment is to be undertaken.

Year	1	2	3	4	5
DF @ 5%	0.952	0.907	0.864	0.823	0.784

QUESTION 42 :

Loft Ltd. is considering an investment in new technology that will reduce operating costs through increasing efficiency. The new technology will cost ₹ 5,00,000 and have a four year life at the end of which it will have a residual value of ₹ 50,000.

An annual license fee of ₹ 52,000 is payable to operate the machine. The purchase can be financed by 10% loan payable in equal installments at the end of each of four years. The depreciation is to be charged as per reducing balance method. The rate of depreciation is 25% per annum.

Alternatively, Loft Ltd. could lease the new technology. The Company would pay four annual lease rentals of ₹ 1,90,000 per year. The annual lease rentals include the cost of license fee. Tax rate is 30%. Compute the incremental cash flows under each option. What would be the appropriate rate at which these cash flows have to be discounted? Discount the incremental cash flows under each option and decide which option is better - buy or lease?

Year	1	2	3	4
DF @ 7%	0.935	0.873	0.816	0.763
DF @ 10%	0.909	0.826	0.751	0.683

**QUESTION 43 :**

PD Ltd. an existing company, is planning to introduce a new product with projected life of 8 years. Project cost will be ₹ 2,40,00,000. At the end of 8 years no residual value will be realized. Working capital of ₹ 30,00,000 will be needed. The 100% capacity of the project is 2,00,000 units p.a. but the Production and Sales Volume is expected are as under :

Year	Number of Units
1	60,000 units
2.	80,000 units
3-5	1,40,000 units
6-8	1,20,000 units

Other Information:

- Selling price per unit ₹ 200
- Variable cost is 40 of sales.
- Fixed cost p.a. ₹ 30,00,000.
- In addition to these advertisement expenditure will have to be incurred as under:

Year	1	2	3-5	6-8
Expenditure (₹)	50,00,000	25,00,000	10,00,000	5,00,000

- Income Tax is 25%.
- Straight line method of depreciation is permissible for tax purpose.
- Cost of capital is 10%.
- Assume that loss cannot be carried forward.

Present Value Table

Year	1	2	3	4	5	6	7	8
PVF@ 10	0.909	0.826	0.751	0.683	0.621	0.564	0.513	0.467

Advise about the project acceptability.

QUESTION 44 :

CK Ltd. is planning to buy a new machine. Details of which are as follows:

Cost of the Machine at the commencement	₹ 2,50,000
Economic Life of the Machine	8 year
Residual Value	Nil
Annual Production Capacity of the Machine	1,00,000 units
Estimated Selling Price per unit	₹ 6
Estimated Variable Cost per unit	₹ 3
Estimated Annual Fixed Cost	₹ 1,00,000 (Excluding depreciation)
Advertisement Expenses in 1st year in addition of annual fixed cost	₹ 20,000
Maintenance Expenses in 5th year in addition of annual fixed cost	₹ 30,000
Cost of Capital	12%

Ignore Tax.

Analyse the above mentioned proposal using the Net Present Value Method and advice.

P.V. factor @ 12% are as under:

Year	1	2	3	4	5	6	7	8
PV Factor	0.893	0.797	0.712	0.636	0.567	0.507	0.452	0.404

QUESTION 45 :

TT Ltd. issued 20,000, 10% convertible debenture of ₹ 100 each with a maturity period of 5 years. At maturity the debenture holders will have the option to convert debentures into equity shares of the company in ratio of 1:5 (5 shares for each debenture). The current market price of the equity share is ₹ 20 each and

historically the growth rate of the share is 4% per annum. Assuming tax rate is 25%. Compute the cost of 10% convertible debenture using Approximation Method and Internal Rate of Return Method. PV Factor are as under:

Year	1	2	3	4	5
PV Factor @ 10%	0.909	0.826	0.751	0.683	0.621
PV Factor @ 15%	0.870	0.756	0.658	0.572	0.497

QUESTION 46 :

A company wants to buy a machine, and two different models namely A and B are available. Following further particulars are available:

Particulars	Machine-A	Machine-B
Original Cost (₹)	8,00,000	6,00,000
Estimated Life in years	4	4
Salvage Value (₹)	0	0

The company provides depreciation under Straight Line Method. Income tax rate applicable is 30%.

The present value of ₹ 1 at 12% discounting factor and net profit before depreciation and tax are as under:

Year	Net Profit Before Depreciation and tax		PV Factor
	Machine-A ₹	Machine-B ₹	
1.	2,30,000	1,75,000	0.893
2.	2,40,000	2,60,000	0.797
3.	2,20,000	3,20,000	0.712
4.	5,60,000	1,50,000	0.636

Calculate:

1. NPV (Net Present Value)
2. Discounted pay-back period
3. PI (Profitability Index)

Suggest: Purchase of which machine is more beneficial under Discounted pay-back period method, NPV method and PI method.

QUESTION 47 :

An existing company has a machine which has been in operation for two years, its estimated remaining useful life is 4 years with no residual value in the end. Its current market value is ₹ 3 lakhs. The management is considering a proposal to purchase an improved model of a machine gives increase output. The details are as under:

Particulars	Existing Machine	New Machine
Purchase Price	₹ 6,00,000	₹ 10,00,000
Estimated Life	6 years	4 years
Residual Value	0	0
Annual Operating days	300	300
Operating hours per day	6	6
Selling price per unit	₹ 10	₹ 10
Material cost per unit	₹ 2	₹ 2
Output per hour in units	20	40
Labour cost per hour	₹ 20	₹ 30
Fixed overhead per annum excluding depreciation	₹ 1,00,000	₹ 60,000
Working Capital	₹ 1,00,000	₹ 2,00,000
Income-tax rate	30%	30%



Assuming that - cost of capital is 10% and the company uses written down value of depreciation @ 20% and it has several machines in 20% block.

Advice the management on the Replacement of Machine as per the NPV method. The discounting factors table given below:

Discounting Factors	Year 1	Year 2	Year 3	Year 4
10%	0.909	0.826	0.751	0.683

QUESTION 48 :

Prem Ltd has a maximum of ₹ 8,00,000 available to invest in new projects. Three possibilities have emerged and the business finance manager has calculated Net present Value (NPVs) for each of the projects as follows :

Investment	Initial cash outlay ₹	NPV ₹
Alfa (α)	5,40,000	1,00,000
Beta (β)	6,00,000	1,50,000
Gama (γ)	2,60,000	58,000

DETERMINE which investment/combination of investments should the company invest in, if we assume that the projects can be divided?

QUESTION 49 :

A&R Ltd. has undertaken a project which has an initial investment of ₹2,000 lakhs in plant & machinery and ₹800 lakhs for working capital. The plant & machinery would have a salvage value of ₹ 474.61 lakhs at the end of the fifth year. The plant & machinery would depreciate at the rate of 25% p.a. on WDV method. The other details of the project for the five year period are as follows:

Sales	10,00,000 units p.a.
Selling price per unit	₹500
Variable cost	50% of selling price
Fixed overheads (excluding depreciation)	₹300 lakh p.a.
Corporate tax rate	35%
Rate of interest on bank loan	12%
After tax required rate of return	15%

- CACULATE net present value (NPV) of the project and DETERMINE the viability of the project.
- DETERMINE the sensitivity of project's NPV under each of the following condition:
 - Decrease in selling price by 10%;
 - Increase in cost of plant & machinery by 10%.

PV factor	Year-1	Year-2	Year-3	Year-4	Year-5
12%	0.892	0.797	0.711	0.635	0.567
15%	0.869	0.756	0.657	0.571	0.497

QUESTION 50 :

A firm can make investment in either of the following two projects. The firm anticipates its cost of capital to be 10%. The pre-tax cash flows of the projects for five years are as follows:

Year	0	1	2	3	4	5
Project A (₹)	(2,00,000)	35,000	80,000	90,000	75,000	20,000
Project B (₹)	(2,00,000)	2,18,000	10,000	10,000	4,000	3,000

Ignore Taxation.

An amount of ₹ 35,000 will be spent on account of sales promotion in year 3 in case of Project A. This has not been taken into account in calculation of pre-tax cash flows.

The discount factors are as under:



Year	0	1	2	3	4	5
PVF (10%)	1	0.91	0.83	0.75	0.68	0.62

You are required to calculate for each project:

- (i) The payback period
- (ii) The discounted payback period
- (iii) Desirability factor
- (iv) Net Present Value

QUESTION 51 :

City Clap Ltd. is in the business of providing housekeeping services. There is a proposal before the company to purchase a mechanized cleaning system for a sum of ₹ 40 lakhs. The present system of the company is to use manual labour for the cleaning job. You are provided with the following information:

Proposed Mechanized System:

Cost of the machine	₹ 40 lakhs
Life of the machine	7 years
Depreciation (on straight line basis)	15%
Operating cost of mechanized system	₹ 20 lakhs per annum

Present system (Manual):

Manual labour	350 persons
Cost of manual labour	₹ 15,000 per person per annum

The company has an after-tax cost of fund at 10% per annum.

The applicable tax rate is 50%.

PV factor for 7 years at 10% are as follows:

Years	1	2	3	4	5	6	7
P.V. factor	0.909	0.826	0.751	0.683	0.621	0.564	0.513

You are required to DETERMINE whether it is advisable to purchase the mechanized cleaning system. Give your recommendations with workings.

QUESTION 52 :

GG Pathology Lab Ltd. is using 2D sonography machine which has reached the end of its useful life. The lab is intending to upgrade along with the technology by investing in 3D sonography machine as per the choices preferred by the patients. Following new 3D sonography machine of two different brands with same features is available in the market:

Brand	Cost of machine	Life of machine	Maintenance Cost (₹)			SLM Depreciation rate
	(₹)	(₹)	Year 1-5	Year 6-10	Year 11-15	(%)
X	15,00,000	15	50,000	70,000	98,000	6
Y	10,00,000	10	70,000	1,15,000	-	6

Residual Value of machines shall be dropped by 10% and 40% of Purchase price for Brand X and Y respectively in the first year and thereafter shall be depreciated at the rate mentioned above on the original cost.

Alternatively, the machine of Brand Y can also be taken on rent to be returned back to the owner after use on the following terms and conditions:

- Annual Rent shall be paid in the beginning of each year and for first year it shall be ₹ 2,24,000. Annual Rent for the subsequent 4 years shall be ₹ 2,25,000.
- Annual Rent for the final 5 years shall be ₹ 2,70,000.
- The Rent/Agreement can be terminated by GG Labs by making a payment of ₹ 2,20,000 as penalty. This penalty would be reduced by ₹ 22,000 each year of the period of rental agreement.

You are required to:

- (i) ADVISE which brand of 3D sonography machine should be acquired assuming that the use of machine shall be continued for a period of 20 years.



(ii) STATE which of the option is most economical if machine is likely to be used for a period of 5 years? The cost of capital of GG Labs is 12%. The present value factor of ₹ 1 @ 12% for different years is given as under:

Year	PVF	Year	PVF
1	0.893	9	0.361
2	0.797	10	0.322
3	0.712	11	0.287
4	0.636	12	0.257
5	0.567	13	0.229
6	0.507	14	0.205
7	0.452	15	0.183
8	0.404	16	0.163

QUESTION 53 :

Sadbhavna Limited is a manufacturer of computers. It wants to introduce artificial intelligence while making computers. It estimates that the annual savings from the artificial intelligence (AI) include a reduction of five employees with annual salaries of ₹ 3,00,000 each, ₹ 3,00,000 from reduction in production delays caused by inventory problem, reduction in lost sales ₹ 2,50,000 and ₹ 2,00,000 from billing issues.

The purchase price of the system for installation of artificial intelligence is ₹ 20,00,000 with installation cost of ₹ 1,00,000. The life of the system is 5 years and it will be depreciated on a straight-line basis. The salvage value is zero which will be its market value after the end of its life of five years

However, the operation of the new system for AI requires two computer specialists with annual salaries of ₹ 5,00,000 per person. Also, the estimated maintenance and operating expenses of 1,50,000 is required. The company's tax rate is 30% and its required rate of return is 12%.

From the above information:

- CALCULATE the initial cash outflow and annual operating cash flow over its life of 5 years.
- Further, EVALUATE the project by using Payback Period, Net Present Value and Profitability Index.
- You are also REQUIRED to obtain the cash flows and NPV on the assumption that book salvage value for depreciation purposes is ₹ 2,00,000 even though the machine is having no real worth in terms of its resale value. Also, the book salvage value of ₹ 2,00,000 is allowed for tax purposes.

Also COMMENT on the acceptability of the project in (ii) and (iii) above

QUESTION 54 :

Superb Ltd. constructs customized parts for satellites to be launched by USA and Canada. The parts are constructed in eight locations (including the central headquarter) around the world. The Finance Director, Ms. Kuthrapali, chooses to implement video conferencing to speed up the budget process and save travel costs. She finds that, in earlier years, the company sent two officers from each location to the central headquarter to discuss the budget twice a year. The average travel cost per person, including air fare, hotels and meals, is ₹ 27,000 per trip. The cost of using video conferencing is ₹ 8,25,000 to set up a system at each location plus ₹ 300 per hour average cost of telephone time to transmit signals. A total 48 hours of transmission time will be needed to complete the budget each year. The company depreciates this type of equipment over five years by using straight line method. An alternative approach is to travel to local rented video conferencing facilities, which can be rented for ₹ 1,500 per hour plus ₹ 400 per hour average cost for telephone charges. You are Senior Officer of Finance Department. You have been asked by Ms. Kuthrapali to EVALUATE the proposal and SUGGEST if it would be worthwhile for the company to implement video conferencing.

QUESTION 55 :

A proposal to invest in a project, which has a useful life of 5 years and no salvage value at the end of useful life, is under consideration of a firm. It is anticipated that the project will generate a steady cash inflow of ₹ 70,000 per annum. After analyzing other facts of the project, following information were revealed:

- Internal rate of return - 13%
 Desirability factor - 1.07762 You are required to find out:
 (i) Cost of project
 (ii) Cost of capital
 (iii) Payback period
 (iv) Net present value

Present value factors at different rates are given as under:

Year	10%	11%	12%	13%
1	0.909	0.901	0.893	0.885
2	0.826	0.812	0.797	0.783
3	0.751	0.731	0.712	0.693
4	0.683	0.659	0.636	0.613
5	0.621	0.593	0.567	0.543
Total	3.790	3.696	3.605	3.517

Note: Use only above present values to solve this question.

QUESTION 56 :

A Doctor is considering purchasing a machine at a cost of ₹ 1,20,000. The projected life of the machine is 5 years and has an expected salvage value of ₹ 10,000 at the end of 5 years. The annual operating cost of the machine is ₹ 2,000. It is expected to generate revenues of ₹ 60,000 per year for five years. At present the Doctor is outsourcing his work related to this machine and earns commission income of ₹ 15,000 per annum; net of taxes. Tax Rate is 30%.

You are required to find as to whether it would be profitable for the Doctor to purchase the machine? Give your advice based on:

- (i) Net Present Value Method
 (ii) Profitability Index Method

Take PV Factors at 9% as given below:

Year	1	2	3	4	5	Total
	0.917	0.842	0.772	0.708	0.650	3.889

QUESTION 57 :

Aar Cee Manufacturing Co. is considering a proposal to replace one of its existing machine by the CNC machine. In this connection, the following information is available:

The existing machine was bought 3 years ago for ₹ 15,40,000. It was depreciated on straight line basis and has a remaining useful life of 7 years. It's annual maintenance cost is expected to increase by ₹ 40,000 from the sixth year of its installation. It's present realisable value is ₹ 6,50,000.

The purchase price of CNC machine is ₹ 27,00,000 and installation expenses of ₹ 95,000 will be incurred. Subsidy equal to 15% of the purchase price will be received at the end of first year of its installation. It is subject to same rate of depreciation. It's realisable value after 7 years is ₹ 5,70,000. With the CNC machine, annual cash operating costs are expected to decrease by ₹ 2,16,000. In addition, CNC machine would increase productivity on account of which net cash revenue would increase by ₹ 2,76,000 per annum.

The tax rate applicable to firm is 30% and cost of capital is 11%.

QUESTION 58 :

A firm is willing to purchase a new machine and is having two options. Information related to the options are as follows:

	Option-I	Option-II
Cost of Machine	₹ 30,00,000	₹ 35,00,000
Expected Life	5 years	6 years
Salvage value of Machine	₹ 5,00,000	₹ 5,00,000



Expected Earning (After tax) ₹ 7,75,000 ₹ 8,25,000
 The firm charges depreciation on the machine as per straight line method. The cost of capital is 14%.
 The present value of ₹ 1 @ 14% is as under:

Year	1	2	3	4	5	6
P/V factor	0.877	0.769	0.675	0.592	0.519	0.455

You are required to evaluate both the options on the basis of:

- Discounted pay back period.
- Net present value
- Profitability index

QUESTION 59 :

KT Limited is considering to buy any one of the two mutually exclusive machines X and Y. The details are as under:

	Machine X	Machine Y
Cost of Machine	₹ 7,00,000	₹ 10,50,000
Expected life	5 years	6 years
Annual Income before tax and depreciation	₹ 2,41,500	₹ 3,18,500

The cost of capital is 13% and the corporate tax rate is 30%. Depreciation is to be charged on straight line basis.

You are required to:

- Calculate the discounted pay-back period and internal rate of return for each machine.
- Advise the management of KT Limited as to which machine it should buy. The present value factors of Re. 1 are as under:

YEAR	12%	13%	14%	15%	16%
1	0.893	0.885	0.877	0.870	0.862
2	0.797	0.783	0.769	0.756	0.743
3	0.712	0.693	0.675	0.658	0.641
4	0.636	0.613	0.592	0.572	0.552
5	0.567	0.543	0.519	0.497	0.476
6	0.507	0.480	0.456	0.432	0.410

QUESTION 60 :

ABC Ltd., a profit-making company, is engaged in the business of car manufacturing. In order to be independent in terms of its electricity needs, the company's management has proposed to put up a Solar Power Plant to generate the electricity. The details of the proposal are as follows:

- Cost of the power plant ₹ 280 lakhs
- Cost of land ₹ 30 lakhs
- Subsidy of ₹ 25 lakhs from state government to be received at the end of first year of installation.
- Sale of electricity to State Electricity Board will be at ₹ 2.25 per unit in year 1. This will increase by ₹ 0.25 per unit every year till year 7. After that it will increase by
- ₹ 0.50 per unit every year.
- Maintenance cost will be ₹ 4 lakhs in year 1 and the same will increase by ₹ 2 lakhs every year.
- Estimated life is 10 years.
- Cost of capital 15%.
- Residual value of power plant is nil. However, land value will go up to ₹ 90 lakhs at the end of year 10.
- Depreciation will be 100% of the cost of the power plant in year 1 (entire ₹ 280 lakhs is to be depreciated in year 1 without considering subsidy) and the same will be allowed for tax purposes.
- Gross electricity generated will be 25 lakhs units per annum. 4% of this electricity generated will be committed free to the State Electricity Board as per the agreement.
- Tax rate is 50%.



You are required to suggest the viability of the proposal by calculating the 'Net Present Value' while ignoring the tax on capital profit. Assume that the tax savings, if any, are utilized in the year of their occurrence. Present value (PV) factor @ 15% for the year 1 to year 10 are as given below and should be used for calculating present value of various cash flows.

Year	1	2	3	4	5	6	7	8	9	10
PV Factor	0.870	0.756	0.658	0.572	0.497	0.432	0.376	0.327	0.284	0.247

QUESTION 61 :

A Ltd. is considering the purchase of a machine which will perform some operations which are at present performed by the workers. Machine "I" and Machine "II" are the two alternative models. The following details of Machine "I" and Machine "II" are available:

	Machine I (₹)	Machine II (₹)
Cost of machine	70,000	1,80,000
Estimated life of machine	7 years	9 years
Estimated cost of maintenance p.a.	5,000	8,000
Estimated additional cost of indirect material p.a.	3,000	4,000
Estimated savings in scrap p.a.	8,000	12,000
Estimated cost of supervision p.a.	13,000	18,000
Estimated savings in wages p.a.	40,000	80,000

Depreciation will be charged on straight line basis. The tax rate is 30%. You are required to: Evaluate the alternatives according to each of the following:

- Average rate of return method,
 - Present value index method assuming cost of capital being 12%.
- (The present value of ₹ 1.00 @ 12% p.a. for 7 years is 4.564 and for 9 years is 5.328)

QUESTION 62 :

BT Pathology Lab Ltd. is using an X-ray machines which reached at the end of their useful lives. Following new X-ray machines are of two different brands with same features are available for the purchase.

Brand	Cost of Machine	Life of Machine	Maintenance Cost			Rate of Depreciation
			Year 1-5	Year 6-10	Year 11-15	
XYZ	₹6,00,000	15 years	₹ 20,000	₹ 28,000	₹ 39,000	4%
ABC	₹4,50,000	10 years	₹ 31,000	₹ 53,000	--	6%

Residual Value of both of above machines shall be dropped by 1/3 of Purchase price in the first year and thereafter shall be depreciated at the rate mentioned above.

Alternatively, the machine of Brand ABC can also be taken on rent to be returned back to the owner after use on the following terms and conditions:

- Annual Rent shall be paid in the beginning of each year and for first year it shall be ₹ 1,02,000.
- Annual Rent for the subsequent 4 years shall be ₹ 1,02,500.
- Annual Rent for the final 5 years shall be ₹ 1,09,950.
- The Rent Agreement can be terminated by BT Labs by making a payment of ₹ 1,00,000 as penalty. This penalty would be reduced by ₹ 10,000 each year of the period of rental agreement.

You are required to:

- Advise which brand of X-ray machine should be acquired assuming that the use of machine shall be continued for a period of 20 years.
- State which of the option is most economical if machine is likely to be used for a period of 5 years? The cost of capital of BT Labs is 12%.

**QUESTION 63 :**

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' (₹)	(8,00,000)	2,60,000	1,60,000	2,80,000	2,40,000	2,20,000	3,00,000
Project 'J' (₹)	(4,00,000)	1,40,000	2,60,000	2,40,000	□	□	□

Required:

- Estimate the net present value (NPV) of the Project 'P' and 'J' using 15% as the hurdle rate.
- Estimate the internal rate of return (IRR) of the Project 'P' and 'J'.
- Why there is a conflict in the project choice by using NPV and IRR criterion?
- 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

QUESTION 64 :

You are a financial analyst for B Limited. The director of finance has asked you to analyse two proposed capital investments, Projects X and Y. Each project has a cost of ₹ 10,00,000 and the cost of capital for each project is 12 per cent. The project's expected net cash flows are as follows:

Year	Expected net cash flows	
	Project X (₹)	Project Y (₹)
0	(10,00,000)	(10,00,000)
1	6,50,000	3,50,000
2	3,00,000	3,50,000
3	3,00,000	3,50,000
4	1,00,000	3,50,000

- Calculate each project's payback period, net present value (NPV) and internal rate of return (IRR).
- State which project or projects should be accepted if they are independent?

QUESTION 65 :

A firm can make investment of ₹ 10,00,000 in either of the following two projects. The firm anticipates its cost of capital to be 15% and the net (after tax) cash flows of the projects for five years are as follows:

Year	1	2	3	4	5
Project-A	1,70,000	4,00,000	4,80,000	4,40,000	1,40,000
Project-B	9,00,000	2,00,000	1,40,000	60,000	40,000

The discount factors are as under:

Year	0	1	2	3	4	5
PVF (15%)	1	0.8696	0.7561	0.6575	0.5718	0.4972
PVF (20%)	1	0.8333	0.6944	0.5787	0.4823	0.4019
PVF (30%)	1	0.7692	0.5917	0.4552	0.3501	0.2693

Required:

- Calculate the NPV and IRR of each project.
- State with reasons which project you would recommend.
- Explain the inconsistency in ranking of two projects.

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

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 ₹ 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

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 ₹ 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

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

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



CHAPTER THREE

RISK ANALYSIS IN CAPITAL BUDGETING

LOS 1 : PROBABILITY DISTRIBUTION APPROACH

Expected Cash Flow

$$\sum ENCF \times Probability$$

Standard Deviation:

$$\sigma = \sqrt{\sum [probability \times (Given\ NPV - Expected\ NPV)^2]}$$

❖ Higher the S.D, Higher the risk & Vice-versa.

Co-efficient of Variation (CV):

$$CV = \frac{\text{Standard Deviation}}{\text{Expected NPV}}$$

Higher the CV, higher the risk & vice-versa

QUESTION 1A:

Possible net cash flows of Projects A and B and their probabilities are given as below. Discount rate is 10 per cent for both the project initially investment is ₹ 10,000. Calculate the expected net present value for each project. Which project is preferable?

Possible Event	Project A		Project B	
	Cash Flow (₹)	Probability	Cash Flow (₹)	Probability
A	8,000	0.10	4,000	0.10
B	10,000	0.20	20,000	0.15
C	12,000	0.40	16,000	0.50
D	14,000	0.20	12,000	0.15
E	16,000	0.10	8,000	0.10

- a) Calculate Variance and Standard Deviation
- b) Calculate Coefficient of Variation

QUESTION 1B:

Probabilities for net cash flows for 3 years a project are as follows:

Year 1		Year 2		Year 3	
Cash Flow (₹)	Probability	Cash Flow (₹)	Probability	Cash Flow (₹)	Probability
2,000	0.10	2,000	0.20	2,000	0.30
4,000	0.20	4,000	0.30	4,000	0.40
6,000	0.30	6,000	0.40	6,000	0.20
8,000	0.40	8,000	0.10	8,000	0.10

Calculate the expected net cash flows. Also calculate the present value of the expected cash flow, using 10 per cent discount rate. Initial Investment is ₹ 10,000.

**QUESTION 1C :**

Shivam Ltd. is considering two mutually exclusive projects A and B. Project A costs ₹ 36,000 and project B ₹ 30,000. You have been given below the net present value probability distribution for each project.

Project A		Project B	
NPV estimates (₹)	Probability	NPV estimates (₹)	Probability
15,000	0.2	15,000	0.1
12,000	0.3	12,000	0.4
6,000	0.3	6,000	0.4
3,000	0.2	3,000	0.1

- Compute the expected net present values of projects A and B.
- Compute the risk attached to each project i.e. standard deviation of each probability distribution.
- Compute the profitability index of each project.
- Which project do you recommend? State with reasons.

QUESTION 1D :

TIP Ltd. is considering two mutually exclusive projects M and N. You have been given below the Net Cash flow probability distribution of each project:

Project-M		Project-N	
Net Cash Flow (₹)	Probability	Net Cash Flow (₹)	Probability
62,500	0.30	1,62,500	0.20
75,000	0.30	1,37,500	0.30
87,500	0.40	1,12,500	0.50

- REQUIRED:
 - Expected Net Cash Flow of each project.
 - Variance of each project.
 - Standard Deviation of each project.
 - Coefficient of Variation of each project.
- IDENTIFY which project would you recommend? Give reasons.

QUESTION 1E :

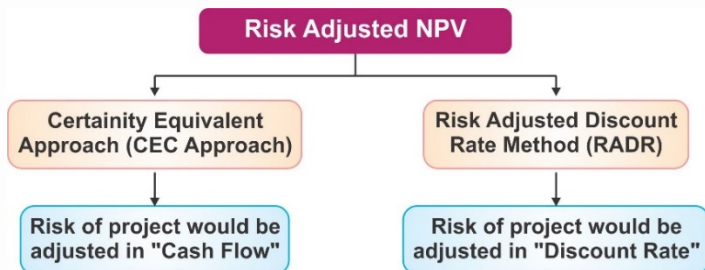
A Ltd. is considering two mutually exclusive projects X and Y. You have been given below the Net Cash flow probability distribution of each project:

Project-X		Project-Y	
Net Cash Flow (₹)	Probability	Net Cash Flow (₹)	Probability
50,000	0.30	1,30,000	0.20
60,000	0.30	1,10,000	0.30
70,000	0.40	90,000	0.50

- Compute the following :
 - Expected Net Cash Flow of each project.
 - Variance of each project.
 - Standard Deviation of each project.
 - Coefficient of Variation of each project.
- Identify which project do you recommend ? Give reason.



LOS 2 : CALCULATION OF RISK ADJUSTED NPV



Note:

- Under this method, Project should be discounted using risk- adjusted discount rate rather than risk-free discount rate.
- Project having higher risk should be discounted with higher rate.
- Higher the risk of the project, higher should be the discount rate.
- NPV calculated by using RADR is known as “Risk Adjusted NPV”.
- CV is a measure of risk, higher the CV, higher the risk.
- Imagine the firm to be market portfolio, K_o can be treated as R_m

$$RADR = R_f + \text{Risk Index} (K_o - R_f)$$

Certainty Equivalent Co-efficient (CEC) Method

It involves discounting of certain Cash Flows instead of Total Cash Flows.

Steps involved:

Step 1: Calculate all cash flows arising from the project.

Step 2: Calculate certain cash flow by using CEC (Certainty Equivalent Co-efficient)

$$\text{Certain Cash Flow} = \text{Cash Flow} \times \text{CEC}$$

Step 3: Compute NPV by taking certain risk-free Cash Flow and risk-free discount rate.

Note:

- ❖ Higher the CEC, lower the risk and vice-versa.
- ❖ CEC of cash flow arising in year 0 will always be One.

QUESTION 2A :

An enterprise is investing ₹ 100 lakhs in a project. The risk-free rate of return is 7%. Risk premium expected by the Management is 7%. The life of the project is 5 years. Following are the cash flows that are estimated over the life of the project.

Year	Cash Flows (₹ in lakhs)
1	25
2	60
3	75
4	80
5	65

Calculate Net Present Value of the project based on Risk free rate and also on the basis of Risks adjusted discount rate.

QUESTION 2B :

If Investment Proposal is ₹ 45,00,000 and risk free rate is 5%, calculate Net present value under certainty equivalent technique.

Year	Expected cash flow (₹)	Certainty Equivalent coefficient
1	10,00,000	0.90
2	15,00,000	0.85
3	20,00,000	0.82
4	25,00,000	0.78

**QUESTION 2D :**

Determine the risk adjusted net present value of the following projects:

	X	Y	Z
Net cash outlays (₹)	2,10,000	1,20,000	1,00,000
Project life	5 years	5 years	5 years
Annual Cash inflow (₹)	70,000	42,000	30,000
Coefficient of variation	1.2	0.8	0.4

The Company selects the risk-adjusted rate of discount on the basis of the coefficient of variation:

Coefficient of Variation	Risk-Adjusted Rate of Return	P.V. Factor 1 to 5 years At risk adjusted rate of discount
0.0	10%	3.791
0.4	12%	3.605
0.8	14%	3.433
1.2	16%	3.274
1.6	18%	3.127
2.0	22%	2.864
More than 2.0	25%	2.689

LOS 3 : SCENARIO ANALYSIS

- ❖ Scenario Analysis is an analysis of the NPV of a project under a series of specific
- ❖ scenarios (worst, most likely and best scenario) based on macro-economics, industry and firm-specific facts
- ❖ Under this, all inputs are set at their most optimistic or pessimistic or most likely levels and NPV is computed.
- ❖ Decision is based on the NPV under all scenarios.

QUESTION 3 :

XYZ Ltd. is considering a project "A" with an initial outlay of ₹ 14,00,000 and the possible three cash inflow attached with the project as follows :

Particular	(₹000)		
	Year 1	Year 2	Year 3
Worst case	450	400	700
Most likely	550	450	800
Best case	650	500	900

Assuming the cost of capital as 9%, determine NPV in each scenario. If XYZ Ltd is certain about the most likely result but uncertain about the third year's cash flow, what will be the NPV expecting worst scenario in the third year.

LOS 4 : SENSITIVITY ANALYSIS

- ❖ Also known as "What if" Analysis.
- ❖ Sensitivity Analysis is one of the methods of analyzing the risk surrounding the capital expenditure Decision and enables an assessment to be made of how responsive the project's NPV is to changes in those variables based on which NPV is computed.
- ❖ Sensitivity Analysis is a tool in the hand of firms to **analyze change in the project's NPV for a given change in one of the variables.**
- ❖ Under this analysis we try to measure risk of each factor taking NPV=0.
- ❖ Key factors which are used to calculate NPV are as follows:



	Inverse Effect
Cash Inflows	Decrease
Cash Outflows	Increase
Discount Rate	Increase
Life of the project	Decrease

❖ Decision Rule

- ❖ Management should pay maximum attention towards the factor where minimum percentage of adverse changes causes maximum adverse effect.

Example:

- ❖ If NPV is to become Zero with 5% change in initial investment relative to 10% change in cash inflows, project is said to be more sensitive to initial investment than to cash inflows.

Note:

Sensitivity Analysis is calculated for each factor separately, keeping other factors constant.

Method 1 : Margin of Safety Approach (MOS)

Set NPV = 0 & Calculate the Break Even Values and Margin of Safety for Each Factor

$$\text{Sensitivity (\%)} = \frac{\text{Change}}{\text{Base}} \times 100$$

Decision : Most critical / Sensitive Factor is that Factor for which MOS is least.

Method 2 : Shock Approach

Shock each Risk Factor in the adverse direction like 10% / 20% & Find out the Revised NPV or %age fall in NPV

$$\% \text{ Fall In NPV} = \frac{\text{Revised NPV} - \text{Original NPV}}{\text{Original NPV}} \times 100$$

Decision : Most critical / Sensitive Factor is that Factor for which results in Maximum Fall in NPV.

QUESTION 4A :

X Ltd is considering its New Product 'with the following details

Sr. No.	Particulars	Figures
1	Initial capital cost	₹ 400 Cr
2	Annual unit sales	5 Cr
3	Selling price per unit	₹ 100
4	Variable cost per unit	₹ 50
5	Fixed costs per year	₹ 50 Cr
6	Discount Rate	6%
7	No. of years	3

Calculate the NPV of the project.

Find the NPV of a 2.5 per cent adverse variance in each variable. Which variable is having maximum effect.

QUESTION 4B :

From the following details relating to a project, analyse the sensitivity of the project to changes in initial project cost, annual cash inflow and cost of capital :

Initial Project Cost (₹)	1,20,000
Annual Cash Inflow (₹)	45,000
Project Life (Years)	4
Cost of Capital	10%



To which of the three factors, the project is most sensitive if the variable is adversely affected by 10%? (Use annuity factors: for 10% 3.169 and 11% ... 3.103).

QUESTION 4C :

From the following details relating to a project, analyse the sensitivity of the project to changes in the Initial Project Cost, Annual Cash Inflow and Cost of Capital :

Particulars

Initial Project Cost ₹2,00,00,000

Annual Cash Inflow ₹60,00,000

Project Life 5 years

Cost of Capital 10%

To which of the 3 factors, the project is most sensitive if the variable is adversely affected by 10 ?

Cumulative Present Value Factor for 5 years for 10% is 3.791 and for 11% is 3.696.

QUESTION 5 :

CALCULATE Variance and Standard Deviation of Project A and Project B on the basis of following information:

Possible Event	Project A		Project B	
	Cash Flow (₹)	Probability	Cash Flow (₹)	Probability
A	8,000	0.10	24,000	0.10
B	10,000	0.20	20,000	0.15
C	12,000	0.40	16,000	0.50
D	14,000	0.20	12,000	0.15
E	16,000	0.10	8,000	0.10

QUESTION 6 :

CALCULATE Coefficient of Variation of Project A and Project B based on the following information:

Possible Event	Project A		Project B	
	Cash Flow (₹)	Probability	Cash Flow (₹)	Probability
A	10000	0.10	26,000	0.10
B	12,000	0.20	22,000	0.15
C	14,000	0.40	18,000	0.50
D	16,000	0.20	14,000	0.15
E	18,000	0.10	10,000	0.10

QUESTION 7 :

If Investment proposal costs ₹ 45,00,000 and risk free rate is 5%, CALCULATE net present value under certainty equivalent technique.

Year	Expected cash flow (₹)	Certainty Equivalent coefficient
1	10,00,000	0.90
2	15,00,000	0.85
3	20,00,000	0.82
4	25,00,000	0.78

QUESTION 8 :

X Ltd. is considering its new project with the following details:

Sr. No.	Particulars	Figures
1	Initial capital cost	₹ 400 Cr.
2	Annual unit sales	5 Cr.
3	Selling price per unit	₹ 100
4	Variable cost per unit	₹ 50



5	Fixed costs per year	₹ 50 Cr.
6	Discount Rate	6%

Required:

- CALCULATE the NPV of the project.
 - COMPUTE the impact on the project's NPV considering a 2.5 per cent adverse variance in each variable. Which variable is having maximum effect?
- Consider Life of the project as 3 years.

QUESTION 9 :

PNR Ltd. is considering a project with the following Cash flows:

Year	Cost of Plant (₹)	Running Cost (₹)	Savings (₹)
0	12,00,00,000	-	-
1	-	4,00,00,000	12,00,00,000
2	-	5,00,00,000	14,00,00,000
3	-	6,00,00,000	11,00,00,000

The cost of capital is 12%. Measure the sensitivity of the project to changes in the levels of plant cost, running cost and savings (considering each factor at a time) such that the NPV becomes zero. The P.V. factors at 12% are as under:

Year	0	1	2	3
PV factor @12%	1	0.892	0.797	0.711

DETERMINE the factor which is the most sensitive to affect the acceptability of the project?

QUESTION 10 :

X Ltd is considering installation of new machine with the following details:

Sr. No.	Particulars	Figures
1	Initial Investment	₹ 1400 Crore
2	Annual unit sales	100 Crore
3	Selling price per unit	₹ 40
4	Variable cost per unit	₹ 20
5	Annual Fixed costs	₹ 500 Crore
6	Depreciation	₹ 200 Crore
7	Discount Rate	12%
8	Tax rate	30%

Consider Life of the project as 4 years with no salvage value. Required:

- CALCULATE the expected NPV of the project.
- COMPUTE the impact on the project's NPV if change in variables is as under and also compute which variable is having maximum impact on NPV.

Sr. No.	Variable	Figures
1	Unit sold per year	85 Crore
2	Selling price per unit	₹ 39
3	Variable cost per unit	₹ 22
4	Annual Fixed costs	₹ 575 Crore

PV factor at 12% are as follows:

7B Year	1	2	3	4
PV factor	0.893	0.797	0.712	0.636

QUESTION 11

In May, 2020 shares of RT Ltd. was sold for ₹ 1,460 per share. A long term earnings growth rate of 7.5% is anticipated. RT Ltd. is expected to pay dividend of ₹ 20 per share.



- (i) CALCULATE rate of return an investor can expect to earn assuming that dividends are expected to grow along with earnings at 7.5% per year in perpetuity?
- (ii) It is expected that RT Ltd. will earn about 10% on retained earnings and shall retain 60% of earnings. In this case, STATE whether, there would be any change in growth rate and cost of Equity?

QUESTION 12

Giri Ltd. is using Certainty Equivalent approach in the evaluation of risky proposals. The following information regarding a new project is as follows:

Year	Expected Cash flow (₹)	Certainty equivalent quotient
0	(4,00,000)	1.0
1	3,20,000	0.8
2	2,80,000	0.7
3	2,60,000	0.6
4	2,40,000	0.4
5	1,60,000	0.3

Riskless rate of interest on the government securities is 6 per cent. DETERMINE whether the project should be accepted?

QUESTION 13

Following information have been retrieved from the finance department of Corp Finance Ltd. relating to Project X, Y and Z:

Particulars	X	Y	Z
Net cash outlays (₹)	42,00,000	24,00,000	20,00,000
Project life	5 years	5 years	5 years
Annual Cash inflow (₹)	14,00,000	8,40,000	6,00,000
Coefficient of variation	2.0	0.8	1.6

You are required to DETERMINE the risk adjusted net present value of the projects considering that the Company selects risk adjusted rate of discount on the basis of the coefficient of variation:

Coefficient of Variation	Risk rate	Adjusted discount	P.V. Factor for 1 to 5 years at risk adjusted discount rate
0.0	8%		3.992
0.4	10%		3.790
0.8	12%		3.604
1.2	14%		3.433
1.6	16%		3.274
2.0	20%		2.990
More than 2.0	22%		2.863

QUESTION 14

The Textile Manufacturing Company Ltd. is considering one of two mutually exclusive proposals, Project M and N, which require cash outlays of ₹ 8,50,000 and ₹ 8,25,000 respectively. The certainty equivalent (C.E) approach is used in incorporating risk in capital budgeting decisions. The current yield on government bonds is 6% and this is used as the risk free rate. The expected net cash flows and their certainty equivalents are as follows:

Year-end	Project M		Project N	
	Cash Flow (₹)	C.E.	Cash Flow (₹)	C.E.
1	4,50,000	0.8	4,50,000	0.9
2	5,00,000	0.7	4,50,000	0.8
3	5,00,000	0.5	5,00,000	0.7



Present value factors of ₹ 1 discounted at 6% at the end of year 1, 2 and 3 are 0.943, 0.890 and 0.840 respectively.

Required:

- (i) ANALYSE which project should be accepted?
- (ii) If risk adjusted discount rate method is used, IDENTIFY which project would be appraised with a higher rate and why?

QUESTION 15

A&R Ltd. has under its consideration a project with an initial investment of ₹ 90,00,000. Three probable cash inflow scenarios with their probabilities of occurrence have been estimated as below:

Annual cash inflow (₹)	20,00,000	30,00,000	40,00,000
Probability	0.2	0.7	0.1

The project life is 5 years and the desired rate of return is 18%. The estimated terminal values for the project assessed under the three probability alternatives, respectively, are ₹ 0, ₹ 20,00,000 and ₹ 30,00,000.

You are required to:

- (i) CALCULATE the probable NPV.
- (ii) CALCULATE the worst case NPV and the best case NPV.
- (iii) STATE the probability occurrence of the worst case, if the cash flows are perfectly positively correlated over time.

QUESTION 16

SG Ltd. is considering a project "Z" with an initial outlay of ₹ 7,50,000 and life of 5 years. The estimates of project are as follows:

	Lower Estimates	Base	Upper Estimates
Sales (units)	4,500	5,000	5,500
	(₹)	(₹)	(₹)
Selling Price p.u.	175	200	225
Variable cost p.u.	100	125	150
Fixed Cost	50,000	75,000	1,00,000

Depreciation included in Fixed cost is ₹ 35,000 and corporate tax is 25%.

Assuming the cost of capital as 15%, DETERMINE NPV in three scenarios i.e worst, base and best case scenario. PV factor for 5 years at 15% are as follows:

Years	1	2	3	4	5
P.V. factor	0.870	0.756	0.658	0.572	0.497

QUESTION 17

New Projects Ltd. is evaluating 3 projects, P-I, P-II, P-III. Following information is available in respect of these projects:

	P-I	P-II	P-III
Cost	₹ 15,00,000	₹ 11,00,000	₹ 19,00,000
Inflows-Year 1	6,00,000	6,00,000	4,00,000
Year 2	6,00,000	4,00,000	6,00,000
Year 3	6,00,000	5,00,000	8,00,000
Year 4	6,00,000	2,00,000	12,00,000
Risk Index	1.80	1.00	0.60

Minimum required rate of return of the firm is 15% and applicable tax rate is 40%. The risk free interest rate is 10%.

REQUIRED:

- (i) Find out the risk-adjusted discount rate (RADR) for these projects.



(ii) Which project is the best?

QUESTION 18

G Ltd. using certainty-equivalent approach in the evaluation of risky proposals. The following information regarding a new project is as follows:

Year	Expected Cash flow	Certainty-equivalent quotient
0	(8,00,000)	1.0
1	6,40,000	0.8
2	5,60,000	0.7
3	5,20,000	0.6
4	4,80,000	0.4
5	3,20,000	0.3

Riskless rate of interest on the government securities is 6 per cent. DETERMINE whether the project should be accepted?

QUESTION 19

A company is evaluating a project that requires initial investment of ₹ 60 lakhs in fixed assets and ₹12 lakhs towards additional working capital.

The project is expected to increase annual real cash inflow before taxes by ₹ 24,00,000 during its life. The fixed assets would have zero residual value at the end of life of 5 years. The company follows straight line method of depreciation which is expected for tax purposes also. Inflation is expected to be 6% per year. For evaluating similar projects, the company uses discounting rate of 12% in real terms. Company's tax rate is 30%.

Advise whether the company should accept the project, by calculating NPV in real terms.

PVIF (12%, 5 years)		PVIF (12%, 5 years)	
Year 1	0.893	Year 1	0.943
Year 2	0.797	Year 2	0.890
Year 3	0.712	Year 3	0.840
Year 4	0.636	Year 4	0.792
Year 5	0.567	Year 5	0.747

QUESTION 20

A project requires an initial outlay of ₹ 3,00,000.

The company uses certainty equivalent method approach to evaluate the project. The risk free rate is 7%. Following information is available:

Year	CFAT (Cash Flow After Tax) ₹	CE (Certainty Equivalent Coefficient)
1.	1,00,000	0.90
2.	1,50,000	0.80
3.	1,15,000	0.60
4.	1,00,000	0.55
5.	50,000	0.50

PV Factor at 7%

Year	1	2	3	4	5
PV Factor	0.935	0.873	0.816	0.763	0.713

Evaluate the above. Is investment in the project beneficial?

QUESTION 21

K.P. Ltd. is investing ₹ 50 lakhs in a project. The life of the project is 4 years. Risk free rate of return is 6% and risk premium is 6%, other information is as under:

Sales of 1st year	₹ 50 lakhs
Sales of 2nd year	₹ 60 lakhs
Sales of 3rd year	₹ 70 lakhs



Sales of 4th year	₹ 80 lakhs
P/V Ratio (same in all the years)	50%
Fixed Cost (Excluding Depreciation) of 1st year	₹ 10 lakhs
Fixed Cost (Excluding Depreciation) of 2nd year	₹ 12 lakhs
Fixed Cost (Excluding Depreciation) of 3rd year	₹ 14 lakhs
Fixed Cost (Excluding Depreciation) of 4th year	₹ 16 lakhs

Ignoring interest and taxes,

You are required to calculate NPV of given project on the basis of Risk Adjusted Discount Rate.

Discount factor @ 6% and 12% are as under:

Year	1	2	3	4
Discount Factor @ 6%	0.943	0.890	0.840	0.792
Discount Factor @ 12%	0.893	0.797	0.712	0.636

QUESTION 22

Invest Corporation Ltd. adjusts risk through discount rates by adding various risk premiums to the risk free rate. Depending on the resultant rate, the proposed project is judged to be a low, medium or high risk project.

Risk level	Risk free rate (%)	Risk Premium (%)
Low	8	4
Medium	8	7
High	8	10

DEMONSTRATE the acceptability of the project on the basis of Risk Adjusted rate.

QUESTION 23

N&B Ltd. is considering one of two mutually exclusive proposals, Projects A and B, which require cash outlays of ₹ 34,00,000 and ₹ 33,00,000 respectively. The certainty- equivalent (C.E) approach is used in incorporating risk in capital budgeting decisions. The current yield on government bonds is 5% and this is used as the risk free rate. The expected net cash flows and their certainty equivalents are as follows:

Year-end	Project A		Project B	
	Cash Flow (₹)	C.E.	Cash Flow (₹)	C.E.
1	16,75,000	0.8	16,75,000	0.9
2	15,00,000	0.7	15,00,000	0.8
3	15,00,000	0.5	15,00,000	0.7
4	20,00,000	0.4	10,00,000	0.8
5	21,20,000	0.6	9,00,000	0.9

PV factor at 5% are as follows:

Year	1	2	3	4	5
PV factor	0.952	0.907	0.864	0.823	0.784

DETERMINE which project should be accepted

QUESTION 24

The following details of PQR Limited for the year ended 31st March, 2021 are given below:

Operating leverage	1.4
Combined leverage	2.8
Fixed Cost (Excluding interest)	₹ 2.10 lakhs
Sales	₹ 40.00 lakhs
10% Debentures of ₹ 100 each	₹ 25.00 lakhs
Equity Share Capital of ₹ 10 each	₹ 20.00 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 1.6, does it have a high or low assets turnover?
 (iv) At what level of sales, the Earning before Tax (EBT) of the company will be equal to zero?
 In the question, assume that 10% Debentures and Share Capital consists of total liabilities.

QUESTION 25

PQR Ltd. has under its consideration a project with an initial investment of ₹ 2,25,00,000. Three probable cash inflow scenarios with their probabilities of occurrence have been estimated as below:

Annual cash inflow (₹)	50,00,000	75,00,000	1,00,00,000
Probability	0.2	0.7	0.1

The project life is 5 years and the desired rate of return is 12%. The estimated terminal values for the project assets under the three probability alternatives are ₹ 0, ₹ 50,00,000 and ₹ 75,00,000 respectively.

You are required to:

- (i) CALCULATE the probable NPV;
 (ii) CALCULATE the worst-case NPV and the best-case NPV; and
 STATE the probability occurrence of the worst case, if the cash flows are perfectly positively correlated over time.

QUESTION 26

SL Ltd. has invested ₹1,000 lakhs in a project. The risk-free rate of return is 5%. Risk premium expected by the Management is 10%. The life of the project is 5 years. Following are the cash flows that are estimated over the life of the project.

Year	Cash flows (₹ in lakhs)
1	125
2	300
3	375
4	400
5	325

CALCULATE Net Present Value of the project based on Risk free rate and also on the basis of Risks adjusted discount rate.

QUESTION 27

Door Ltd. is considering an investment of ₹ 4,00,000. This investment is expected to generate substantial cash inflows over the next five years. Unfortunately, the annual cash flows from this investment is uncertain, and the following profitability distribution has been established.

Annual Cash Flow (₹)	Probability
50,000	0.3
1,00,000	0.3
1,50,000	0.4

At the end of its 5 years life, the investment is expected to have a residual value of ₹40,000.

The cost of capital is 5%

- (i) Calculate NPV under the three different scenarios.
 (ii) Calculate Expected Net Present Value.
 (iii) Advise Door Ltd. on whether the investment is to be undertaken.

Year	1	2	3	4	5
DF @ 5%	0.952	0.907	0.864	0.823	0.784



CHAPTER FOUR

DIVIDEND DECISIONS

LOS 1 : INTRODUCTION



Note: Total Earnings mean Earnings available to equity share holders

Income Statement

	Sales
Less:	<u>Variable cost</u>
	Contribution
Less:	<u>Fixed cost excluding Dep.</u>
	EBITDA
Less:	<u>Depreciation and Amortization</u>
	EBIT
Less:	<u>Interest</u>
	EBT
Less:	<u>Tax</u>
	EAT
Less:	<u>Preference Dividend</u>
	Earnings Available to Equity Share holders
Less:	<u>Equity Dividend</u>
	T/F to R&S

Two types of decision are taken in Dividend Policy:-

1. Long-term financing decision
2. Wealth maximization decision

Internal Financing & External Financing :-

- ❖ Internal source of financing means using own funds i.e. Retained Earnings.
- ❖ External source of financing means taking funds from outside i.e. Equity Share Capital, Preference Share Capital, Debentures, Bonds, etc.
- ❖ Internal financing is generally less expensive because firm doesn't incur any floating cost to obtain it i.e. $K_r < K_e$

Factors Effecting Dividend Policy:-

1. Financial needs of the company
2. Desire of Share Holders
3. Industry Trend
4. Legal Constraints
5. Cost of Equity (K_e) & Rate of Return (r)
6. Ownership/Control
7. Discretion of Management
8. Liquidity needs of Company



LOS 2 : SOME BASIC RATIOS

- ❖ EPS = $\frac{\text{Total earning available to equity shareholders}}{\text{Total number of equity shares}}$
- ❖ DPS = $\frac{\text{Total dividend paid to equity shareholders}}{\text{Total number of equity shares}}$
- ❖ MPS = $\frac{\text{Total Market Value/ Market Capitalization/ Market Cap}}{\text{Total number of equity shares}}$
- ❖ REPS = $\frac{\text{Total Retained earnings}}{\text{Total number of equity shares}}$

OR

- ❖ REPS = **EPS - DPS**
- ❖ Dividend Yield = $\frac{\text{Dividend per share}}{\text{Market price per share}} \times 100$
- ❖ Dividend pay-out Ratio = $\frac{\text{Dividend per share}}{\text{Earning per share}} \times 100$
- ❖ Dividend Rate = $\frac{\text{Dividend per share}}{\text{Face value per share}} \times 100$
- ❖ Earning Yield = $\frac{\text{Earning per share}}{\text{Market Price per share}} \times 100$
- ❖ P/E Ratio = $\frac{\text{MPS}}{\text{EPS}}$
- ❖ Retention Ratio = $\frac{\text{Retained Earning per share}}{\text{Earning per share}} \times 100$
= $\frac{\text{EPS} - \text{DPS}}{\text{EPS}} \times 100$

OR

- ❖ Retention Ratio = 1 - Dividend Payout Ratio

Note :**Relationship Between DPR & RR:**

$$\text{RR} + \text{DPR} = 100\% \text{ or } 1$$

- ❖ Dividend yield and Earning Yield is always calculated on annual basis.
- ❖ Dividend is 1st paid to preference share holder before any declaration of dividend to equity shareholders.
- ❖ Dividend is always paid upon FV(Face Value) not on Market Value.

LOS 3 : DEFINE CASH DIVIDENDS, STOCK DIVIDEND ,STOCK SPLIT

Cash Dividends: As the name implies, are payments made to shareholders in cash. They come in 3 forms:

- (i) **Regular Dividends:** Occurs when a company pays out a portion of profits on a consistent basis. E.g. Quarterly, Yearly, etc.
- (ii) **Special Dividends:** They are used when favourable circumstances allow the firm to make a one-time cash payment to shareholders, in addition to any regular dividends. E.g. Cyclical Firms
- (iii) **Liquidating Dividends:** Occurs when company goes out of business and distributes the proceeds to shareholders.

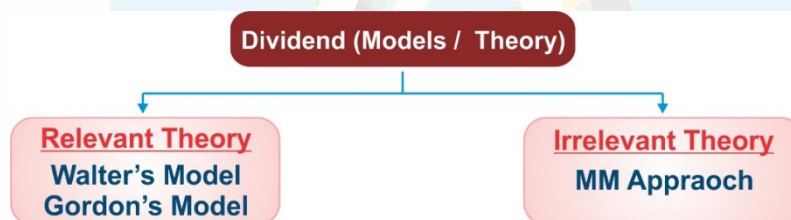
Stock Dividends (Bonus Shares) :

- ❖ Stock Dividend are dividends paid out in new shares of stock rather than cash. In this case, there will be more shares outstanding, but each one will be worth less.
- ❖ Stock dividends are commonly expressed as a percentage. A 20% stock dividend means every shareholder gets 20% more stock.

Stock Splits :

- ❖ Stock Splits divide each existing share into multiple shares, thus creating more shares. There are now more shares, but the price of each share will drop correspondingly to the number of shares created, so there is no change in the owner's wealth.
- ❖ Splits are expressed as a ratio. In a 3-for-1 stock split, each old share is split into three new shares.
- ❖ Stock splits are more common today than stock dividends.

LOS 4 : THEORIES OF DIVIDENDS



Relevant Theory: Dividend played an important role in determination of market price of share.

Irrelevant Theory: Dividend do not play any role in determination of market price of share/ Market value of the firm.

Walter's Model :

Walter's supports the view that the dividend policy plays an important role in determining the market price of the share.

He emphasis two factors which influence the market price of a share:-

- (i) Dividend Payout Ratio.
- (ii) The relationship between Internal return on Retained earnings (r) and cost of equity capital (K_e)

Walter classified all the firms into three categories:-

a) Growth Firm:

- ❖ If $r > K_e$. In this case, the shareholder's would like the company to retain maximum amount i.e. to keep payout ratio quite low.
- ❖ In this case, there is negative correlation between dividend and market price of share.
- ❖ If $r > K_e$, Lower the Dividend Pay-out Ratio Higher the Market Price per Share & vice-versa.



b) Declining Firm:

- ❖ If $(r < K_e)$. In this case, the shareholder's won't like the firm to retain the profits so that they can get higher return by investing the dividend received by them.
- ❖ In this case, there is positive correlation between dividend and market price of share.
- ❖ If $r < K_e$, Higher the Dividend Pay-out Ratio, Higher the Market Price per Share & vice-versa.

c) Constant Firm:

- ❖ If rate of return on Retained earnings (r) is equal to the cost of equity capital (K_e) i.e. ($r = K_e$). In this case, the shareholder's would be indifferent about splitting off the earnings between dividend & Retained earnings.
- ❖ If $r = K_e$, Any Retention Ratio or Any Dividend Payout Ratio will not affect Market Price of share. MPS will remain same under any Dividend Payout or Retention Ratio.

Note: Walter concludes:-

- ❖ The optimum payout ratio is NIL in case of growth firm.
- ❖ The optimum payout ratio for declining firm is 100%
- ❖ The payout ratio of constant firm is irrelevant.

Summary: Optimum Dividend as per Walter's

Category of the Firm	r Vs. K_e	Correlation between DPS & MPS	Optimum Payout Ratio	Optimum Retention Ratio
Growth	$r > K_e$	Negative	0 %	100 %
Constant	$r = K_e$	No Correlation	Every payout is Optimum	Every retention is Optimum
Decline	$r < K_e$	Positive	100%	0 %

Valuation of Equity as per Walter's

Current market price of a share is the present value of two cash flow streams:-

- a) Present Value of all dividend.
- b) Present value of all return on retained earnings.

In order to testify the above, Walter has suggested a mathematical valuation model i.e.,

$$P_0 = \frac{DPS}{K_e} + \frac{r}{K_e} \frac{(EPS - DPS)}{K_e}$$

When

- P_0 = Current price of equity share (Ex-dividend price)/ Fair or Theoretical or Intrinsic or Equilibrium or present Value Price per Share
- DPS = Dividend per share paid by the firm
- r = Rate of return on investment of the firm / IRR / Return on equity
- K_e = Cost of equity share capital / Discount rate / expected rate of return/opportunity cost / Capitalization rate
- EPS = Earnings per share of the firm
- EPS – DPS = Retained Earning Per Share

Assumptions :

- ❖ DPS & EPS are constant.
- ❖ K_e & r are constant.
- ❖ Going concern assumption, company has infinite life.
- ❖ No external Finance

QUESTION NO. 1A

XYZ Ltd. which earns ₹ 10/share is capitalized at 10% and has a return on investment of 12%. Determine the optimum dividend payout ratio and the price of the share at the payout.

QUESTION NO. 1B

Sahu & Co. earns ₹ 6 per share having capitalization rate of 10% and has a return on investment at the rate of 20%. According to Walter's Model, what should be the price per share at 30% dividend payout ratio? Is this the optimum payout ratio as per Walter?

QUESTION NO. 1C

Following figures are collected from annual report of A Ltd.

Net Profit	₹ 30.00 Lacs
Outstanding 12% Preference Shares	₹ 100.00 Lacs
Number of Equity Shares	3,00,000
Return on Investment	20%
K_e	16%

What should be the approximate dividend payout ratio so as to keep share price at ₹ 42, use Walter Model?

QUESTION NO. 1D

The following information pertains to M/s XY Ltd.

Earnings of the Company	₹ 5,00,000
Dividend Payout Ratio	60%
No. of Shares Outstanding	1,00,000
Equity Capitalization Rate	12%
Rate of Return on Investment	15%

- What would be the market value per share as per Walter's model?
- What is the optimum dividend payout ratio according to Walter's model and the market value of Company's share at that payout ratio?

QUESTION NO. 1E

Following information relating to Jee Ltd. is given:

Particulars

Profit after tax	₹ 10,00,000
Dividend pay-out ratio	50%
Number of Equity Shares	50,000
Cost of Equity	10%
Rate of Return on Investment	12%

Rate of Return on Investment

- CALCULATE market value per share as per Walter's Model?
- What is the optimum dividend pay-out ratio according to Walter's Model and Market value of equity share at that pay-out ratio?

QUESTION NO. 1F

The following information relates to LMN Ltd.

Earning of the company	₹ 30,00,000
Dividend pay-out ratio	60%
No. of shares outstanding	5,00,000
Rate of return on investment	15%
Equity capitalized rate	13%

**Required:**

- Determine what would be the market value per share as per Walter's model.
- Compute optimum dividend pay-out ratio according to Walter's model and the market value of company's share at that pay-out ratio.

LOS 5 : GORDON'S MODEL/GROWTH MODEL/ DIVIDEND DISCOUNT MODEL

- ❖ Gordon's Model suggest that the dividend policy is relevant and can effect the value of the share.
- ❖ Dividend Policy is relevant as the investor's prefer current dividend as against the future uncertain Capital Gain
- ❖ Current Market price of share = PV of future Dividend, growing at a constant rate

$$P_0 = \frac{D_0 (1+g)}{K_e - g_c} \quad \text{OR} \quad P_0 = \frac{D_1 \text{ (next expected dividend)}}{K_e - g_c} \quad \text{OR} \quad P_0 = \frac{EPS_1 (1-b)}{K_e - br}$$

P_0 = Current market price of share.

K_e = Cost of equity capital/ Discount rate/ expected rate of return/ Opportunity cost/ Capitalization rate.

g = Growth rate

D_1 = DPS at the end of year / Next expected dividend / Dividend to be paid

D_0 = Current year dividend / dividend as on today / last paid dividend

EPS_1 = EPS at the end of the year

b = Retention Ratio

$1-b$ = Dividend payout Ratio

Note:

Watch for words like ' Just paid ' or ' recently paid ', these refers to the last dividend D_0 and words like ' will pay ' or ' is expected to pay ' refers to D_1 .

Assumptions:

- No external finance is available.
- K_e & r are constant.
- ' g ' is the product of its Retention Ratio ' b ' and its rate of return ' r '

$$g = b \times r \quad \text{OR} \quad g = RR \times ROE.$$

(iv) $K_e > g$

(v) g & RR are constant.

(vi) Firm has an infinite life

Applications**1. $EPS_1 (1-b) = DPS_1$** **Proof :**

$$\begin{aligned} EPS_1 (1-b) &= EPS_1 \times \text{Dividend payout Rate} \\ &= EPS_1 \times \frac{DPS_1}{EPS_1} \\ &= DPS_1 \end{aligned}$$

We know that $DPR + RR = 1$ or 100%



2. If $EPS = DPS$, $RR = 0$ then $g = 0$

$$P_0 = \frac{D_0 (1+g)}{K_e - g}$$

$$P_0 = \frac{D_0}{K_e} \text{ as } g = 0$$

$$P_0 = \frac{EPS}{K_e} (\because EPS = DPS)$$

3. Calculation of P_1 (Price at the end of year 1)

Price at the beginning = PV of Dividend at end + PV of market price at end

$$P_0 = \frac{D_1 + P_1}{(1 + K_e)}$$

$$4. K_e = \frac{1}{\text{P.E Ratio}}$$

QUESTION NO. 2A

X Ltd. is a no growth company, pays a dividend of ₹ 5 per share. If the cost of capital is 10%, what should be the current market price of the share?

QUESTION NO. 2B

XYZ is company having share capital of ₹10 lakhs of ₹10 each. It distributed current dividend of 20% per annum. Annual growth rate in dividend expected is 2%. The expected rate of return on its equity capital is 15%.

QUESTION NO. 2C

A firm had been paid dividend at ₹ 2 per share last year. The estimated growth of the dividends from the company is estimated to be 5% p.a. Determine the estimated market price of the equity share if the estimated growth rate of dividends (i) rises to 8%, and (ii) falls to 3%. Also find out the present market price of the share, given that the required rate of return of the equity investors is 15%.

QUESTION NO. 2D

With the help of following figures calculate the market price of a share of a company by using (i) Walter's Formula, (ii) Dividend Growth Model (Gordon's Formula)

Earnings per Share (EPS)	₹ 10
Dividend per Share (DPS)	₹ 4
Cost of Capital (K)	20%
Internal Rate of Return on Investment	25%
Retention Ratio	40%

QUESTION NO. 2E

The following information is taken from ABC Ltd.

Net Profit for the year ₹ 30,00,000

12% Preference share capital ₹ 1,00,00,000

Equity share capital (Share of ₹ 10 each) ₹ 60,00,000

Internal rate of return on investment 22%

Cost of Equity Capital 18%

Retention Ratio 75%

Calculate the market price of the share using:

(i) Gordon's Model

(ii) Walter's Model



LOS 6: CALCULATE P / E RATIO AT WHICH DIVIDEND PAYOUT WILL HAVE NO EFFECT ON THE VALUE OF THE SHARE.

When $r = K_e$, dividend payout ratio will not affect value of share.

Example:

$$\text{If } r = 10\% \text{ then } K_e = 10\% \text{ and } K_e = \frac{1}{P/ERatio} \Rightarrow 0.10 = \frac{1}{P/ERatio}$$

\Rightarrow P/E Ratio = 10 times

QUESTION NO. 3

The firm was started a year ago with an equity capital of ₹ 20 Lacs

Earning of the firm	₹ 2,00,000	Dividend paid	₹ 1,50,000	P/E Ratio	12.5
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Number of the shares outstanding, 20,000 @ ₹ 100 each. The firm is expected its current rate of earning on investment.

- Ascertain whether the company's D/P ratio is optimal according to Walter.
- What should be the P/E ratio at which the dividend pay-out ratio will have no effect on the value of the share?
- Will your decision change if the P/E ratio is 8, instead of 12.5?

LOS 7: MM APPROACH (IRRELEVANCE THEORY)

Dividends do not play any role in determination of market value. Market value is rather affected by earnings and investment.

Formulae:

$$nP_0 = \frac{(n+m) \times P_1 + E_1 - I_1}{(1 + K_e)^1}$$

- n = Existing number of equity shares at the beginning of the year
 - m = New number of equity shares, issued at year end market price
 - P_0 = Current market price as on today
 - P_1 = Market price per share at the end of year one
 - E_1 = Total earning at the end of year one
 - I_1 = Total investment at the end of year one
 - K_e = Cost of equity
 - nP_0 = Market value of the company as on today
 - $n+m$ = Total no of equity share at the end (old + new share)
 - $(n + m)P_1$ = Total market value of the company at the end.
- Amount raised by issue of new equity shares = Investment – [Earning – Dividend]

Assumption:

Funds can raise only by equity & retained earnings.

Note:

- ❖ The Market Price of a share = PV of dividend paid at end + PV of market price at the end at the beginning of a period

$$P_0 = \frac{P_1 + D_1}{(1 + K_e)^1}$$

Calculate P_1 from this formulae.



❖ **New number of equity share**

$$m = \frac{I_1 - (E_1 - nD_1)}{P_1} \text{ or } m = \frac{\text{Investment}_1 - (\text{Earnings}_1 - n \times \text{DPS}_1)}{\text{Market Price at the End}(P_1)}$$

QUESTION NO. 4A

AB Engineering Ltd. belongs to a risk class for which the capitalization rate is 10%. It currently has outstanding 10,000 shares selling at ₹100 each. The firm is contemplating the declaration of a dividend of ₹5/share at the end of the current financial year. It expects to have a net income of ₹1,00,000 and has a proposal for making new investments of ₹2,00,000. CALCULATE the value of the firms when dividends (i) are not paid (ii) are paid

QUESTION NO. 4B

M Ltd. belongs to a risk class or which the capitalization rate is 10%. It has 25,000 outstanding shares and the current market price is ₹ 100. It expects a net profit of ₹ 2,50,000 for the year and the Board is considering dividend of ₹ 5 per share. M Ltd. requires to raise ₹ 5,00,000 for an approved investment expenditure. Show how the MM approach affects the value of M Ltd., if dividends are paid or not paid.

QUESTION NO. 4C

RST Ltd. has a capital of ₹ 10,00,000 in equity shares of ₹ 100 each. The shares are currently quoted at par. The company proposes to declare a dividend of ₹ 10 per share at the end of the current financial year. The capitalization rate for the risk class of which the company belongs is 12%. What will be the market price of the share at the end of the year, if

- (i) a dividend is not declared?
- (ii) a dividend is declared ?
- (iii) Assuming that the company pays the dividend and has net profits of ₹ 5,00,000 and makes new investments of ₹ 10,00,000 during the period, how many new shares must be issued? Use the MM model.

LOS 8 : GRAHAM & DODD MODEL (TRADITIONAL APPROACH)

$$P_0 = m \times \left[\text{DPS} + \frac{\text{EPS}}{3} \right]$$

OR

$$P_0 = m \times \left[\frac{4 \text{DPS}}{3} \right] + m \times \left[\frac{\text{REPS}}{3} \right]$$

Where **m = multiplier**

QUESTION NO. 5A

The earnings per share of a company is ₹ 30 and the dividend payout ratio is 60%. Multiplier is 2. What is the price of a share of a company according to the Graham and Dodd model?

QUESTION NO. 5B

The following information regarding the equity shares of M Ltd. is given:

Market price	₹58.33
Dividend per share	₹5
Multiplier	7

According to the Graham & Dodd approach to the dividend policy, compute the EPS.

QUESTION NO. 5C

The dividend payout ratio of H Ltd. is 40%. If the company follows traditional approach to dividend policy with a multiplier of 9, what will be the P/E ratio.



LOS 9: LINTER'S MODEL

We will calculate dividend to be paid by any Company.

Assumption:

Dividend should not fall. It may remain constant or may increase but can't fall.

Formula:

$$D_1 = D_0 + [EPS \times \text{Target Dividend Payout} - D_0] \times AF$$

Where

AF = Adjustment factor

D_0 = Dividend in Previous Year or Dividend Paid

D_1 = Dividend to be paid/ declared

QUESTION NO. 6

Given the last year's dividend is ₹ 9.80, speed of adjustment = 45%, target payout ratio 60% and EPS for current year ₹ 20. Calculate current year's dividend.

QUESTION NO. 7

The following figures are collected from the annual report of XYZ Ltd.:

Net Profit	₹ 30 lakhs
Outstanding 12% preference shares	₹ 100 lakhs
No. of equity shares	3 lakhs
Return on Investment	20%
Cost of capital i.e. (K_e)	16%

CALCULATE price per share using Gordon's Model when dividend pay-out is (i) 25%; (ii) 50% and (iii) 100%.

QUESTION NO. 8

Taking an example of three different firms i.e. growth, normal and declining, CALCULATE the share price using Gordon's model.

Factors	Growth Firm $r > K_e$	Normal Firm $r = K_e$	Declining Firm $r < K_e$
r (rate of return on retained earnings)	15%	10%	8%
K_e (Cost of Capital)	10%	10%	10%
E (Earning Per Share)	₹ 10	₹ 10	₹ 10
b (Retained Earnings)	0.6	0.6	0.6
1 - b (Dividend Payout)	0.4	0.4	0.4

QUESTION NO. 9

The following information is given below in case of Aditya Ltd.: Earnings per share = ₹ 60
Capitalisation rate = 15% Return on investment = 25% Dividend payout ratio = 30%

(i) COMPUTE price per share using Walter's Model.

(ii) WHAT would be optimum dividend payout ratio per share under Gordon's Model.

QUESTION NO. 10

M Ltd. belongs to a risk class for which the capitalization rate is 10%. It has 25,000 outstanding shares and the current market price is ₹ 100. It expects a net profit of ₹ 2,50,000 for the year and the Board is considering dividend of ₹ 5 per share.

M Ltd. requires to raise ₹ 5,00,000 for an approved investment expenditure. ILLUSTRATE, how the MM approach affects the value of M Ltd. if dividends are paid or not paid.



QUESTION NO. 11

The annual report of XYZ Ltd. provides the following information for the Financial Year 2020-21:

Particulars	Amount (₹)
Net Profit	50 lakhs
Outstanding 15% preference shares	100 lakhs
No. of equity shares	5 lakhs
Return on Investment	20%
Cost of capital i.e. (Ke)	16%

CALCULATE price per share using Gordon's Model when dividend pay-out is:

- (i) 25%;
- (ii) 50%;
- (iii) 100%.

QUESTION NO. 12

A&R Ltd. is a large-cap multinational company listed in BSE in India with a face value of ₹ 100 per share. The company is expected to grow @ 15% p.a. for next four years then 5% for an indefinite period. The shareholders expect 20% return on their share investments. Company paid ₹ 120 as dividend per share for the FY 2020-21. The shares of the company traded at an average price of ₹ 3,122 on last day. FIND out the intrinsic value of per share and state whether shares are overpriced or underpriced.

QUESTION NO. 13

Aakash Ltd. has 10 lakh equity shares outstanding at the start of the accounting year 2021. The existing market price per share is ₹ 150. Expected dividend is ₹ 8 per share. The rate of capitalization appropriate to the risk class to which the company belongs is 10%.

- (i) CALCULATE the market price per share when expected dividends are: (a) declared, and (b) not declared, based on the Miller – Modigliani approach.
- (ii) CALCULATE number of shares to be issued by the company at the end of the accounting year on the assumption that the net income for the year is ₹ 3 crore, investment budget is ₹ 6 crores, when (a) Dividends are declared, and (b) Dividends are not declared.
- (iii) PROOF that the market value of the shares at the end of the accounting year will remain unchanged irrespective of whether (a) Dividends are declared, or (ii) Dividends are not declared.

QUESTION NO. 14

The earnings per share of a company is ₹ 10 and the rate of capitalisation applicable to it is 10 per cent. The company has three options of paying dividend i.e. (i) 50%, (ii) 75% and (iii) 100%.

CALCULATE the market price of the share as per Walter's model if it can earn a return of (a) 15, (b) 10 and (c) 5 per cent on its retained earnings.

QUESTION NO. 15

Following figures and information were extracted from the company A Ltd.

Earnings of the company	₹ 10,00,000
Dividend paid	₹ 6,00,000
No. of shares outstanding	2,00,000
Price Earnings Ratio	10
Rate of return on investment	20%

You are required to calculate:

- (i) Current Market price of the share
- (ii) Capitalisation rate of its risk class
- (iii) What should be the optimum pay-out ratio?
- (iv) What should be the market price per share at optimal pay-out ratio? (use Walter's Model)

**QUESTION NO. 16**

The details about two companies R Ltd. and S Ltd. having same operating risk are given below:

Particulars	R Ltd.	S Ltd.
Profit before interest and tax	₹ 10 lakhs	₹ 10 lakhs
Equity share capital ₹ 10 each	₹ 17 lakhs	₹ 50 lakhs
Long term borrowings @ 10%	₹ 33 lakhs	-
Cost of Equity (K_e)	18%	15%

You are required to:

- Calculate the value of equity of both the companies on the basis of M.M. Approach without tax.
- Calculate the Total Value of both the companies on the basis of M.M. Approach without tax.

QUESTION NO. 17

The following information is supplied to you:

	₹
Total Earnings	2,00,000
No. of equity shares (of ₹ 100 each)	20,000
Dividend paid	1,50,000
Price/ Earnings ratio	12.5

Applying Walter's Model

- DETERMINE whether the company is following an optimal dividend policy.
- IDENTIFY, what should be the P/E ratio at which the dividend policy will have no effect on the value of the share.
- Will your decision change, if the P/E ratio is 8 instead of 12.5? ANALYSE

QUESTION NO. 18

The following figures are collected from the annual report of XYZ Ltd.:

Net Profit	₹60 lakhs
Outstanding 10% preference shares	₹100 lakhs
No. of equity shares	5 lakhs
Return on Investment	20%
Cost of capital i.e. (K_e)	14%

CALCULATE price per share using Gordon's Model when dividend pay-out is

- 25%;
- 50% and
- 100%.

QUESTION NO. 19

ZX Ltd. has a paid-up share capital of ₹1,00,00,000, face value of ₹100 each. The current market price of the shares is ₹100 each. The Board of Directors of the company has an agenda of meeting to pay a dividend of 50% to its shareholders. The company expects a net income of ₹75,00,000 at the end of the current financial year. Company also plans for a capital expenditure for the next financial year for a cost of ₹95,00,000, which can be financed through retained earnings and issue of new equity shares.

Company's desired rate of investment is 15%.

Required:

Following the Modigliani- Miller (MM) Hypothesis, DETERMINE value of the company when:

- It does not pay dividend and
- It does pay dividend

QUESTION NO. 20

The following data is available in respect of N Ltd. for the year ended 31st March, 2021:

	₹ (in Crore)
Share capital (@ ₹ 10 per share)	25.00
Reserves	15.00
Profit after tax (PAT)	3.70
Dividends paid	3.00
P/E ratio	26.70

Using Walter's Model:

- (i) COMMENT on the firm's dividend policy;
- (ii) DETERMINE the optimum payout ratio and
- (iii) DETERMINE the P/E ratio at which dividend payout will have no effect on share price.

QUESTION NO. 21

The following information is given:

Dividend per share (DPS)	₹ 9
Cost of capital (Ke)	19%
Internal rate of return on investment	24%
Retention Ratio	25%

CALCULATE the market price per share by using:

- (i) Walter's formula
- (ii) Gordon's formula (Dividend Growth model)





NOTES



CHAPTER FIVE

FINANCIAL ANALYSIS & PLANNING – RATIO ANALYSIS

- ❖ A ratio is defined as “the indicated quotient of two mathematical expressions and as the relationship between two or more things.” Here ratio means financial ratio or accounting ratio which is a mathematical expression of the relationship between accounting figures.

Ratio Analysis

- ❖ The term financial ratio can be explained by defining how it is calculated and what the objective of this calculation is?

Calculation Basis

- ❖ A relationship expressed in mathematical terms;
- ❖ Between two individual figures or group of figures;
- ❖ Connected with each other in some logical manner; and
- ❖ Selected from financial statements of the concern

Objective for financial ratios is that all stakeholders (owners, investors, lenders, employees etc.) can draw conclusions about the

- ❖ Performance (past, present and future);
- ❖ Strengths & weaknesses of a firm; and
- ❖ Can take decisions in relation to the firm.
- ❖ Ratio analysis is based on the fact that a single accounting figure by itself may not communicate any meaningful information but when expressed as a relative to some other figure, it may definitely provide some significant information.
- ❖ Ratio analysis is not just comparing different numbers from the balance sheet, income statement, and cash flow statement. It is comparing the number against previous years, other companies, the industry, or even the economy in general for the purpose of financial analysis.

APPLICATION OF RATIO ANALYSIS IN FINANCIAL DECISION MAKING

Financial Ratios for Evaluating Performance

- ❖ Liquidity Position
- ❖ Long-term Solvency
- ❖ Operating Efficiency:
- ❖ Overall Profitability:
- ❖ Inter-firm Comparison
- ❖ Financial Ratios for Budgeting

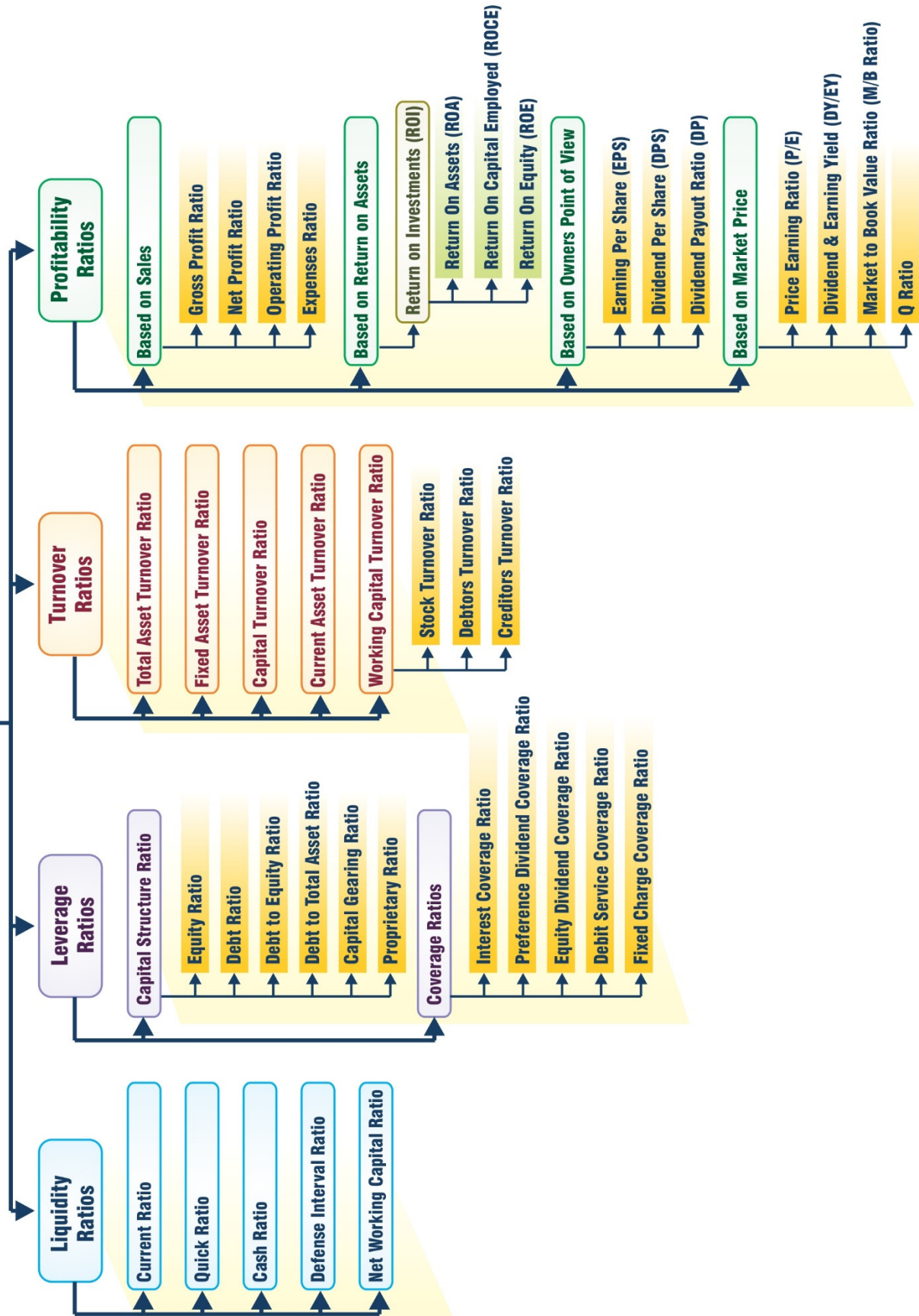
Sources of Financial Data for Analysis

The sources of information for financial statement analysis are:

- Annual Reports
- Interim financial statements
- Notes to Accounts
- Statement of cash flows
- Business periodicals.
- Credit and investment advisory services



TYPES OF RATIOS

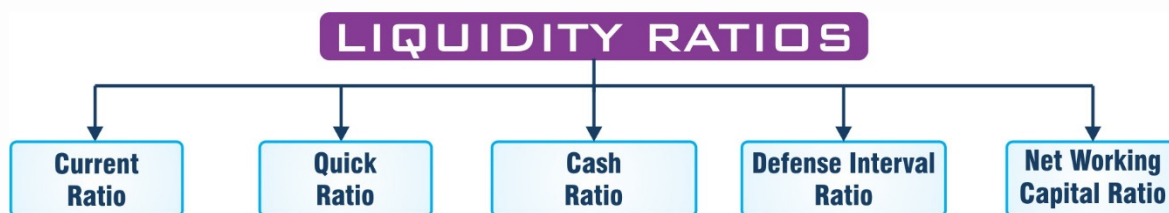


1. Liquidity Ratios

The terms 'liquidity' and 'short-term solvency' are used synonymously.

Liquidity or short-term solvency means ability of the business to pay its short-term liabilities. 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.

Short-term lenders and creditors of a business are very much interested to know its state of liquidity because of their financial stake. Both lack of sufficient liquidity and excess liquidity is bad for the organization.



- a) **Current Ratio:** The Current Ratio is one of the best known measures of short term solvency. It is the most common measure of short-term liquidity.

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

Where,

Current Assets	Current Liabilities
Inventories	Creditors for goods and services
+ Sundry Debtors	+ Short-term Loans
+ Cash and Bank Balances	+ Bank Overdraft
+ Receivables/ Accruals	+ Cash Credit
+ Loans and Advances	+ Outstanding Expenses
+ Disposable Investments	+ Provision for Taxation
+ Any other current assets.	+ Proposed Dividend
	+ Unclaimed Dividend
	+ Any other current liabilities.

Interpretation

A generally acceptable current ratio is 2 to 1. But whether or not a specific ratio is satisfactory depends on the nature of the business and the characteristics of its current assets and liabilities.

- b) **Quick Ratios:** The Quick Ratio is sometimes called the "acid-test" ratio and is one of the best measures of liquidity.

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

Where,

Quick Assets = Current Assets - Inventories - Prepaid Expenses

Current Liabilities = As mentioned under Current Ratio.

The Quick Ratio is a much more conservative measure of short-term liquidity than the Current Ratio.

Quick Assets consist of only cash and near cash assets. Inventories are deducted from current assets on the belief that these are not 'near cash assets'



Interpretation

An acid-test of 1:1 is considered satisfactory unless the majority of “quick assets” are in accounts receivable, and the pattern of accounts receivable collection lags behind the schedule for paying current liabilities.

- c) **Cash Ratio/ Absolute Liquidity Ratio:** The cash ratio measures the absolute liquidity of the business. This ratio considers only the absolute liquidity available with the firm.

$$\text{Cash Ratio} = \frac{\text{Cash \& Bank Balances} + \text{Marketable Securities or Current Investments}}{\text{Current Liabilities}}$$

- d) **Basic Defense Interval/ Interval Measure:**

$$\text{Basic Defense Interval} = \frac{\text{Cash \& Bank Balances} + \text{Marketable Securities}}{\text{Daily Operating Expenses}}$$

Or

$$\text{Interval Measure} = \frac{\text{Current Assets} - \text{Inventories}}{\text{Daily Operating Expenses}}$$

Note : Daily operating Expenses

$$= \frac{\text{Cost of good sold} + \text{Selling Administration and other General Expenses} - \text{Depreciation other non-cash expenditure}}{\text{No. of Days in a year}}$$

Interpretation

If for some reason all the company’s revenues were to suddenly cease, the Basic Defense Interval would help determine the number of days the company can cover its cash expenses without the aid of additional financing.

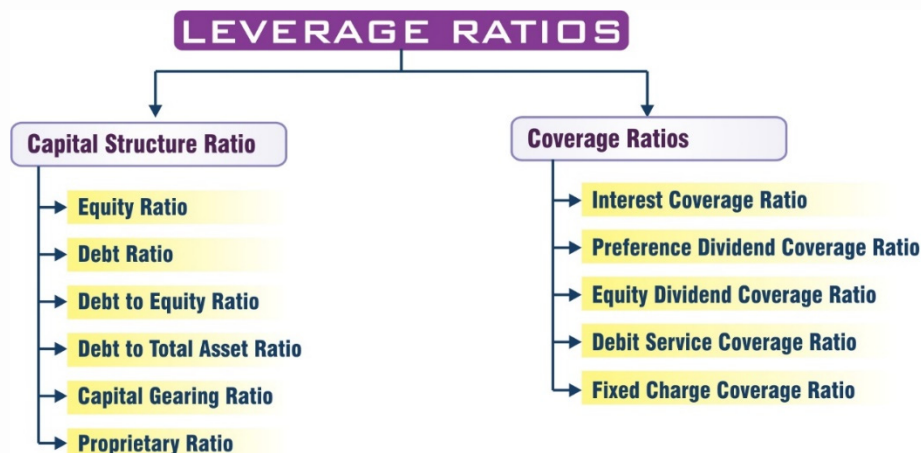
- e) **Net Working Capital Ratio:** Net working capital is more a measure of cash flow than a ratio. The result of this calculation must be a positive number.

$$\text{Net Working Capital Ratio} = \text{Current Assets} - \text{Current Liabilities}$$

2. Long-term Solvency Ratio /Leverage Ratio

The leverage ratios may be defined as those financial ratios which measure the long term stability and structure of the firm. These ratios indicate the mix of funds provided by owners and lenders and assure the lenders of the long term funds with regard to:

- (i) Periodic payment of interest and
- (ii) Repayment of principal amount



A. Capital Structure Ratios

These ratios provide an insight into the financing techniques used by a business and focus, as a consequence, on the long-term solvency position.

From the balance sheet one can get only the absolute fund employed and its sources, but only capital structure ratios show the relative weight of different sources.

a) Equity Ratio:

This ratio indicates proportion of owners' fund to total fund invested in the business. Traditionally, it is believed that higher the proportion of owners' fund lower is the degree of risk.

$$\text{Equity Ratio} = \frac{\text{Shareholders' Equity}}{\text{Capital Employed}}$$

b) Debt Ratio: It shows the proportion of interest bearing debt in the capital structure.

$$\text{Debt Ratio} = \frac{\text{Total outside Liabilities or Total Debt}}{\text{Total Debt + Net Worth}}$$

OR

$$\text{Debt Ratio} = \frac{\text{Total Debt}}{\text{Net Assets}}$$

Total debt or total outside liabilities includes

- ❖ short and long term borrowings from financial institutions,
- ❖ debentures/bonds,
- ❖ deferred payment arrangements for buying capital equipments,
- ❖ bank borrowings,
- ❖ public deposits and
- ❖ any other interest bearing loan.

Interpretation

This ratio is used to analyse the long-term solvency of a firm.

c) Debt to Equity Ratio:

$$\text{Debt to Equity Ratio} = \frac{\text{Total outside liabilities or Total Debt}}{\text{Shareholders' Equity}}$$

The shareholders' equity is

Equity Share Capital

- + reserve & surplus
- + preference share capital
- fictitious assets etc.

Interpretation

A high debt to equities ratio here means less protection for creditors, a low ratio, on the other hand, indicates a wider safety cushion.

This ratio indicates the proportion of debt fund in relation to equity.

Debt equity ratio is the indicator of firm's financial leverage.

d) Debt to Total Assets Ratio: This ratio measures the proportion of total assets financed with debt and, therefore, the extent of financial leverage.



$$\text{Debt to Total Asset Ratio} = \frac{\text{Total outside liabilities or Total Debt}}{\text{Total Assets}}$$

- e) **Capital Gearing Ratio:** Capital gearing ratio shows the proportion of fixed interest (dividend) bearing capital to funds belonging to equity shareholders i.e. equity funds or net worth.

$$\text{Capital Gearing Ratio} = \frac{\text{Preference Share Capital} + \text{Debenture} + \text{Other Borrowed Funds}}{\text{Equity Share Capital} + \text{Reserve and Surplus} - \text{Losses}}$$

- f) **Proprietary Ratio:**

$$\text{Proprietary Ratio} = \frac{\text{Proprietary Fund}}{\text{Total Assets}}$$

- ❖ **Proprietary fund includes Equity Share Capital**

+ Preference Share Capital
+ Reserve & Surplus.

- ❖ Total assets exclude fictitious assets and losses.

Interpretation

It indicates the proportion of total assets financed by shareholders.

B. Coverage Ratios:

The coverage ratios measure the firm's ability to service the fixed liabilities. These ratios establish the relationship between fixed claims and what is normally available out of which these claims are to be paid. The fixed claims consist of:

- (i) Interest on loans
- (ii) Preference dividend
- (iii) Amortisation of principal or repayment of the instalment of loans or redemption of preference capital on maturity.

- a) **Interest Coverage Ratio:** This ratio also known as "times interest earned ratio" indicates the firm's ability to meet interest (and other fixed-charges) obligations.

$$\text{Interest Coverage Ratio} = \frac{\text{EBIT}}{\text{Interest}}$$

Interpretation

- ❖ It shows the times interest charges are covered by funds that are available for their payment.
 - ❖ A high interest coverage ratio means that an enterprise can easily meet its interest obligations even if earnings before interest and taxes suffer a considerable decline.
 - ❖ A lower ratio indicates excessive use of debt or inefficient operations.
- b) **Preference Dividend Coverage Ratio:** This ratio measures the ability of a firm to pay dividend on preference shares which carry a stated rate of return.

$$\text{Preference Dividend Coverage Ratio} = \frac{\text{Net Profit or Earning after taxes or PAT}}{\text{Preference Dividend Liability}}$$



Interpretation

This ratio indicates margin of safety available to the preference shareholders. A higher ratio is desirable from preference shareholders point of view.

- c) **Equity Dividend Coverage Ratio:** It can also be calculated taking (EAT – Pref. Dividend) and equity fund figures into consideration.

$$\text{Equity Dividend Coverage Ratio} = \frac{\text{EAT} - \text{Preference Dividend}}{\text{Equity Dividend}}$$

- d) **Debt Service Coverage Ratio (DSCR):** Lenders are interested in debt service coverage to judge the firm’s ability to pay off current interest and instalments.

$$\text{Debt Service Coverage Ratio} = \frac{\text{Earning available for debt service}}{\text{Interest} + \text{Principal Repayment}}$$

Earning for debt service = Net profit (Earning after taxes)

- + Non-cash operating expenses like depreciation and other amortizations
- + Interest
- + other adjustments like loss on sale of Fixed Asset etc.

Interpretation

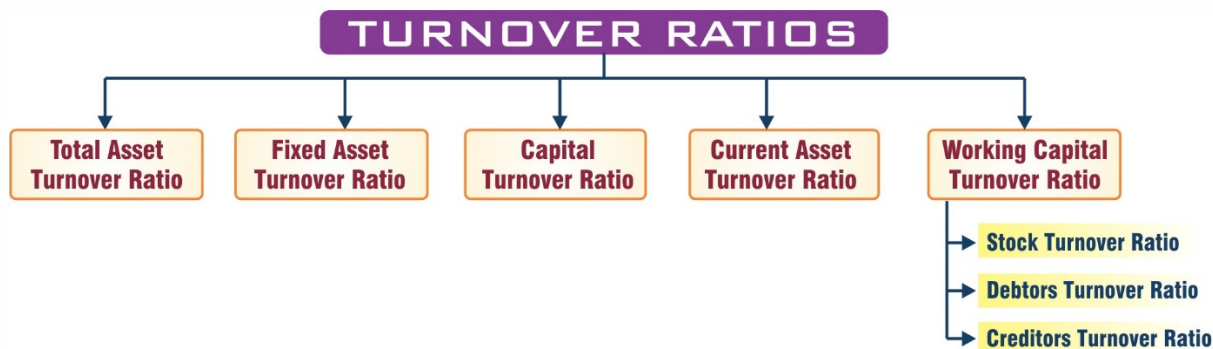
Normally DSCR of 1.5 to 2 is satisfactory. You may note that sometimes in both numerator and denominator lease rentals may be added.

- e) **Fixed Charges Coverage Ratio:** This ratio shows how many times the cash flow before interest and taxes covers all fixed financing charges. This ratio is more than 1 is considered as safe.

$$\text{Fixed Charges Coverage Ratio} = \frac{\text{EBIT} + \text{Depreciation}}{\text{Interest} + \frac{\text{Repayment of Loan}}{(1 - \text{tax rate})}}$$

3. Activity Ratio/ Efficiency Ratio/ Performance Ratio/ Turnover Ratio

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.





These ratios are usually calculated with reference to sales/cost of goods sold and are expressed in terms of rate or times.

- a) **Total Asset Turnover Ratio:** This ratio measures the efficiency with which the firm uses its total assets.

$$\text{Total Asset Turnover Ratio} = \frac{\text{Sales / Cost of Goods Sold}}{\text{Average Total Assets}}$$

- b) **Fixed Assets Turnover Ratio:** It measures the efficiency with which the firm uses its fixed assets.

$$\text{Fixed Assets Turnover Ratio} = \frac{\text{Sales / Cost of Goods Sold}}{\text{Fixed Assets}}$$

Interpretation

A high fixed assets turnover ratio indicates efficient utilisation of fixed assets in generating sales. A firm whose plant and machinery are old may show a higher fixed assets turnover ratio than the firm which has purchased them recently.

- c) **Capital Turnover Ratio/ Net Asset Turnover Ratio:**

$$\text{Capital Turnover Ratio/ Net Asset Turnover Ratio} = \frac{\text{Sales / Cost of Goods Sold}}{\text{Net Assets or Capital Employed}}$$

Interpretation

- This ratio indicates the firm's ability of generating sales/ Cost of Goods Sold per rupee of long term investment. The higher the ratio, the more efficient is the utilisation of owner's and long-term creditors' funds.
- Net Assets includes Net Fixed Assets and Net Current Assets (Current Assets – Current Liabilities). Since Net Assets equals to capital employed it is also known as Capital Turnover Ratio.

- d) **Current Assets Turnover Ratio:** It measures the efficiency using the current assets by the firm

$$\text{Current Assets Turnover Ratio} = \frac{\text{Sales / Cost of Goods Sold}}{\text{Current Assets}}$$

- e) **Working Capital Turnover Ratio:**

$$\text{Working Capital Turnover Ratio} = \frac{\text{Sales / Cost of Goods Sold}}{\text{Working Capital}}$$

Note: Average of Total Assets/ Fixed Assets/ Current Assets/ Net Assets/ Working Capital/ also can be taken.

Working Capital Turnover is further segregated into Inventory Turnover, Debtors Turnover, and Creditors Turnover.

- (i) **Inventory/ Stock Turnover Ratio:** This ratio also known as stock turnover ratio establishes the relationship between the cost of goods sold during the year and average inventory held during the year. It measures the efficiency with which a firm utilizes or manages its inventory.

$$\text{Inventory / Stock Turnover Ratio} = \frac{\text{Cost of Good Sold / Sales}}{\text{Average Inventory}}$$

$$\text{Where, Average Inventory} = \frac{\text{Opening Stock} + \text{Closing Stock}}{2}$$

$$\text{Days of Inventory Holdings (DIH)} = \frac{\text{Average Inventory}}{\text{Cost of Good Sold}} \times 360 = \frac{360}{\text{Stock turnover Ratio}}$$

In the case of inventory of raw material the inventory turnover ratio is calculated using the following formula :

$$\text{Raw Material Inventory Turnover Ratio} = \frac{\text{Raw Material Consumed}}{\text{Average Raw Material Stock}}$$

$$\text{Work-in-progress Inventory Turnover Ratio} = \frac{\text{Cost of production}}{\text{Average Work-in-progress inventory}}$$

Interpretation

This ratio indicates that how fast inventory is used or sold. A high ratio is good from the view point of liquidity and vice versa. A low ratio would indicate that inventory is not used/ sold/ lost and stays in a shelf or in the warehouse for a long time.

- (ii) **Receivables (Debtors) Turnover Ratio:** In case firm sells goods on credit, the realization of sales revenue is delayed and the receivables are created. The cash is realised from these receivables later on.

The speed with which these receivables are collected affects the liquidity position of the firm. The debtor's turnover ratio throws light on the collection and credit policies of the firm. It measures the efficiency with which management is managing its accounts receivables. It is calculated as follows:

$$\text{Debtors Turnover Ratio(DTR)} = \frac{\text{Credit Sales}}{\text{Average Accounts Receivable or Average Debtors}}$$

Receivables (Debtors') Velocity: Debtors' turnover ratio indicates the average collection period. However, the average collection period can be directly calculated as follows:

$$\text{Receivable Velocity / Average Collection Period} = \frac{\text{Average Debtors}}{\text{Credit Sales}} \times 360$$

$$\text{OR } \frac{\text{Average Debtors}}{\text{Average Daily Credit Sales}} \quad \text{OR } \frac{12 \text{ months}/52 \text{ weeks}/ 360 \text{ days}}{\text{Debtors turnover Ratio}}$$

$$\text{Average Daily Credit Sales} = \frac{\text{Credit Sales}}{\text{No.of days in a year (say 360)}}$$

Interpretation

The average collection period measures the average number of days it takes to collect an account receivable. This ratio is also referred to as the number of days of receivable and the number of day's sales in receivables.



(iii) **Payables / Creditors Turnover Ratio:** This ratio is calculated on the same lines as receivable turnover ratio is calculated. This ratio shows the velocity of payables payment by the firm. It is calculated as follows:

$$\text{Payables/ Creditors Turnover Ratio} = \frac{\text{Annual Net Credit Purchase}}{\text{Average Accounts Payables}}$$

A low creditor's turnover ratio reflects liberal credit terms granted by supplies. While a high ratio shows that accounts are settled rapidly.

$$\text{Payable Velocity/ Average payment period} = \frac{\text{Average Accounts Payables}}{\text{Annual Net Credit Purchase}} \times 360 \text{ OR}$$

$$\frac{\text{Average Account Payables}}{\text{Average Daily Credit Purchase}} \text{ OR } \frac{12 \text{ months}/52 \text{ weeks}/ 360 \text{ days}}{\text{Creditors turnover Ratio}}$$

Interpretation

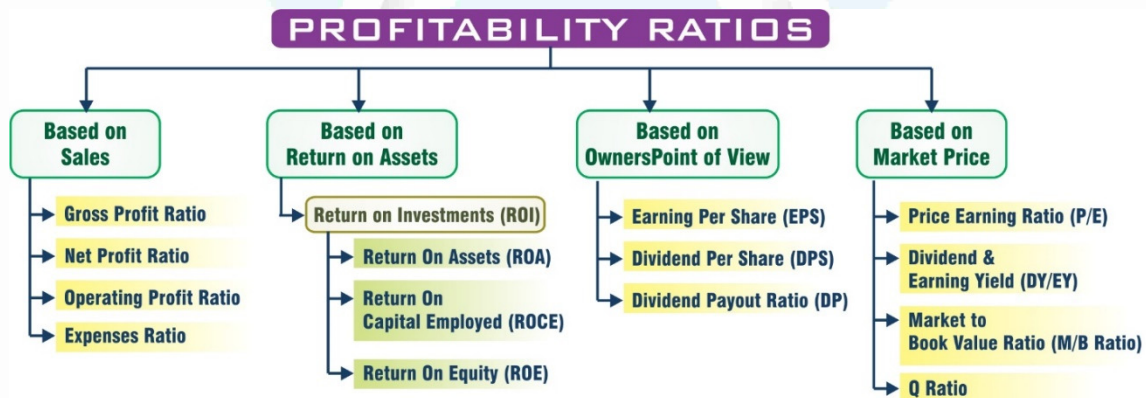
The firm can compare what credit period it receives from the suppliers and what it offers to the customers. Also it can compare the average credit period offered to the customers in the industry to which it belongs.

The above three ratios i.e. Inventory Turnover Ratio/ Receivables Turnover Ratio/Payable Turnover Ratio / is also relevant to examine liquidity of an organization.

4. Profitability Ratios

The profitability ratios measure the profitability or the operational efficiency of the firm. These ratios reflect the final results of business operations. Management attempts to maximize these ratios to maximize firm value.

The results of the firm can be evaluated in terms of its earnings with reference to a given level of assets or sales or owner's interest etc. Therefore, the profitability ratios are broadly classified in four categories:



A. Profitability Ratios based on Sales

a) **Gross Profit (G.P) Ratio/ Gross Profit Margin:** It measures the percentage of each sale in rupees remaining after payment for the goods sold.

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

$$\text{Gross Profit} = \text{Sales} - \text{Cost of Good Sold}$$



Interpretation

Gross profit margin depends on the relationship between price/ sales, volume and costs. A high Gross Profit Margin is a favourable sign of good management.

- b) **Net Profit Ratio/ Net Profit Margin:** It measures the relationship between net profit and sales of the business.

$$\text{Net Profit Ratio} = \frac{\text{Profit after Tax (PAT)}}{\text{Sales}} \times 100$$

Interpretation

Net Profit ratio finds the proportion of sales that finds its way into profits. A high net profit ratio will ensure positive returns of the business.

- c) **Operating profit ratio:**

Operating profit ratio is also calculated to evaluate operating performance of business.

$$\text{Operating profit ratio} = \frac{\text{Operating Profit OR EBIT}}{\text{Sales}} \times 100$$

Where,

Operating Profit = Sales – Operating Cost

Operating Cost = COGS + Admin Exp + S & D

EBIT = Earning before interest and tax

Interpretation

Operating profit ratio measures the percentage of each sale in rupees that remains after the payment of all costs and expenses except for interest and taxes. This ratio is followed closely by analysts because it focuses on operating results.

- d) **Expenses Ratio:** Based on different concepts of expenses it can be expressed in different variants as below:

$$(i) \text{ Cost of Good Sold (COGS) Ratio} = \frac{\text{COGS}}{\text{Sales}} \times 100$$

$$(ii) \text{ Operating Expense Ratio} = \frac{\text{COGS} + \text{Operating expenses}}{\text{Sales}} \times 100$$

$$(iii) \text{ Financial Expense Ratio} = \frac{\text{Financial Expenses}}{\text{Sales}} \times 100$$

B. Profitability Ratios related to Overall Return on Assets/ Investments

- a) **Return on Investment (ROI):** ROI is the most important ratio of all. It is the percentage of return on funds invested in the business by its owners. In short, this ratio tells the owner whether or not all the effort put into the business has been worthwhile. It compares earnings/ returns/ profit with the investment in the company.

$$\text{Return on Investment (ROI)} = \frac{\text{Return / Profit / Earnings}}{\text{Investments}} \times 100$$

The concept of investment varies and accordingly there are three broad categories of ROI i.e.

- (i) Return on Assets (ROA),
- (ii) Return on Capital Employed (ROCE) and
- (iii) Return on Equity (ROE).



- (i) **Return on Assets (ROA):** The profitability ratio is measured in terms of relationship between net profits and assets employed to earn that profit. This ratio measures the profitability of the firm in terms of assets employed in the firm. Based on various concepts of net profit (return) and assets the ROA may be measured as follows:

$$\text{Return on Assets (ROA)} = \frac{\text{Net Profit after taxes}}{\text{Total assets}} \times 100$$

Here net profit is exclusive of interest. As Assets are also financed by lenders, hence ROA can be calculated as:

$$\text{ROTA (Return on Total Assets)} = \frac{\text{EBIT (1-Tax)}}{\text{Average total assets}} \times 100$$

- (ii) **Return on Capital Employed (ROCE):** It is another variation of ROI.

$$\text{Return on Capital Employed (ROCE) (Post-Tax)} = \frac{\text{EBIT (1-Tax)}}{\text{Capital Employed}} \times 100$$

Where,

Capital Employed = Total Assets – Current Liabilities, or
= Fixed Assets + Working Capital

ROCE should always be higher than the rate at which the company borrows. Intangible assets (assets which have no physical existence like goodwill, patents and trade-marks) should be included in the capital employed. But no fictitious asset should be included within capital employed. If information is available then average capital employed shall be taken.

- (iii) **Return on Equity (ROE):** Return on Equity measures the profitability of equity funds invested in the firm. This ratio reveals how profitably of the owners' funds have been utilised by the firm. It also measures the percentage return generated to equity shareholders. This ratio is computed as:

$$\text{Return on Equity (ROE)} = \frac{\text{Net Profit after taxes} - \text{Preferences Dividend (if any)}}{\text{Net worth or equity shareholders fund}} \times 100$$

- ❖ Return on equity is one of the most important indicators of a firm's profitability and potential growth. Companies that boast a high return on equity with little or no debt are able to grow without large capital expenditures, allowing the owners of the business to withdraw cash and reinvest it elsewhere.
- ❖ Many investors fail to realize, however, that two companies can have the same return on equity, yet one can be a much better business. If return on total shareholders is calculated then Net Profit after taxes (before preference dividend) shall be divided by total shareholders' fund includes preference share capital.

Return on Equity using the Du Pont Model:

- ❖ There are various components in the calculation of return on equity using the 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.



- (i) **Profitability/Net Profit Margin:** The net profit margin is simply the after-tax profit a company generates for each rupee of revenue. Net profit margins vary across industries, making it important to compare a potential investment against its competitors.

$$\text{Net Profit Ratio} = \frac{\text{Profit after Tax (PAT)}}{\text{Sales}}$$

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

$$\text{Total Asset Turnover Ratio} = \frac{\text{Sales}}{\text{Total Assets}}$$

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. The result is that the investor can compare companies using different models (low-profit, high-volume vs. high-profit, low-volume) and determine which one is the more attractive business.

- (iii) **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:

$$\text{Equity Multiplier} = \frac{\text{Total Assets}}{\text{Shareholder's Equity}}$$

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.)

$$\text{Return on Equity} = \frac{\text{Profit after Tax (PAT)}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Total Assets}} \times \frac{\text{Total Assets}}{\text{Shareholder's Equity}}$$

C. Profitability Ratios Required for Analysis from Owner's Point of View

- a) **Earnings per Share (EPS):** The profitability of a firm from the point of view of ordinary shareholders can be measured in terms of number of equity shares. This is known as Earnings per share. It is calculated as follows:

$$\text{EPS} = \frac{\text{Total earning available to equity shareholders}}{\text{Total number of equity shares}}$$

- b) **Dividend per Share (DPS):** Dividend per share ratio indicates the amount of profit distributed to equity shareholders per share. It is calculated as:

$$\text{DPS} = \frac{\text{Total dividend paid to equity shareholders}}{\text{Total number of equity shares}}$$

- c) **Dividend Payout Ratio (DP):** This ratio measures the dividend paid in relation to net earnings. It is determined to see to how much extent earnings per share have been retained by the management for the business. It is computed as:



$$\text{Dividend pay-out Ratio} = \frac{\text{Dividend per share}}{\text{Earning per share}} \times 100$$

D. Profitability Ratios related to market/ valuation/ Investors

These ratios involve measures that consider the market value of the company's shares. Frequently share prices data are punched with the accounting data to generate new set of information.

These are (a) Price- Earnings Ratio, (b) Dividend Yield, (c) Market Value/ Book Value per share, (d) Q Ratio.

a) **Price- Earnings Ratio (P/E Ratio)**: The price earnings ratio indicates the firm's performance as expected by investors. It indicates investor's judgement about the firm's performance. It is calculated as

$$\text{P/E Ratio} = \frac{\text{MPS}}{\text{EPS}}$$

b) **Dividend and Earning Yield:**

$$\text{Dividend Yield} = \frac{\text{Dividend per share}}{\text{Market price per share}} \times 100$$

$$\text{Earning Yield} = \frac{\text{Earning per share}}{\text{Market Price per share}} \times 100$$

Interpretation

This ratio indicates return on investment. Yield (%) is the indicator of true return in which share capital is taken at its market value.

c) **Market Value to Book Value Ratio (MVBV)**: It provides evaluation of how investors view the company's past and future performance

$$\text{M/B Ratio} = \frac{\text{Market Value per share}}{\text{Book Value per share}}$$

Interpretation

This ratio indicates market response of the shareholders' investment. Undoubtedly, higher the ratios better is the shareholders' position in terms of return and capital gains.

d) **Q Ratio**: This ratio is proposed by James Tobin, a ratio is defined as

$$\text{Q Ratio} = \frac{\text{Market Value of Assets (Equity \& Liabilities)}}{\text{Estimated Replacement Cost of Assets}}$$

QUESTION NO. 1

In a meeting held at Solan towards the end of 2019-20, the Directors of HPCL Ltd. have taken a decision to diversify. At present HPCL Ltd. sells all finished goods from its own warehouse. The company issued debentures on 01.04.2020 and purchased fixed assets on the same day. The purchase prices have remained stable during the concerned period. Following information is provided to you:

INCOME STATEMENT

Particulars	2019-20 (₹)		2020-21 (₹)	
Cash Sales	30,000		32,000	
Credit Sales	2,70,000	3,00,000	3,42,000	3,74,000
Less: Cost of goods sold		2,36,000		2,98,000
Gross profit		64,000		76,000
Less: Operating Expenses:				
Warehousing	13,000		14,000	
Transport	6,000		10,000	
Administrative	19,000		19,000	
Selling	11,000	49,000	14,000	57,000
Net Profit		15,000		19,000

BALANCE SHEET

Assets & Liabilities	2019-20 (₹)		2020-21 (₹)	
Fixed Assets (Net Block)	-	30,000	-	40,000
Receivables	50,000		82,000	
Cash at Bank	10,000		7,000	
Stock	60,000		94,000	
Total Current Assets (CA)	1,20,000		1,83,000	
Payables	50,000		76,000	
Total Current Liabilities (CL)	50,000		76,000	
Working Capital (CA - CL)		70,000		1,07,000
Net Assets		1,00,000		1,47,000
Represented by:				
Share Capital		75,000		75,000
Reserve and Surplus		25,000		42,000
Debentures		-		30,000
		1,00,000		1,47,000

You are required to CALCULATE the following ratios for the years 2019-20 and 2020-21:

- (i) Gross Profit Ratio
- (ii) Operating Expenses to Sales Ratio
- (iii) Operating Profit Ratio
- (iv) Capital Turnover Ratio
- (v) Stock Turnover Ratio
- (vi) Net Profit to Net Worth Ratio
- (vii) Receivables Collection Period

Ratio relating to capital employed should be based on the capital at the end of the year. Give the reasons for change in the ratios for 2 years. Assume opening stock of ₹ 40,000 for the year 2019-20. Ignore Taxation.

QUESTION NO. 2

Following is the abridged Balance Sheet of Alpha Ltd.:-

Liabilities	₹	Assets	₹	₹
Share Capital	1,00,000	Land and Buildings		80,000



Profit and Loss Account	17,000	Plant and Machineries Less: Depreciation	50,000 15,000	35,000
Current Liabilities	40,000			
		Stock	21,000	
		Debtors	20,000	
		Bank	1,000	42,000
Total	1,57,000	Total		1,57,000

With the help of the additional information furnished below, you are required to prepare Trading and Profit & Loss Account and a Balance Sheet as at 31st March, 2021:

- (i) The company went in for reorganisation of capital structure, with share capital remaining the same as follows:

Share capital	50%
Other Shareholders' funds	15%
5% Debentures	10%
Trade Creditors	25%

Debentures were issued on 1st April, interest being paid annually on 31st March.

- (ii) Land and Buildings remained unchanged. Additional plant and machinery has been bought and a further ₹ 5,000 depreciation written off.
- (iii) (The total fixed assets then constituted 60% of total gross fixed and current assets.)
- (iv) Working capital ratio was 8 : 5.
- (v) Quick assets ratio was 1 : 1.
- (vi) The debtors (four-fifth of the quick assets) to sales ratio revealed a credit period of 2 months. There were no cash sales.
- (vii) Return on net worth was 10%.
- (viii) Gross profit was at the rate of 15% of selling price.
- (ix) Stock turnover was eight times for the year. Ignore Taxation.

QUESTION NO. 3

X Co. has made plans for the next year. It is estimated that the company will employ total assets of ₹8,00,000; 50 per cent of the assets being financed by borrowed capital at an interest cost of 8 per cent per year. The direct costs for the year are estimated at ₹4,80,000 and all other operating expenses are estimated at ₹ 80,000. the goods will be sold to customers at 150 per cent of the direct costs. Tax rate is assumed to be 50 per cent. **You are required** to calculate:

- (i) net profit margin;
- (ii) return on assets;
- (iii) asset turnover and
- (iv) return on owners' equity.

QUESTION NO. 4

ABC Company sells plumbing fixtures on terms of 2/10, net 30. Its financial statements over the last 3 years are as follows:

	2018-19	2019-20	2020-21
Cash	30,000	20,000	5,000
Accounts receivable	2,00,000	2,60,000	2,90,000
Inventory	4,00,000	4,80,000	6,00,000
Net fixed assets	8,00,000	8,00,000	8,00,000
Total	14,30,000	15,60,000	16,95,000
Accounts payable	2,30,000	3,00,000	3,80,000
Accruals	2,00,000	2,10,000	2,25,000



Bank loan, short-term	1,00,000	1,00,000	1,40,000
Long-term debt	3,00,000	3,00,000	3,00,000
Common stock	1,00,000	1,00,000	1,00,000
Retained earnings	5,00,000	5,50,000	5,50,000
Total	14,30,000	15,60,000	16,95,000
Sales	40,00,000	43,00,000	38,00,000
Cost of goods sold	32,00,000	36,00,000	33,00,000
Net profit	3,00,000	2,00,000	1,00,000

Considering opening balance of Accounts Receivable and Inventory as 2,00,000 and 4,00,000 respectively as on 01.04.2018, ANALYSE the company's financial condition and performance over the last 3 years. Are there any problems?

QUESTION NO. 5

The capital structure of Beta Limited is as follows:

Equity share capital of ₹ 10 each	8,00,000
9% preference share capital of ₹ 10 each	3,00,000
	11,00,000

Additional information: Profit (after tax at 35 per cent), ₹ 2,70,000; Depreciation, ₹ 60,000; Equity dividend paid, 20 per cent; Market price of equity shares, ₹ 40.

You are required to compute the following, showing the necessary workings:

- Dividend yield on the equity shares
- Cover for the preference and equity dividends
- Earnings per shares
- Price-earnings ratio.

QUESTION NO. 6

The following accounting information and financial ratios of PQR Ltd. relate to the year ended 31st March, 2021:

I	Accounting Information:	
	Gross Profit	15% of Sales
	Net profit	8% of sales
	Raw materials consumed	20% of works cost
	Direct wages	10% of works cost
	Stock of raw materials	3 months' usage
	Stock of finished goods	6% of works cost
	Debt collection period	60 days
	All sales are on credit	
II	Financial Ratios:	
	Fixed assets to sales	1:3
	Fixed assets to Current assets	13:11
	Current ratio	2:1
	Long-term loans to Current liabilities	2:1
	Capital to Reserves and Surplus	1:4

If value of fixed assets as on 31st March, 2020 amounted to ₹ 26 lakhs, prepare a summarised Profit and Loss Account of the company for the year ended 31st March, 2021 and also the Balance Sheet as on 31st March, 2021.

QUESTION NO. 7

The total sales (all credit) of a firm are ₹ 6,40,000. It has a gross profit margin of 15 per cent and a current ratio of 2.5. The firm's current liabilities are ₹ 96,000; inventories ₹ 48,000 and cash ₹ 16,000.



- (a) Determine the average inventory to be carried by the firm, if an inventory turnover of 5 times is expected? (Assume a 360 day year).
- (b) Determine the average collection period if the opening balance of debtors is intended to be of ₹80,000? (Assume a 360 day year).

QUESTION NO. 8

Ganpati Limited has furnished the following ratios and information relating to the year ended 31st March, 2021.

Sales	₹ 60,00,000
Return on net worth	25%
Rate of income tax	50%
Share capital to reserves	7:3
Current ratio	2
Net profit to sales	6.25%
Inventory turnover (based on cost of goods sold)	12
Cost of goods sold	₹ 18,00,000
Interest on debentures	₹ 60,000
Sundry debtors	₹ 2,00,000
Sundry creditors	₹ 2,00,000

You are required to:

- a) Calculate the operating expenses for the year ended 31st March, 2021.
- b) Prepare a balance sheet as on 31st March in the following format:

Balance Sheet as on 31st March, 2021

Liabilities	₹	Assets	₹
Share Capital	.....	Fixed Assets	.....
Reserve and Surplus	.....	
15% Debentures	.....	Current Assets	.....
Sundry Creditors	.....	Stock	.....
		Debtors	.....
		Cash	.....
Total	.....	Total	.....

QUESTION NO. 9

Using the following information, complete this balance sheet:

Long-term debt to net worth	0.5
Total asset turnover	2.5
Average collection period*	18 days
Inventory turnover	9
Gross profit margin	10%
Acid-test ratio	1

*Assume a 360-day year and all sales on credit.

	₹		₹
Cash	.....	Notes and payables	1,00,000
Accounts receivable	.....	Long-term debt	.....
Inventory	.....	Common stock	1,00,000
Plant and equipment	.....	Retained earnings	1,00,000
Total Assets	.....	Total Liabilities and Equity	.....

QUESTION NO. 10

Following information has been provided from the books of Laxmi Pvt. Ltd. for the year ending on 31st March, 2021:



Working Capital	₹ 4,80,000
Bank overdraft	₹ 80,000
Fixed Assets to Proprietary ratio	0.75
Reserves and Surplus	₹ 3,20,000
Current ratio	2.5
Liquid ratio	1.5

You are required to PREPARE a summarised Balance Sheet as at 31st March, 2021 assuming that there is no long term debt.

QUESTION NO. 11

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

QUESTION NO. 12

MT Limited has the following Balance Sheet as on March 31, 2019 and March 31, 2020: Balance Sheet

	₹ in lakhs	
	March 31, 2019	March 31, 2020
Sources of Funds:		
Shareholders' Funds	2,500	2,500
Loan Funds	3,500	3,000
	6,000	5,500
Applications of Funds:		
Fixed Assets	3,500	3,000
Cash and bank	450	400
Receivables	1,400	1,100
Inventories	2,500	2,000
Other Current Assets	1,500	1,000
Less: Current Liabilities	(1,850)	(2,000)
	6,000	5,500

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

	₹ in lakhs	
	March 31, 2019	March 31, 2020
Sales	22,500	23,800
Less: Cost of Goods sold	(20,860)	(21,100)
Gross Profit	1,640	2,700
Less: Selling, General and Administrative expenses	(1,100)	(1,750)
Earnings before Interest and Tax (EBIT)	540	950
Less: Interest Expense	(350)	(300)
Earnings before Tax (EBT)	190	650
Less: Tax	(57)	(195)
Profits after Tax (PAT)	133	455

**QUESTION NO. 13**

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

Total debt to net worth	1 : 2
Total assets turnover	2
Gross profit on sales	30%
Average collection period (Assume 360 days in a year)	40 days
Inventory turnover ratio based on cost of goods sold and year-end inventory	3
Acid test ratio	0.75

Balance Sheet as on March 31, 20X8

Liabilities	₹	Assets	₹
Equity Shares Capital	4,00,000	Plant and Machinery and other Fixed Assets	—
Reserves and Surplus	6,00,000	Current Assets:	
Total Debt:		Inventory	—
Current Liabilities	—	Debtors	—
		Cash	—
Total		Total	

QUESTION NO. 14

Manan Pvt. Ltd. gives you the following information relating to the year ending 31st March, 2021:

1	Current Ratio	2.5 : 1
2	Debt-Equity Ratio	1 : 1.5
3	Return on Total Assets (After Tax)	15%
4	Total Assets Turnover Ratio	2
5	Gross Profit Ratio	20%
6	Stock Turnover Ratio	7
7	Net Working Capital	₹ 13,50,000
8	Fixed Assets	₹ 30,00,000
9	1,80,000 Equity Shares of ₹ 10 each	
10	60,000, 9% Preference Shares of ₹ 10 each	
11	Opening Stock	₹ 11,40,000

You are required to CALCULATE:

- Quick Ratio
- Fixed Assets Turnover Ratio
- Proprietary Ratio
- Earnings per Share

QUESTION NO. 15

MNP Limited has made plans for the next year 2019 -20. It is estimated that the company will employ total assets of ₹50,00,000; 30% of assets being financed by debt at an interest cost of 9% p.a. The direct costs for the year are estimated at ₹30,00,000 and all other operating expenses are estimated at ₹4,80,000. The sales revenue are estimated at ₹45,00,000. Tax rate is assumed to be 40%. Required to calculate:

- Net profit margin;
- Return on Assets;
- Asset turnover; and
- Return on Equity.

QUESTION NO. 16

The following accounting information and financial ratios of M Limited relate to the year ended 1st March, 2021:

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 ₹ 6,00,00,000; cash sales 25% of credit sales; cash purchases ₹46,00,000; working capital ₹ 56,00,000; closing inventory is ₹16,00,000 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.

QUESTION NO. 17

SN Ltd. has furnished the following ratios and information relating to the year ended 31st March 2021:

Share Capital ₹ 6,25,000

Working Capital ₹ 2,00,000

Gross Margin 25%

Inventory Turnover 5 times

Average Collection Period 1.5 months

Current Ratio 1.5:1

Quick Ratio 0.7:1

Reserves & Surplus to Bank & Cash 3 times

Further, the assets of the company consist of fixed assets and current assets, while its current liabilities comprise bank credit and others in the ratio of 3:1. Assume 360 days in a year.

You are required to PREPARE the Balance Sheet as on 31st March 2021.

(Note- Balance sheet may be prepared in traditional T Format.)

QUESTION NO. 18

Following information relate to a concern:

Debtors Velocity	3 months
Creditors velocity	2 months
Stock Turnover Ratio	1.5
Gross Profit Ratio	25%
Bills Receivable	₹ 25,000
Bills Payables	₹ 10,000
Gross Profit	₹ 4,00,000
Fixed Assets to turnover Ratio	4

Closing stock of the period is ₹ 10,000 above the opening stock. Find out:

- (i) Sales and cost of goods sold
- (ii) Sundry Debtors
- (iii) Sundry Creditors
- (iv) Closing Stock
- (v) Fixed Assets



QUESTION NO. 19

G Ltd. has furnished the following information relating to the year ended 31st March, 2020 and 31st March, 2021:

	31st March, 2020	31st March, 2021
Share Capital	40,00,000	40,00,000
Reserve and Surplus	20,00,000	25,00,000
Long term loan	30,00,000	30,00,000

- Net profit ratio: 8%
- Gross profit ratio: 20%
- Long-term loan has been used to finance 40% of the fixed assets.
- Stock turnover with respect to cost of goods sold is 4.
- Debtors represent 90 days sales.
- The company holds cash equivalent to 1½ months cost of goods sold.
- Ignore taxation and assume 360 days in a year.

You are required to prepare Balance Sheet as on 31st March, 2021 in following format:

Liabilities	(₹)	Assets	(₹)
Share Capital	.....	Fixed Assets	.....
Reserve and Surplus	.....	Sundry Debtors	.....
Long-term loan	.....	Closing Stock	.....
Sundry Creditors	.....	Cash in hand	.....

QUESTION NO. 20

With the following ratios and further information given below prepare a Trading Account, Profit and Loss Account and Balance Sheet of ABC Company.

Fixed Assets	₹ 40,00,000
Closing Stock	₹ 4,00,000
Stock turnover ratio	10
Gross profit ratio	25 percent
Net profit ratio	20 percent
Net profit to capital	1/5
Capital to total liabilities	1/2
Fixed assets to capital	5/4
Fixed assets/Total current assets	5/7

QUESTION NO. 21

Based on the following particulars show various assets and liabilities of T Ltd.

Fixed assets turnover ratio	8 times
Capital turnover ratio	2 times
Inventory Turnover	8 times
Receivable turnover	4 times
Payable turnover	6 times
GP Ratio	25%

Gross profit during the year amounts to ₹8,00,000. There is no long-term loan or overdraft. Reserve and surplus amount to ₹2,00,000. Ending inventory of the year is ₹ 20,000 above the beginning inventory.

Required:

CALCULATE various assets and liabilities and PREPARE a Balance sheet of Tirupati Ltd.

QUESTION NO. 22

From the following table of financial ratios of R. Textiles Limited, comment on various ratios given at the end:

Ratios	2017	2018	Average of Textile Industry
Liquidity Ratios			
Current ratio	2.2	2.5	2.5
Quick ratio	1.5	2	1.5
Receivable turnover ratio	6	6	6
Inventory turnover	9	10	6
Receivables collection period	87 days	86 days	85 days
Operating profitability			
Operating income –ROI	25%	22%	15%
Operating profit margin	19%	19%	10%
Financing decisions			
Debt ratio	49.00%	48.00%	57%
Return			
Return on equity	24%	25%	15%

COMMENT on the following aspect of R. Textiles Limited

- (i) Liquidity
- (ii) Operating profits
- (iii) Financing
- (iv) Return to the shareholders

QUESTION NO. 23

Assuming the current ratio of a Company is 2, STATE in each of the following cases whether the ratio will improve or decline or will have no change:

- (i) Payment of current liability
- (ii) Purchase of fixed assets by cash
- (iii) Cash collected from Customers
- (iv) Bills receivable dishonoured
- (v) Issue of new shares

QUESTION NO. 24

The following is the information of XML Ltd. relate to the year ended 31-03-2018 :

Gross Profit	20% of Sales
Net Profit	10% of Sales
Inventory Holding period	3 months
Receivable collection period	3 months
Non-Current Assets to Sales	1 : 4
Non-Current Assets to Current Assets	1 : 2
Current Ratio	2 : 1
Non-Current Liabilities to Current Liabilities	1 : 1
Share Capital to Reserve and Surplus	4 : 1
Non-current Assets as on 31st March, 2017	₹ 50,00,000
Assume that:	

- (i) No change in Non-Current Assets during the year 2017-18
- (ii) No depreciation charged on Non-Current Assets during the year 2017-18.
- (iii) Ignoring Tax



QUESTION NO. 25

From the following ratios and information given below, PREPARE Trading Account, Profit and Loss Account and Balance Sheet of Aebece Company:

Fixed Assets	₹ 40,00,000
Closing Stock	₹ 4,00,000
Stock turnover ratio	10
Gross profit ratio	25 percent
Net profit ratio	20 percent
Net profit to capital	1/5
Capital to total liabilities	1/2
Fixed assets to capital	5/4
Fixed assets/Total current assets	5/7

QUESTION NO. 26

Following information are available for Navya Ltd. along with various ratios relevant to the particular industry it belongs to. APPRAISE your comments on strength and weakness of Navya Ltd. comparing its ratios with the given industry norms.

Navya Ltd. - Balance Sheet as at 31.3.2021

Liabilities	Amount (₹)	Assets	Amount (₹)
Equity Share Capital	48,00,000	Fixed Assets	24,20,000
10% Debentures	9,20,000	Cash	8,80,000
Sundry Creditors	6,60,000	Sundry debtors	11,00,000
Bills Payable	8,80,000	Stock	33,00,000
Other current Liabilities	4,40,000		-
Total	77,00,000	Total	77,00,000

Statement of Profitability For the year ending 31.3.2021

Particulars	Amount (₹)	Amount (₹)
Sales		1,10,00,000
Less: Cost of goods sold:		
Material	41,80,000	
Wages	26,40,000	
Factory Overhead	12,98,000	81,18,000
Gross Profit		28,82,000
Less: Selling and Distribution Cost	11,00,000	
Administrative Cost	12,28,000	23,28,000
Earnings before Interest and Taxes		5,54,000
Less: Interest Charges		92,000
Earning before Tax		4,62,000
Less: Taxes @ 50%		2,31,000
Net Profit (PAT)		2,31,000

Industry Norms

Ratios	Norm
Current Ratio	2.5
Receivables Turnover Ratio	8.0
Inventory Turnover Ratio (based on Sales)	9.0
Total Assets Turnover Ratio	2.0
Net Profit Ratio	3.5%
Return on Total Assets (on EBIT)	7.0%
Return on Net worth (Based on Net profit)	10.5%
Total Debt/Total Assets	60.0%

QUESTION NO. 27

The following is the Profit and loss account and Balance sheet of KLM LLP.

Trading and Profit & Loss Account

Particulars	Amount (₹)	Particulars	Amount (₹)
To Opening stock	12,46,000	By Sales	1,96,56,000
To Purchases	1,56,20,000	By Closing stock	14,28,000
To Gross profit c/d	42,18,000		
	2,10,84,000		2,10,84,000
		By Gross profit b/d	42,18,000
To Administrative expenses	18,40,000	By Interest on investment	24,600
To Selling & distribution expenses	7,56,000	By Dividend received	22,000
To Interest on loan	2,60,000		
To Net profit	14,08,600		
	42,64,600		42,64,600

Balance Sheet as on.....

Capital & Liabilities	Amount (₹)	Assets	Amount (₹)
Capital	20,00,000	Plant & machinery	24,00,000
Retained earnings	42,00,000	Building	42,00,000
General reserve	12,00,000	Furniture	12,00,000
Term loan from bank	26,00,000	Sundry receivables	13,50,000
Sundry Payables	7,20,000	Inventory	14,28,000
Other liabilities	2,80,000	Cash & Bank balance	4,22,000
	1,10,00,000		1,10,00,000

You are required to COMPUTE:

- | | | |
|-----------------------------|--------------------------------|---------------------------------|
| (i) Gross profit ratio | (ii) Net profit ratio | (iii) Operating cost ratio |
| (iv) Operating profit ratio | (v) Inventory turnover ratio | (vi) Current ratio |
| (vii) Quick ratio | (viii) Interest coverage ratio | (ix) Return on capital employed |
| (x) Debt to assets ratio. | | |

QUESTION NO. 28

Given below are the estimations for the next year by Niti Ltd.:

Particulars	(₹ in crores)
Fixed Assets	5.20
Current Liabilities	4.68
Current Assets	7.80
Sales	23.00
EBIT	2.30

The company will issue equity funds of ₹ 5 crores in the next year. It is also considering the debt alternatives of ₹ 3.32 crores for financing the assets. The company wants to adopt one of the policies given below:

(₹ in crores)

Financing Policy	Short term debt @ 12%	Long term debt @ 16%	Total
Conservative	1.08	2.24	3.32
Moderate	2.00	1.32	3.32
Aggressive	3.00	0.32	3.32

Assuming corporate tax rate at 30%, CALCULATE the following for each of the financing policy:

- Return on total assets
- Return on owner's equity
- Net Working capital
- Current Ratio

Also advise which Financing policy should be adopted if the company wants high returns.

**QUESTION NO. 29**

Following information has been gathered from the books of Cram Ltd. for the year ended 31st March 2021, the equity shares of which is trading in the stock market at ₹ 28:

Particulars	Amount (₹)
Equity Share Capital (Face value @ ₹ 20)	20,00,000
10% Preference Share capital	4,00,000
Reserves & Surplus	16,00,000
12.5% Debentures	12,00,000
Profit before Interest and Tax for the year	8,00,000

CALCULATE the following when company falls within 25% tax bracket:

- Return on Capital Employed
- Earnings Per share
- P/E Ratio

QUESTION NO. 30

Following information has been gathered from the books of Tram Ltd. the equity shares of which is trading in the stock market at ₹ 14.

Particulars	Amount (₹)
Equity Share Capital (face value ₹ 10)	10,00,000
10% Preference Shares	2,00,000
Reserves	8,00,000
10% Debentures	6,00,000
Profit before Interest and Tax for the year	4,00,000
Interest	60,000
Profit after Tax for the year	2,40,000

Calculate the following:

- Return on Capital Employed
- Earnings per share
- PE ratio

QUESTION NO. 31

Following information relates to RM Co. Ltd.

	(₹)
Total Assets employed	10,00,000
Direct Cost	5,50,000
Other Operating Cost	90,000

Goods are sold to the customers at 150% of direct costs.

50% of the assets being financed by borrowed capital at an interest cost of 8% per annum. Tax rate is 30%.

You are required to calculate :

- Net profit margin
- Return on Assets
- Asset turnover

Return on owners' equity

QUESTION NO. 32

From the following information, complete the Balance Sheet given below:

(i) Equity Share Capital	:	₹ 2,00,000
(ii) Total debt to owner's equity	:	0.75
(iii) Total Assets turnover	:	2 times
(iv) Inventory turnover	:	8 times

(v) Fixed Assets to owner's equity :	0.60
(vi) Current debt to total debt :	0.40

Balance Sheet of XYZ Co. as on March 31, 2020

Liabilities	Amount (₹)	Assets	Amount (₹)
Equity Shares Capital	2,00,000	Fixed Assets	?
Long term Debt	?	Current Assets:	
Current Debt	?	Inventory	?
		Cash	?

QUESTION NO. 33

Masco Limited has furnished the following ratios and information relating to the year ended 31st March 2021:

Sales	₹ 75,00,000
Return on net worth	25%
Rate of income tax	50%
Share capital to reserves	6:4
Current ratio	2.5
Net profit to sales (After Income Tax)	6.50%
Inventory turnover (based on cost of goods sold)	12
Cost of goods sold	₹ 22,50,000
Interest on debentures	₹ 75,000
Receivables (includes debtors ₹ 1,25,000)	₹ 2,00,000
Payables	₹ 2,50,000
Bank Overdraft	₹ 1,50,000

You are required to:

- Calculate the operating expenses for the year ended 31st March, 2021.
- Prepare a balance sheet as on 31st March in the following format:

Liabilities	₹	Assets	₹
Share Capital		Fixed Assets	
Reserves and Surplus		Current Assets	
15% Debentures		Stock	
Payables		Receivables	
Bank Term Loan		Cash	

QUESTION NO. 34

From the following information, PREPARE a summarised Balance Sheet as at 31st March, 20X6:

Working Capital	₹2,40,000
Bank overdraft	₹40,000
Fixed Assets to Proprietary ratio	0.75
Reserves and Surplus	₹1,60,000
Current ratio	2.5
Liquid ratio	1.5

QUESTION NO. 35

Using the information given below, PREPARE the Balance Sheet of SKY Private Limited:

(i)	Current ratio	1.6 : 1
(ii)	Cash and Bank balance	15% of total current assets
(iii)	Debtors turnover ratio	12 times
(iv)	Stock turnover (cost of goods sold) ratio	16 times



(v)	Creditors turnover (cost of goods sold) ratio	10 times
(vi)	Gross profit ratio	20%
(vii)	Capital gearing ratio	0.6
(viii)	Depreciation rate	15% on W.D.V.
(ix)	Net fixed Assets	20% of total assets

(Assume all purchase and sales are on credit)

Balance Sheet of SKY Private Limited as at 31.03.2020

Liabilities		Amount in ₹	Assets		Amount in ₹
Share Capital		25,00,000	Fixed assets		
Reserve & surplus		?	Opening WDV		?
12% Long term debt		?	Less: Depreciation		?
Current liabilities			Current Assets		
Creditors	?		Stock		?
Provisions & outstanding expenses	?	68,50,000	Debtors		?
			Cash and bank balance		?
Total		?	Total		?

(Detailed working notes are not required to be shown)

QUESTION NO. 36

XYZ Ltd. has Owner's equity of ₹ 2,00,000 and the ratios of the company are as follows:

Current debt to total debt	0.3
Total debt to Owner's equity	0.5
Fixed assets to Owner's equity	0.6
Total assets turnover Inventory	2 times
Turnover	10 times

COMPLETE the following Balance Sheet from the information given above:

Liabilities	(₹)	Assets	(₹)
Current Debt	-	Cash	-
Long-term Debt	-	Inventory	-
Total Debt	-	Total Current Assets	-
Owner's Equity	-	Fixed Assets	-

QUESTION NO. 37

ABC Ltd. has total sales of 10,00,000 all of which are credit sales. It has a gross profit ratio of 25% and a current ratio of 2. The company's current liabilities are ₹ 2,00,000. Further, it has inventories of ₹ 80,000, marketable securities of ₹ 50,000 and cash of ₹ 30,000. From the above information:

- CALCULATE the average inventory, if the expected inventory turnover ratio is three times?
- Also CALCULATE the average collection period if the opening balance of debtors is expected to be ₹ 1,50,000.

Assume 360 days a year.

QUESTION NO. 38

Using the information given below, complete the Balance Sheet of PQR Private Limited:

(i)	Current ratio	1.6 : 1
(ii)	Cash and Bank balance	15% of total current assets
(iii)	Debtors turnover ratio	12 times
(iv)	Stock turnover (cost of goods sold) ratio	16 times

(v)	Creditors turnover (cost of goods sold) ratio	10 times
(vi)	Gross Profit ratio	20%
(vii)	Capital Gearing ratio	0.6
(viii)	Depreciation rate	15% on W.D.V.
(ix)	Net Fixed Assets	20% of total assets

(Assume all purchase and sales are on credit)

Balance Sheet of PQR Private Limited as at 31.03.2019

Liabilities	₹	Assets	₹
Share Capital	25,00,000	Fixed Assets	
Reserve & surplus	?	Opening WDV	?
12% Long term debt	?	Less: Depreciation	?
Current Liabilities			
Creditors	?	Current Assets	
Provisions & outstanding expenses	?	Stock	?
	68,50,000	Debtors	?
		Cash and bank balance	?
Total	?	Total	?

QUESTION NO. 39

A Company is capitalized as follows:

7% Preference Shares ₹1 each	₹ 6,00,000
Ordinary Shares, ₹1 Each	₹ 16,00,000
Total	₹ 22,00,000
The following information is relevant as to its financial year just ended :	
Profit (after Taxation @5%)	₹5,42,000
Ordinary Dividend paid	20% Market Price of each Ordinary Share ₹ 4
Depreciation	2,20,000

You are required to calculate the following, showing the necessary workings:

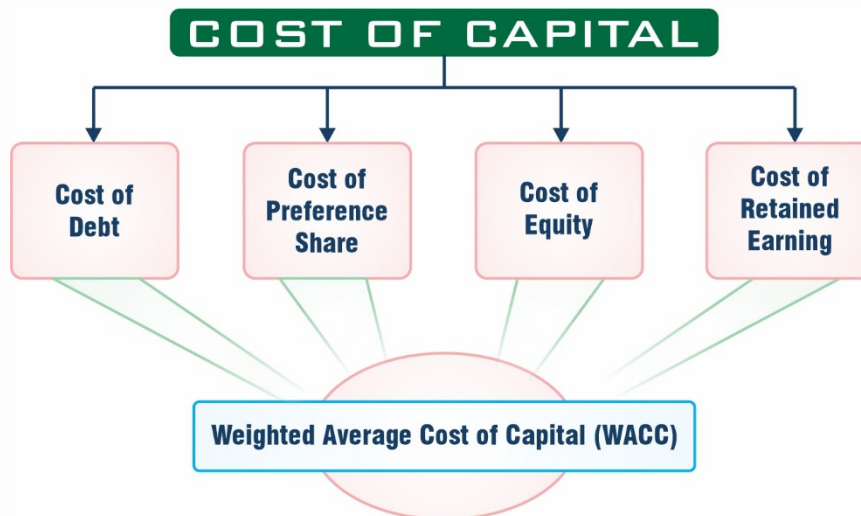
- (i) Dividend Yield on the Ordinary Shares
- (ii) Preference Dividend Coverage Ratio
- (iii) Ordinary Dividend Coverage Ratio
- (iv) Earnings Yield
- (v) Price-earnings (P/E) Ratio
- (vi) Amount transferred to Reserve and Surplus
- (vii) Net Cash Flow



NOTES



COST OF CAPITAL



- ❖ **Cost of Capital:** Cost of capital refers to the discount rate that is used in determining the present value of the estimated future cash proceeds of the business/new project and eventually deciding whether the business/new project is worth undertaking or now.

It is also the minimum rate of return that a firm must earn on its investment which will maintain the market value of share at its current level. It can also be stated as the opportunity cost of an investment, i.e. the rate of return that a company would otherwise be able to earn at the same risk level as the investment that has been selected.

- ❖ **Components of Cost of Capital:**

The cost of capital can be either explicit or implicit. The explicit cost of any source of capital may be defined as the discount rate that equals that present value of the cash inflows that are incremental to the taking of financing opportunity with the present value of its incremental cash outflows.

Implicit cost is the rate of return associated with the best investment opportunity for the firm and its shareholders that will be foregone if the project presently under consideration by the firm was accepted.

- ❖ **Measurement of Specific Cost of Capital for each source of Capital:**

The first step in the measurement of the cost of the capital of the firm is the calculation of the cost of individual sources of raising funds. From the viewpoint of capital budgeting decisions, the long term sources of funds are relevant as they constitute the major sources of financing the fixed assets. In calculating the cost of capital, therefore the focus on long-term funds and which are:-

1. Long term debt (including Debentures)
2. Preference Shares
3. Equity Capital
4. Retained Earnings

- ❖ **Weighted Average Cost of Capital:**

WACC (weighted average cost of capital) represents the investors' opportunity cost of taking on the risk of putting money into a company. Since every company has a capital structure i.e. what percentage of funds comes from retained earnings, equity shares, preference shares, debt and bonds, so by taking a weighted average, it can be seen how much cost/interest the company has to pay for every rupee it borrows/invest. This is the weighted average cost of capital.



Cost of capital is the return expected by the providers of capital (i.e. shareholders, lenders and the debt-holders) to the business as a compensation for their contribution to the total capital.

1. COST OF LONG TERM DEBT

External borrowings or debt instruments do not confer ownership to the providers of finance. The providers of the debt fund do not participate in the affairs of the company but enjoy the charge on the profit before taxes.

Long term debt includes long term loans from the financial institutions, capital from issuing debentures or bonds etc.

Features of debentures or bonds:

- (i) **Face Value:** Debentures or Bonds are denominated with some value; this denominated value is called face value of the debenture. Interest is calculated on the face value of the debentures.
E.g. If a company issues 9% Non-convertible debentures of ₹ 100 each, this means the face value is ₹ 100 and the interest @ 9% will be calculated on this face value.
- (ii) **Interest (Coupon) Rate:** Each debenture bears a fixed interest (coupon) rate (except Zero coupon bond and Deep discount bond). Interest (coupon) rate is applied to face value of debenture to calculate interest, which is payable to the holders of debentures periodically.
- (iii) **Maturity period:** Debentures or Bonds have a fixed maturity period for redemption. However, in case of irredeemable debentures maturity period is not defined and it is taken as infinite.
- (iv) **Redemption Value:** Redeemable debentures or bonds are redeemed on its specified maturity date. Based on the debt covenants the redemption value is determined.
- (v) **Benefit of tax shield:** The payment of interest to the debenture holders are allowed as expenses for the purpose of corporate tax determination. Hence, interest paid to the debenture holders save the tax liability of the company.

a) **Cost of Irredeemable Debentures**

Cost of Irredeemable Debenture

$$K_d = \frac{\text{Interest}(I)}{NP} (1 - t)$$

Where,

K_d = Cost of debt after tax

I = Annual interest payment

NP = Net proceeds of debentures or current market price

t = Tax rate

b) **Cost of Redeemable Debentures**

Cost of Redeemable Debenture

$$K_d = \frac{\text{Interest}(1-t) + \frac{(RV-NP)}{n}}{\frac{(RV+NP)}{2}}$$

Where,

NP = Net proceeds from debentures in case of new issue of deb or Current market price in case of existing debt.

RV = Redemption value of debentures

t = Tax rate applicable to the company

n = Life of debentures.

- ❖ If discount on issue and/ or premium on redemption are tax deductible, the following formula can be used to calculate the cost of debt.



Cost of Redeemable Debenture

$$K_d = \frac{\text{Interest} + \frac{(RV-NP)}{n}}{\frac{(RV+NP)}{2}} (1 - t)$$

c) Cost of Debt using Present value method [Yield to maturity (YTM) approach]/ IRR Technique:

The cost of redeemable debt K_d is also calculated by discounting the relevant cash flows using Internal rate of return (IRR). Here YTM is the annual return of an investment from the current date till maturity date. So, YTM is the internal rate of return at which current price of a debt equals to the present value of all cashflows.

The relevant cash flows are as follows:

Year	Cash flows
0	Net proceeds in case of new issue/ Current market price in case of existing debt (NP or P_0)
1 to n	Interest net of tax [$I(1-t)$]
n	Redemption value (RV)

Steps to calculate relevant cash flows:

Step-1: Identify the cash flows

Step-2: Calculate NPVs of cash flows as identified above using two discount rates (guessing).

Step-3: Calculate IRR

Note :

Amortisation of Bond

A bond may be amortised every year i.e. principal is repaid every year rather than at maturity. In such a situation, the principal will go down with annual payments and interest will be computed on the outstanding amount. The cash flows of the bonds will be uneven.

The formula for determining the value of a bond or debenture that is amortised every year is as follows:

$$V_b = \frac{C_1}{(1+Kd)^1} + \frac{C_2}{(1+Kd)^2} + \dots + \frac{C_n}{(1+Kd)^n}$$

Note :

Cost of Convertible Debenture

Holders of the convertible debentures has the option to either get the debentures redeemed into the cash or get specified numbers of companies shares in lieu of cash. The calculation of cost of convertible debentures are very much similar to the redeemable debentures. While determining the redeemable value of the debentures, it is assumed that all the debenture holders will choose the option which has the higher value and accordingly it is considered to calculate cost of debt.

- ❖ Converted into equity shares after certain period.
- ❖ Conversion Ratio = No. of share Received per Convertible Bond
- ❖ When **Conversion Value > Bond value**, option can be exercised otherwise not.

Conversion Value = No. of equity shares issued × MPS at the time of Conversion

$$K_d = \frac{\text{Interest}(1 - t) + \frac{(RV - NP)}{n}}{\frac{(RV + NP)}{2}}$$



2. COST OF PREFERENCE SHARES:

The preference share capital is paid dividend at a specified rate on face value of preference shares. Payment of dividend to the preference shareholders are not mandatory but are given priority over the equity shareholder. The payment of dividend to the preference shareholders are not charged as expenses but treated as appropriation of after tax profit. Hence, dividend paid to preference shareholders does not reduce the tax liability to the company. Like the debentures, Preference share capital can be categorised as redeemable and irredeemable. Accordingly cost of capital for each type will be discussed here.

a) **Cost of Redeemable Preference Shares**

Preference shares issued by a company which are redeemed on its maturity is called redeemable preference shares. Cost of redeemable preference share is similar to the cost of redeemable debentures with the exception that the dividends paid to the preference shareholders are not tax deductible.

Cost of Redeemable Preference Share

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

Where,

- PD = Annual preference dividend
 RV = Redemption value of preference shares
 NP = Net proceeds on issue of preference shares
 n = Life of preference shares.

b) **Cost of Irredeemable Preference Shares**

Cost of Redeemable Preference Share

$$K_p = \frac{PD}{P_0}$$

Where,

- PD = Annual preference dividend
 P₀ = Net proceeds in issue of preference shares

3. COST OF EQUITY SHARE CAPITAL

- Dividend Price Approach
- Earning Price Approach
- Realized Yield Approach
- Capital Asset Pricing Model (CAPM) Approach

a) **Dividend Price Approach/Dividend Valuation Approach**

- (i) **Dividend Price Approach with Constant Dividend:** In this approach dividend is constant, which means there is no-growth or zero growth in dividend. The cost of equity can be calculated as follows:

$$K_e = \frac{D}{P_0}$$

Where,

- K_e = Cost of equity
 D = Expected dividend
 P₀ = Market price of equity (ex- dividend)

This model assumes that dividends are paid at a constant rate to perpetuity.



- (ii) **Dividend Price Approach with Constant Growth:** As per this approach the rate of dividend growth remains constant. Where earnings, dividends and equity share price all grow at the same rate, the cost of equity capital may be computed as follows:

$$K_e = \frac{D_1}{P_0} + g$$

Where,

$D_1 = [D_0 (1 + g)]$ i.e. next expected dividend

P_0 = Current Market price per share

g = Constant Growth Rate of Dividend.

- (iii) In case of newly issued equity shares where floatation cost is incurred, the cost of equity share with an estimation of constant dividend growth is calculated as below:

$$K_e = \frac{D_1}{P_0 - F} + g$$

where, F = Flotation cost per share.

b) Earning/ Price Approach

- (i) **Earnings/ Price Approach with Constant Earnings**

The cost of equity share capital would be based upon the expected rate of earnings of a company.

$$K_e = \frac{EPS}{P_0}$$

Where,

EPS = Current earnings per share

P_0 = Market share price

- (ii) **Earnings/ Price Approach with Growth in Earnings:**

$$K_e = \frac{EPS_1}{P_0} + g$$

Where,

EPS_1 = Expected earnings per share

P_0 = Market price per share

g = Annual growth rate of earnings.

❖ **Estimation of Growth Rate**

The calculation of 'g' (the growth rate) is an important factor in calculating cost of equity share capital. Generally two methods are used to determine the growth rate, which are discussed below:

Method 1 : Average Method

It calculated as below:

$$D_0 = D_n (1 + g)^{n-1}$$



Where,

D_0 = Current dividend,

D_n = Dividend in n years ago

Example: The current dividend is ₹16.10 and the dividend 5 year ago was ₹10. The growth rate in the dividend can found out as follows:

Method 2 : Gordon's Growth Model

This model takes Earnings retention rate (b) and rate of return on investments (r) into account to estimate the future growth rate.

It can be calculated as below:

$$\text{Growth } (g) = b \times r$$

Where,

r = rate of return on fund invested

b = earnings retention ratio

c) Realized Yield Approach

According to this approach, the average rate of return realized in the past few years is historically regarded as 'expected return' in the future. It computes cost of equity based on the past records of dividends actually realised by the equity shareholders.

d) Capital Asset Pricing Model (CAPM) Approach

CAPM model describes the risk-return trade-off for securities. It describes the linear relationship between risk and return for securities. Thus, the cost of equity capital can be calculated under this approach as:

$$\text{Cost of Equity } (K_e) = R_f + \beta (R_m - R_f)$$

Where,

K_e = Cost of equity capital

R_f = Risk free rate of return

β = Beta coefficient

R_m = Rate of return on market portfolio

$(R_m - R_f)$ = Market premium

4. COST OF RETAINED EARNINGS

Like another source of fund, retained earnings involve cost. It is the opportunity cost of dividends foregone by shareholders. sometime cost of retained earnings remains below the cost of equity due to saving in floatation cost and existence of personal tax.

In absence of any information on personal tax (tp):

Cost of Retained Earnings (K_r) = Cost of Equity Shares (K_e)

❖ If there is any information on personal tax (tp): $K_r = K_e - tp$

Note:

- ❖ K_e of new equity will always be greater than K_e of existing equity/retained earnings.
- ❖ Floatation Cost is only applicable in case of new equity and not on existing equity (or retained earnings).

WEIGHTED AVERAGE COST OF CAPITAL (WACC)

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.

The steps to calculate WACC is as follows:

- Step 1:** Calculate the total capital from all the sources.
(i.e. Long term debt capital + Pref. Share Capital + Equity Share Capital + Retained Earnings)
- Step 2:** Calculate the proportion (or %) of each source of capital to the total capital.

$$i. e. = \left(\frac{\text{Equity Share Capital (for example)}}{\text{Total Capital (as calculated in Step 1 above)}} \right)$$
- Step 3:** Multiply the proportion as calculated in Step 2 above with the respective cost of capital.
(i.e. $K_e \times$ Proportion (%) of equity share capital (for example) calculated in Step 2 above)
- Step 4:** Aggregate the cost of capital as calculation Step 3 above. This is the WACC. (i.e. $K_e + K_d + K_p + K_s$ as calculated in Step 3 above)

Example:
Calculation of WACC

Capital Component	Cost of capital	% of total capital structure	Total
Retained Earnings	10% (K_r)	25% (W_r)	2.50% ($K_r \times W_r$)
Equity Share Capital	11% (K_e)	10% (W_e)	1.10% ($K_e \times W_e$)
Preference Share Capital	9% (K_p)	15% (W_p)	1.35% ($K_p \times W_p$)
Long term debts	6% (K_d)	50% (W_d)	3.00% ($K_d \times W_d$)
Total (WACC)			7.95%

The cost of weighted average method is preferred because the proportions of various sources of funds in the capital structure are different. To be representative, therefore, cost of capital should take into account the relative proportions of different sources of finance.

❖ Choice of weights

There is a choice weights between the book value (BV) and market value (MV).

- Book Value (BV):** Book value weights is operationally easy and convenient. While using BV, reserves such as share premium and retained profits are included in the BV of equity, in addition to the nominal value of share capital.
- Market Value (MV):** Market value weight is more correct and represent a firm's capital structure. It is preferable to use MV weights for the equity. While using MV, reserves such as share premium and retained profits are ignored as they are in effect incorporated into the value of equity.

❖ MARGINAL COST OF CAPITAL

The marginal cost of capital may be defined as the cost of raising an additional rupee of capital. Since the capital is raised in substantial amount in practice, marginal cost is referred to as the cost incurred in raising new funds. Marginal cost of capital is derived, when the average cost of capital is calculated using the marginal weights.

**QUESTION 1**

Five years ago, Sona Limited issued 12 per cent irredeemable debentures at ₹103, a ₹3 premium to their par value of ₹100. The current market price of these debentures is ₹94. If the company pays corporate tax at a rate of 35 per cent what is its current cost of debenture capital?

QUESTION 2

A company issued 10,000, 10% debentures of ₹100 each at a premium of 10% on 1.4.2017 to be matured on 1.4.2022. The debentures will be redeemed on maturity. Compute the cost of existing debentures assuming 35% tax rate.

QUESTION 3

A company issued 10,000, 10% debentures of ₹ 100 each at par on 1.4.2012 to be matured on 1.4.2022. The company wants to know the cost of its existing debt on 1.4.2017 when the market price of the debentures is ₹ 80. COMPUTE the cost of existing debentures assuming 35% tax rate.

QUESTION 4

RBML is proposing to sell a 5-year bond of ₹5,000 at 8 percent rate of interest per annum. The bond amount will be amortised equally over its life. What is the bond's present value for an investor if he expects a minimum rate of return of 6 per cent?

QUESTION 5

A company issued 10,000, 15% Convertible debentures of ₹100 each with a maturity period of 5 years. At maturity the debenture holders will have the option to convert the debentures into equity shares of the company in the ratio of 1:10 (10 shares for each debenture). The current market price of the equity shares is ₹12 each and historically the growth rate of the shares are 5% per annum. Compute the cost of debentures assuming 35% tax rate.

QUESTION 6

XYZ & Co. issues 2,000 10% preference shares of ₹100 each at ₹95 each. the company proposes to redeem the preference shares at the end of 10th year from the date of issue. Calculate the cost of preference shares.

QUESTION 7

XYZ & Co. issues 2,000 10% preference shares of ₹100 each at ₹95 each. Calculate the cost of preference shares.

QUESTION 8

If R Energy is issuing preferred stock at ₹100 per share, with a stated dividend of ₹12, and a floatation cost of 3% then, what is the cost of preference share?

QUESTION 9

A company has paid dividend of Re. 1 per share (of face value of ₹10 each) last year and it is expected to grow @ 10% next year. Calculate the cost of equity if the market price of share is ₹55.

QUESTION 10

Mr. Mehra had purchased a share of Alpha Limited for ₹1,000. He received dividend for a period of five years at the rate of 10 percent. At the end of the fifth year, he sold the share of Alpha Limited for ₹1,128. You are required to compute the cost of equity as per realised yield approach.

QUESTION 11

Calculate the cost of equity capital of H Ltd., whose risk free rate of return equals 10%. The firm's beta equals 1.75 and the return on the market portfolio equals to 15%.



QUESTION 12

ABC Company provides the following details:

D_0	₹4.19
P_0	₹50
g	5%

Calculate the cost of retained earnings.

QUESTION 13

ABC Company provides the following details:

R_f	7%
β	1.20
$R_m - R_f$	6%

Calculate the cost of retained earnings based on CAPM method.

QUESTION 14

Gamma Limited has in issue 5,00,000 ₹1 ordinary shares whose current ex-dividend market price is ₹1.50 per share. The company has just paid a dividend of 27 paise per share, and dividends are expected to continue at this level for some time. If the company has no debt capital, what is the weighted average cost of capital?

QUESTION 15

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.

QUESTION 16

Calculate the WACC using the following data by using:

- Book value weights
- Market value weights

The capital structure of the company is as under:

	(₹)
Debentures (₹100 per debenture)	5,00,000
Preference shares (₹100 per share)	5,00,000
Equity shares (₹10 per share)	10,00,000
	20,00,000

The market prices of these securities are:

Debenture	₹105 per debenture
Preference	₹110 per preference share
Equity	₹24 each.

Additional information:

- ₹100 per debenture redeemable at par, 10% coupon rate, 4% floatation costs, 10 year maturity.
- ₹100 per preference share redeemable at par, 5% coupon rate, 2% floatation cost and 10 year maturity.
- Equity shares has ₹4 floatation cost and market price ₹24 per share.

The next year expected dividend is ₹1 with annual growth of 5%. The firm has practice of paying all earnings in the form of dividend.



Corporate tax rate is 30%. Use YTM method to calculate cost of debentures and preference shares.

QUESTION 17

Determine the cost of capital of Best Luck Limited using the book value (BV) and market value (MV) weights from the following information:

Sources	Book Value (₹)	Market Value (₹)
Equity shares	1,20,00,000	2,00,00,000
Retained earnings	30,00,000	—
Preference shares	9,00,000	10,40,000
Debentures	36,00,000	33,75,000

Additional information:

- Equity: Equity shares are quoted at ₹130 per share and a new issue priced at ₹125 per share will be fully subscribed; flotation costs will be ₹5 per share.
- Dividend: During the previous 5 years, dividends have steadily increased from ₹10.60 to ₹14.19 per share. Dividend at the end of the current year is expected to be ₹15 per share.
- Preference shares: 15% Preference shares with face value of ₹100 would realise ₹105 per share.
- Debentures: The Company proposes to issue 11-year 15% debentures but the yield on debentures of similar maturity and risk class is 16%; flotation cost is 2%.
- Tax: Corporate tax rate is 35%. Ignore dividend tax.

Flotation cost would be calculated on face value.

QUESTION 18

ABC Ltd. has the following capital structure which is considered to be optimum as on 31st March, 2022.

	(₹)
14% debentures	30,000
11% Preference shares	10,000
Equity (10,000 shares)	1,60,000
	2,00,000

The company share has a market price of ₹23.60. Next year dividend per share is 50% of year 2022 EPS. The following is the trend of EPS for the preceding 10 years which is expected to continue in future.

Year	EPS (₹)	Year	EPS (₹)
2004	1.00	2009	1.61
2005	1.10	2010	1.77
2006	1.21	2011	1.95
2007	1.33	2012	2.15
2008	1.46	2013	2.36

The company issued new debentures carrying 16% rate of interest and the current market price of debenture is ₹96. Preference share ₹9.20 (with annual dividend of ₹1.1 per share) were also issued. The company is in 50% tax bracket.

- Calculate after tax:
 - Cost of new debt
 - Cost of new preference shares
 - New equity share (consuming new equity from retained earnings)
- Calculate marginal cost of capital when no new shares are issued.
- How much can be spent for capital investment before new ordinary shares must be sold. Assuming that retained earnings for next year's investment are 50 percent of 2010.
- What will the marginal cost of capital when the funds exceeds the amount calculated in (C), assuming new equity is issued at ₹20 per share?



QUESTION 19

Masco Limited wishes to raise additional finance of ₹10 lakhs for meeting its investment plans. It has ₹2,10,000 in the form of retained earnings available for investment purposes. Further details are as following:

(1)	Debt / equity mix	30%/70%
(2)	Cost of debt	
	Upto ₹1,80,000	10% (before tax)
	Beyond ₹1,80,000	16% (before tax)
(3)	Earnings per share	₹4
(4)	Dividend payout	50% of earnings
(5)	Expected growth rate in dividend	10%
(6)	Current market price per share	₹44
(7)	Tax rate	50%

You are required:

- To determine the pattern for raising the additional finance.
- To determine the post-tax average cost of additional debt.
- To determine the cost of retained earnings and cost of equity, and
- Compute the overall weighted average after tax cost of additional finance

QUESTION 20

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

	(₹)
Equity Share Capital (2,00,000 Shares of ₹10 each)	4,00,00,000
Reserves & Surplus	4,00,00,000
12% Preference Shares	2,00,00,000
9% Debentures	6,00,00,000
	16,00,00,000

The market price of equity share is ₹60. It is expected that the company will pay next year a dividend of ₹6 per share, which will grow at 10% forever. Assume 40% income tax rate. You are required to compute weighted average cost of capital using market value weights.

QUESTION 21

The following is the capital structure of Simons Company Ltd. as on 31.12.2020:

	(₹)
Equity shares: 10,000 shares (of ₹100 each)	2,00,00,000
10% Preference Shares (of ₹100 each)	60,00,000
12% Debentures	90,00,000
	3,50,00,000

The market price of the company's share is ₹120 and it is expected that a dividend of ₹12 per share would be declared for the year 2021. The dividend growth rate is 5% and the company is in the 30% tax bracket

- compute the weighted average cost of capital.
- Assuming that in order to finance an expansion plan, the company intends to borrow a fund of ₹2 crores bearing 12% rate of interest, what will be the company's received weighted average cost of capital? This financing decision is expected to increase dividend from ₹12 to ₹14 per share. However, the market price of equity share is expected to decline from ₹120 to ₹115 per share.

In case of both (i) and (ii) above, use market value weight while calculating weighted average cost of capital.

QUESTION 22

The R&G Company has following capital structure at 31st March 2021, which is considered to be optimum:

14% debenture	60,000
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11% preference share capital	20,000
Equity share capital (10,000 shares)	3,20,000

The company's share has a current market price of ₹47.20 per share. The expected dividend per share in next year is 50 percent of the 2020 EPS. The EPS of last 10 years is as follows. The past trends are expected to continue:

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
EPS (₹)	2.00	2.20	2.42	2.66	2.93	3.22	3.54	3.90	4.29	4.72

The company can issue 16 percent new debenture. The company's debenture is currently selling at ₹96. The new preference issue can be sold at a net price of ₹18.50, paying a dividend of ₹2.20 per share. The company's marginal tax rate is 30%.

- CALCULATE after tax: (i) Cost of new debt (ii) Cost of new preference shares (iii) New equity share (assuming new equity from retained earnings)
- CALCULATE marginal cost of capital when no new shares are issued.
- DETERMINE the amount that can be spent for capital investment before new ordinary shares must be sold, assuming that the retained earnings for next year's investment is 50 percent of earnings of 2020.
- COMPUTE marginal cost of capital when the fund exceeds the amount calculated in (C), assuming new equity is issued at ₹ 40 per share?

QUESTION 23

You are required to determine the weighted average cost of capital of a firm using (i) book-value weights and (ii) market value weights. The following information is available for your perusal:

Present book value of the firm's capital structure is:

	(₹)
Debentures of ₹100 each	8,00,000
Preference shares of ₹100 each	2,00,000
Equity shares of ₹10 each	10,00,000
	20,00,000

All these securities are traded in the capital markets. Recent prices are:

Debentures @ ₹110, Preference shares @ ₹120 and Equity shares @ ₹22. Anticipated external financing opportunities are as follows:

- ₹100 per debenture redeemable at par: 10 years maturity 11% coupon rate, 4% floatation costs, sale price ₹100.
- ₹100 preference share redeemable at par: 10 years maturity, 12% dividend rate, 5% floatation costs, sale price ₹100.
- Equity shares: ₹2 per share floatation costs, sale price ₹22.

In addition, the dividend expected on the equity share at the end of the year is ₹2 per share; the anticipated growth rate in dividends is 7% and the firm has the practice of paying all its earnings in the form of dividend. The corporate tax rate is 35%.

QUESTION 24

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.



QUESTION 25

The capital structure of MNP Ltd. is as under:

10% Debenture	₹ 3,00,000
12% Preference shares	₹ 2,50,000
Equity shares (face value: ₹10 per share)	₹ 5,00,000
	₹ 10,50,000

Additional information:

- ₹100 per debenture redeemable at par has 2% floatation cost and 10 years of maturity. The market price per debenture is ₹110.
- ₹100 per preference share redeemable at par has 3% floatation cost and 10 years of maturity. The market price per preference share is ₹108.
- Equity share has ₹4 floatation cost and market price per share of ₹25. 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.
- Corporate Income-tax rate is 30%.

Required:

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

QUESTION 26

M/s. Navya Corporation has a capital structure of 40% debt and 60% equity. The company is presently considering several alternative investment proposals costing less than ₹ 20 lakhs. The corporation always raises the required funds without disturbing its present debt equity ratio.

The cost of raising the debt and equity are as under:

Project cost	Interest Cost	Cost of equity
Upto ₹ 2 lakhs	10%	12%
Above ₹ 2 lakhs & upto to ₹ 5 lakhs	11%	13%
Above ₹ 5 lakhs & upto ₹10 lakhs	12%	14%
Above ₹10 lakhs & upto ₹ 20 lakhs	13%	14.5%

Assuming the tax rate at 50%, calculate:-

- Cost of capital of two projects X and Y whose fund requirements are ₹ 6.5 lakhs and ₹ 14 lakhs respectively.
- If a project is expected to give after tax return of 10%, determine under what conditions it would be acceptable?

QUESTION 27

Annova Ltd is considering raising of funds of about ₹250 lakhs by any of two alternative methods, viz., 14% institutional term loan and 13% non-convertible debentures. The term loan option would attract no major incidental cost and can be ignored. The debentures would have to be issued at a discount of 2.5% and would involve cost of issue of 2% on face value.

ADVISE the company as to the better option based on the effective cost of capital in each case. Assume a tax rate of 50%.

QUESTION 28

G Limited has the following capital structure, which it considers to be optimal:

Capital Structure	Weightage (in percentage)
Debt	25
Preference Shares	15
Equity Shares	60
	100

G Limited's expected net income this year is ₹34,285.72, its established dividend payout ratio is 30 per cent, its tax rate is 40 per cent, and investors expect earnings and dividends to grow at a constant rate of



9 per cent in the future. It paid a dividend of ₹3.60 per share last year, and its shares are currently sold at a price of ₹54 per share.

G Limited requires additional funds which it can obtain in the following ways:

- Preference Shares: New preference shares with a dividend of ₹11 can be sold to the public at a price of ₹95 per share.
- Debt: Debt can be sold at an interest rate of 12 per cent. You are required to:
 - (i) Determine the cost of each capital structure component; and
 - (ii) Compute the weighted average cost of capital (WACC) of G Limited.

QUESTION 29

The summarized Balance Sheet of TPA Traders Ltd. for the year ended 31-03-20X8 is given below:

(₹ in lakhs)

Capital and Liabilities	Amount (₹)	Assets	Amount (₹)
Equity Share capital (fully paid-up)	1,400	Fixed Asset (at cost)	2,100
Reserves and surplus	450	Less: Depreciation	250
Retained earnings	200	Current assets:	
Provision for taxation	100	Stock	250
Sundry payables	400	Receivables	300
		Cash & Bank	150
	2,550		700
			2,550

The following further particulars are also given for the year

	(in lakhs of rupee)
Sales	1,200
Earnings before interest and tax (EBIT)	300
Net profit after tax (PAT)	200

Calculate the following for the company and explain the significance of each in one or two sentences.

(i)	Current ratio	(v)	Receivables' (Debtor's) Turnover ratio
(ii)	Liquidity ratio	(vi)	Average receivable (debtor's) collection period
(iii)	Profitability ratio	(vii)	Stock Turnover ratio
(iv)	Profitability on fund employed	(viii)	Return on Equity

QUESTION 30

Institutional Development Bank (IDB) issued Zero interest deep discount bonds of face value of ₹ 1,00,000 each issued at ₹ 2,500 & repayable after 25 years. COMPUTE the cost of debt if there is no corporate tax.

QUESTION 31

CALCULATE the cost of equity from the following data using realized yield approach:

Year	1	2	3	4	5
Dividend per share (₹)	1.00	1.00	1.20	1.25	1.15
Price per share (at the beginning) (₹)	9.00	9.75	11.50	11.00	10.60

QUESTION 32

Face value of equity shares of a company is ₹ 10, while current market price is ₹ 200 per share. Company is going to start a new project, and is planning to finance it partially by new issue and partially by retained earnings. You are required to CALCULATE cost of equity shares as well as cost of retained earnings if issue price will be ₹ 190 per share and floatation cost will be ₹ 5 per share. Dividend at the end of first year is expected to be ₹ 10 and growth rate will be 5%.



QUESTION 33

Cost of equity of a company is 10.41% while cost of retained earnings is 10%. There are 50,000 equity shares of ₹ 10 each and retained earnings of ₹ 15,00,000. Market price per equity share is ₹ 50. Calculate WACC using market value weights if there are no other sources of finance.

QUESTION 34

ABC Company's equity share is quoted in the market at ₹ 25 per share currently. The company pays a dividend of ₹ 2 per share and the investor's market expects a growth rate of 6% per year.

You are required to:

- (i) CALCULATE the company's cost of equity capital.
- (ii) If the company issues 10% debentures of face value of ₹ 100 each and realises ₹ 96 per debenture while the debentures are redeemable after 12 years at a premium of 12%, CALCULATE cost of debenture using YTM?

Assume Tax Rate to be 50%.

QUESTION 35

Kalyanam Ltd. has an operating profit of ₹ 34,50,000 and has employed Debt which gives total Interest Charge of ₹ 7,50,000. The firm has an existing Cost of Equity and Cost of Debt as 16% and 8% respectively. The firm has a new proposal before it, which requires funds of ₹ 75 Lakhs and is expected to bring an additional profit of ₹ 14,25,000. To finance the proposal, the firm is expecting to issue an additional debt at 8% and will not be issuing any new equity shares in the market. Assume no tax culture.

You are required to CALCULATE the Weighted Average Cost of Capital (WACC) of Kalyanam Ltd.:

- (i) Before the new Proposal
- (ii) After the new Proposal.

QUESTION 36

Navya Limited wishes to raise additional capital of ₹10 lakhs for meeting its modernisation plan. It has ₹ 3,00,000 in the form of retained earnings available for investments purposes. The following are the further details:

Debt/ equity mix	40%/60%
Cost of debt (before tax)	
Upto ₹ 1,80,000	10%
Beyond ₹ 1,80,000	16%
Earnings per share	₹ 4
Dividend pay out	₹ 2
Expected growth rate in dividend	10%
Current market price per share	₹ 44
Tax rate	50%

Required:

- (i) To DETERMINE the pattern for raising the additional finance.
- (ii) To CALCULATE the post-tax average cost of additional debt.
- (iii) To CALCULATE the cost of retained earnings and cost of equity, and
- (iv) To DETERMINE the overall weighted average cost of capital (after tax).

QUESTION 37

Zordon Ltd. has net operating income of ₹ 5,00,000 and total capitalization of ₹ 50,00,000 during the current year. The company is contemplating to introduce debt financing in capital structure and has various options for the same. The following information is available at different levels of debt value:

Debt value (₹)	Interest rate (%)	Equity capitalization rate (%)
0	-	10.00
5,00,000	6.0	10.50



10,00,000	6.0	11.00
15,00,000	6.2	11.30
20,00,000	7.0	12.40
25,00,000	7.5	13.50
30,00,000	8.0	16.00

Assuming no tax and that the firm always maintains books at book values, you are REQUIRED to calculate:

- Amount of debt to be employed by firm as per traditional approach.
- Equity capitalization rate, if MM approach is followed.

QUESTION 38

A Company wants to raise additional finance of ₹ 5 crore in the next year. The company expects to retain ₹ 1 crore earning next year. Further details are as follows:

- The amount will be raised by equity and debt in the ratio of 3: 1.
- The additional issue of equity shares will result in price per share being fixed at ₹ 25.
- The debt capital raised by way of term loan will cost 10% for the first ₹ 75 lakh and 12% for the next ₹ 50 lakh.
- The net expected dividend on equity shares is ₹ 2.00 per share. The dividend is expected to grow at the rate of 5%.
- Income tax rate is 25%.

You are required:

- To determine the amount of equity and debt for raising additional finance.
- To determine the post-tax average cost of additional debt.
- To determine the cost of retained earnings and cost of equity.
- To compute the overall weighted average cost of additional finance after tax.

QUESTION 39

MN Ltd. has a current turnover of ₹ 30,00,000 p.a. Cost of Sale is 80% of turnover and Bad Debts are 2% of turnover, Cost of Sales includes 70% variable cost and 30% Fixed Cost, while company's required rate of return is 15%. MN Ltd. currently allows 15 days credit to its customer, but it is considering increase this to 45 days credit in order to increase turnover.

It has been estimated that this change in policy will increase turnover by 20 %, while Bad Debts will increase by 1%. It is not expected that the policy change will result in an increase in fixed cost and creditors and stock will be unchanged.

Should MN Ltd. introduce the proposed policy? (Assume 360 days year)

QUESTION 40

The following figures are extracted from the annual report of RJ Ltd.:

Net Profit	₹ 50 Lakhs
Outstanding 13% preference shares	₹ 200 Lakhs No. of Equity
Shares	6 Lakhs
Return on Investment	25%
Cost of Capital (Ke)	15%

You are required to compute the approximate dividend pay-out ratio by keeping the share price at ₹ 40 by using Walter's Model.

QUESTION 41

Following are the information of TT Ltd.:

Particulars	
Earnings per share	₹ 10
Dividend per share	₹ 6
Expected growth rate in Dividend	6%

Current market price per share	₹ 120
Tax Rate	30%
Requirement of Additional Finance	₹ 30 lakhs
Debt Equity Ratio (For additional finance)	2:1
Cost of Debt	
0-5,00,000	10%
5,00,001 - 10,00,000	9%
Above 10,00,000	8%

Assuming that there is no Reserve and Surplus available in TT Ltd. You are required to:

- Find the pattern of finance for additional requirement
- Calculate post tax average cost of additional debt
- Calculate cost of equity

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

QUESTION 42

ABC Limited has the following book value capital structure:

Equity Share Capital (1 crore shares @ ₹10 each)	₹1,000 lakh
Reserves and Surplus	₹2,250 lakh
9% Preference Share Capital (5 lakh shares @ ₹100 each)	₹500 lakh
8.5% Debentures (1.5 lakh debentures @ ₹1,000 each)	₹1,500 lakh
12% Term Loans from Financial Institutions	₹500 lakh

- ❖ The debentures of ABC Limited are redeemable at par after five years and are quoting at ₹985 per debenture.
- ❖ 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 7%. The beta of the company is 1.85
- ❖ The preference shares of the company are redeemable at 10% premium after 5 years is currently selling at ₹102 per share.

The applicable income tax rate for the company is 35%.

Required:

CALCULATE weighted average cost of capital of the company using market value weights.

QUESTION 43

P Ltd. has the following capital structure at book-value as on 31st March, 2020:

Particulars	(₹)
Equity share capital (10,00,000 shares)	3,00,00,000
11.5% Preference shares	60,00,000
10% Debentures	1,00,00,000
	4,60,00,000

The equity shares of the company are sold for ₹ 300. It is expected that the company will pay next year a dividend of ₹ 15 per equity share, which is expected to grow by 5% p.a. forever. Assume a 35% corporate tax rate.

Required:

- COMPUTE weighted average cost of capital (WACC) of the company based on the existing capital structure.
- COMPUTE the new WACC, if the company raises an additional ₹ 50 lakhs debt by issuing 12% debentures. This would result in increasing the expected equity dividend to ₹ 20 and leave the growth rate unchanged, but the price of equity share will fall to ₹ 250 per share

**QUESTION 44**

In March, 2021 Tiruv Ltd.'s share was sold for ₹ 219 per share. A long term earnings growth rate of 11.25% is anticipated. Tiruv Ltd. is expected to pay dividend of ₹ 5.04 per share.

- DETERMINE the rate of return an investor can expect to earn assuming that dividends are expected to grow along with earnings at 11.25% per year in perpetuity?
- It is expected that Tiruv Ltd. will earn about 15% on book equity and shall retain 60% of earnings. In this case, whether, there would be any change in growth rate and cost of equity? ANALYSE.

QUESTION 45

HN Limited is considering total investment of ₹ 20 lakhs. You are required to CALCULATE the level of earnings before interest and tax (EBIT) at which the EPS indifference point between the following financing alternatives will occur:

- Equity share capital of ₹ 12,00,000 and 14% debentures of ₹ 8,00,000.

Or

- Equity share capital of ₹ 8,00,000, 16% preference share capital of ₹ 4,00,000 and 14% debentures of ₹ 8,00,000.

Assume the corporate tax rate is 30% and par value of equity share is ₹10 in each case.

QUESTION 46

CALCULATE the WACC by using Market value weights. The capital structure of the company is as under:

	(₹)
Debentures (₹100 per debenture)	10,00,000
Preference shares (₹100 per share)	10,00,000
Equity shares (₹10 per share)	20,00,000
	40,00,000

The market prices of these securities are:

Debentures	₹ 115 per debenture
Preference shares	₹ 120 per preference share
Equity shares	₹ 265 each.

Additional information:

- ₹100 per debenture redeemable at par, 10% coupon rate, 2% floatation cost, 10-year maturity.
- ₹100 per preference share redeemable at par, 5% coupon rate, 2% floatation cost and 10 - year maturity.
- Equity shares have a floatation cost of ₹ 1 per share.
- The next year expected dividend is ₹ 5 with an annual growth of 15%. The firm has the practice of paying all earnings in the form of dividend.

Corporate tax rate is 30%. Use YTM method to calculate cost of debentures and preference shares.

QUESTION 47

JC Ltd. is planning an equity issue in current year. It has an earning per share (EPS) of ₹ 20 and proposes to pay 60% dividend at the current year end. With a PIE ratio 6.25, it wants to offer the issue at market price. The flotation cost is expected to be 4% of the issue price.

Required: Determine the required rate of return for equity share (cost of equity) before the issue and after the issue

QUESTION 48

PQR Ltd. has the following capital structure at book value:

	(₹)
Equity Share Capital (₹ 10 each)	1,50,00,000
10% Preference share capital (₹ 100 each)	50,00,000
9% Debentures (₹ 1,000 each)	1,50,00,000
9.5% Term Loan	2,00,00,000

Debentures are redeemable after 3 years and are being currently quoted at ₹ 980 per debenture in the market.

Preference shares are also redeemable after 5 years and currently selling at ₹ 98.50 per share.

The current market price of one equity share is ₹ 75. The risk free interest rate is 6.25%. The market portfolio return is 15.25%. The beta of the company is 1.93.

The applicable income tax rate for the company is 35%.

You are required to calculate the cost of the following using market value as weight:

- (i) Equity share
- (ii) Preference share
- (iii) 9% Debenture
- (iv) 9.5% Term loan
- (v) Weighted average cost of capital

QUESTION 49

ABC Private Limited wishes to raise additional finance of ₹ 30 lakh for purchasing a machine. It has ₹ 16 lakh in the form of retained earnings which is available for investment purposes.

The following details are provided by the company:

- | | |
|-------------------------------------|------------------|
| 1. Debt-equity mix | 1 : 2 |
| 2. Earnings per share | ₹ 10 |
| 3. Current Market Price per share | ₹ 50 |
| 4. Tax rate | 30% |
| 5. Dividend pay-out | 50% of earning |
| 6. Expected growth rate in dividend | 10% |
| 7. Cost of debt: | |
| upto ₹ 6 lakh, | 12% (before tax) |
| beyond ₹ 6 lakh | 15% (before tax) |

- You are required:
- (i) To determine the pattern for raising the additional finance, assuming that the firm intends to maintain existing debt-equity mix.
 - (ii) To determine the post-tax average cost of additional debt.
 - (iii) To determine the cost of retained earnings and cost of equity.
 - (iv) To Compute the overall weighted average after tax cost of additional finance.

QUESTION 50

PQR Limited is considering investing in a project which requires a funding of ₹ 150 Crores. Finance Manager of the company has presented two financing plans for which information is as follows:

Plan - A: Equity-20%, Debt-80%

Plan - B: Equity-60%, Preference Shares-40%

The Cost of debt is 10% and the Cost of preference shares is also 10%. Tax rate is 25%. Equity shares of the face value of ₹ 100 each will be issued at a premium of ₹ 50 per share. The Expected EBIT is ₹ 60 Crores.

You are required to determine: -

- (i) Earnings Per Share (EPS) for Plan A and Plan B
- (ii) The Financial Break-Even Point for Plan A and Plan B

QUESTION 51

KLM Ltd., has an operating profit of ₹ 46,00,000 and has employed Debt (Total Interest Charge of ₹ 10,00,000). The existing Cost of Equity and Cost of Debt to the firm are 18% and 10% respectively. The firm has a proposal before it requiring funds of ₹ 100 Lakhs (to be raised by issue of additional debt @ 10%) which is expected to bring additional profit of ₹ 19,00,000. Assume no Tax.

You are required to find out the

- (i) Existing Weighted Average Cost of Capital (WACC)
- (ii) New Weighted Average Cost of Capital (WACC)

**QUESTION 52**

The capital structure of Ess Vee Limited is given below:

	Amount (₹)
Equity share capital (6 lakh shares of ₹ 10 each)	60,00,000
Reserve and surplus	48,00,000
12% Preference share capital	25,00,000
9% Debentures	20,00,000

Company wants to raise ₹ 50,00,000 for its expansion project which will raise the existing return (EBIT) on capital employed from 14% to 15%.

It is considering the following alternatives:

- (i) Issue equity shares at a premium of ₹ 15 each for the entire amount.
- (ii) Issue equity shares of ₹ 24,00,000 at a premium of ₹ 20 per share and issue 10% debentures for the balance amount.

Corporate tax rate is 25%.

Required:

- (i) Evaluate the two alternatives and advise the company as to which alternative the company should choose.
- (ii) Assume that the company chooses best option as under point (i) above. It wants to pay dividend to equity shareholders at 15% and keep the total dividend pay-out (equity and preference dividend) at 80%. What level of EBIT the company should achieve to meet its commitments?



CHAPTER SEVEN

FINANCING DECISIONS – CAPITAL STRUCTURE

MEANING OF CAPITAL STRUCTURE

- ❖ 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 total capital requirement). While choosing a suitable financing pattern, certain factors like cost, risk, control, flexibility and other considerations like nature of industry, competition in the industry etc. should be considered
- ❖ Capital Structure decision refers to 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.

$$\text{Value of the firm} = \frac{\text{EBIT}}{\text{Overall cost of capital / Weighted average cost of capital}}$$

$$K_0 = (\text{Cost of debt} \times \text{weight of debt}) + (\text{Cost of equity} \times \text{weight of equity})$$

$$K_0 = \left[K_d \times \frac{D}{D + E} \right] + \left[K_e \times \frac{E}{D + E} \right]$$

Where:

K_0 is the weighted average cost of capital (WACC)

K_d is the cost of debt

D is the market value of debt

E is the market value of equity

K_e is the cost of equity

Meaning of optimal capital structure

- ❖ The theory of optimal capital structure deals with the issue of the right mix of debt and equity in the long term capital structure of a firm.
- ❖ This theory states that if a company takes on debt, the value of the firm increases up to a point.
- ❖ Beyond that point if debt continues to increase then the value of the firm will start to decrease.

EBIT-EPS analysis

- ❖ EBIT-EPS analysis is a vital tool for designing the optimal capital structure of a company.
- ❖ The main objective of this analysis is to find the EBIT level that will equate EPS regardless of the financing plan chosen.
- ❖ The financial leverage affects the pattern of distribution of operating profit among various types of investors and increases the variability of the EPS of the firm.
- ❖ Therefore, while searching for an appropriate capitals structure for a firm, the financial manager must analyse the effects of various alternative financial leverages on the EPS.
- ❖ The effect of leverage on the EPS emerges because of the existence of fixed financial charge (i.e., interest on debt and fixed dividend on preference share capital).



Relationship between the rate of return on assets and the rate of fixed charge:

- ❖ If the rate of return on assets is higher than the cost of financing, then the increasing use of fixed charge financing (i.e., debt and preference share capital) will result in increase in the EPS.
- ❖ This situation is also known as favourable financial leverage or Trading on Equity.
- ❖ On the other hand, if the rate of return on assets is less than the cost of financing, then the effect may be negative and, therefore, the increasing use of debt and preference share capital may reduce the EPS of the firm.

Reasons for choice between debt financing and preference shares at the time of deciding fixed financial charge financing.

❖ The choice is tilted in favour of debt financing for two reasons:

- (i) The explicit cost of debt financing i.e., the rate of interest payable on debt instruments or loans is generally lower than the rate of fixed dividend payable on preference shares, and
- (ii) Interest on debt financing is tax-deductible and therefore the real cost (after-tax) is lower than the cost of preference share capital.

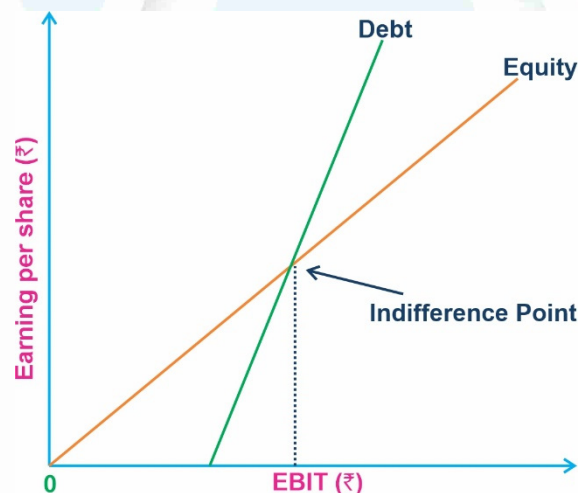
Concept of Financial Break-even and Indifference Analysis.

A. Financial break-even:

- ❖ Financial break-even point is the minimum level of EBIT needed to satisfy all the fixed financial charges i.e. interest and preference dividends.
- ❖ It denotes the level of EBIT for which the company'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.

B. Indifference Analysis:

- ❖ One method of considering the impact of various financing alternatives on earnings per share is to prepare the EBIT chart or the range of Earnings Chart.



- ❖ The EPS may go down if another alternative of financing is chosen even though the EBIT remains at the same level.
- ❖ At a given EBIT, earnings per share under various alternatives of financing may be plotted.
- ❖ A straight line representing the EPS at various levels of EBIT under the alternative may be drawn.
- ❖ Wherever this line intersects, it is known as break-even point.



- ❖ This is known as EPS equivalency point or indifference point since this shows that, between the two given alternatives of financing (i.e., regardless of leverage in the financial plans), EPS would be the same at the given level of EBIT.

The equivalency or indifference point can also be calculated algebraically in the following manner:

$$\frac{(EBIT - I_1)(1 - T)}{E_1} = \frac{(EBIT - I_2)(1 - T)}{E_2}$$

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

I_2 = Interest charges in Alternative 2

T = Tax-rate

Alternative 1 = All equity finance

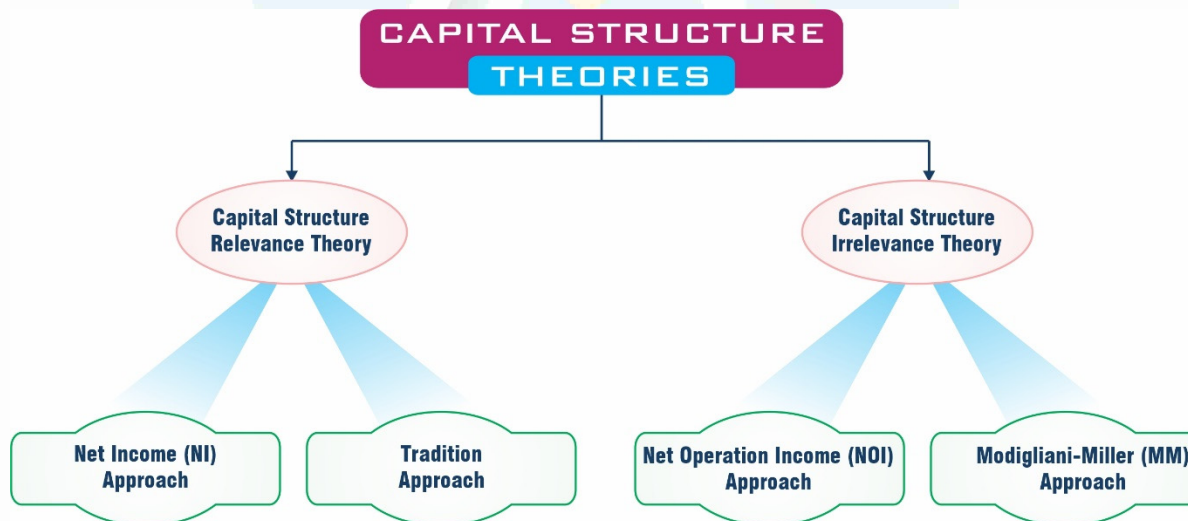
Alternative 2 = Debt-equity finance.

Over Capitalisation : 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.

Under Capitalisation : It is just reverse of over-capitalisation. It is a state, when its actual capitalization is lower than its proper capitalization as warranted by its earning capacity

CAPITAL STRUCTURE THEORIES

The following approaches explain the relationship between cost of capital, capital structure and value of the firm:



- (A) **Net Income (NI) approach**
- (B) **Net Operating Income (NOI) approach**
- (C) **Traditional approach**
- (D) **Modigliani-Miller (MM) approach**

Following assumptions are made to understand this relationship:

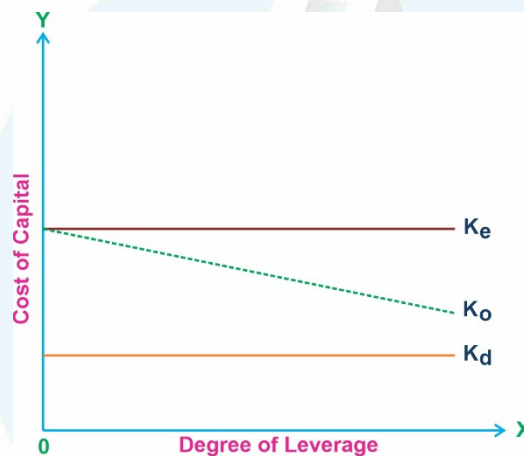
1. There are only two kinds of funds used by a firm i.e. debt and equity.



2. The total assets of the firm are given. The degree of average can be changed by selling debt to purchase shares or selling shares to retire debt.
3. Taxes are not considered.
4. The payout ratio is 100%.
5. The firm's total financing remains constant.
6. Business risk is constant over time.
7. The firm has perpetual life.

A. Net Income (NI) Approach

- ❖ According to this approach, capital structure decision is relevant to the value of the firm.
- ❖ An increase in financial leverage will lead to decline in the weighted average cost of capital (WACC), while the value of the firm as well as market price of ordinary share will increase.
- ❖ Conversely, a decrease in the leverage will cause an increase in the overall cost of capital and a consequent decline in the value as well as market price of equity shares.
- ❖ From the below diagram, K_e and K_d are assumed not to change with leverage. As debt increases, it causes weighted average cost of capital (WACC) to decrease.



The value of the firm on the basis of Net Income Approach can be ascertained as follows:

$$\text{Value of firm} = E + D$$

Where,

V = Value of the firm

E = Market value of equity

D = Market value of debt

$$\text{Market Value of equity (E)} = \frac{NI}{K_e}$$

$$\text{Market Value of Debt (D)} = \frac{\text{Interest}}{K_d}$$

Where,

NI = Earnings available for equity shareholders

K_e = Equity Capitalisation rate

- ❖ Under, NI approach, the value of the firm will be maximum at a point where weighted average cost of capital (WACC) is minimum.
- ❖ Thus, the theory suggests total or maximum possible debt financing for minimising the cost of capital.

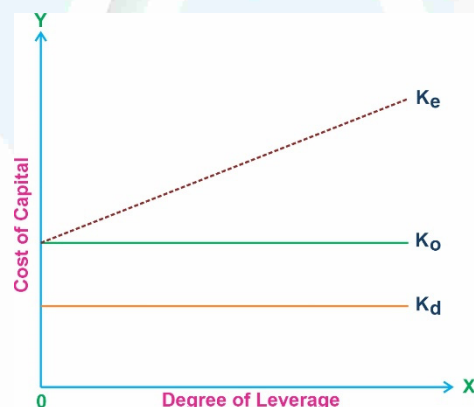
The overall cost of capital under this approach is :

$$\text{Overall cost of capital} = \frac{EBIT}{\text{Value of the firm}}$$

- ❖ Thus according to this approach, the firm can increase its total value by decreasing its overall cost of capital through increasing the degree of leverage.
- ❖ The significant conclusion of this approach is that it pleads for the firm to employ as much debt as possible to maximise its value.

B. Net Operating Income Approach (NOI)

- ❖ NOI means earnings before interest and tax (EBIT).
- ❖ According to this approach, capital structure decisions of the firm are irrelevant.
- ❖ Any change in the leverage will not lead to any change in the total value of the firm and the market price of shares, as the overall cost of capital is independent of the degree of leverage. As a result, the division between debt and equity is irrelevant.
- ❖ As per this approach, an increase in the use of debt which is apparently cheaper is offset by an increase in the equity capitalisation rate.
- ❖ This happens because equity investors seek higher compensation as they are opposed to greater risk due to the existence of fixed return securities in the capital structure.



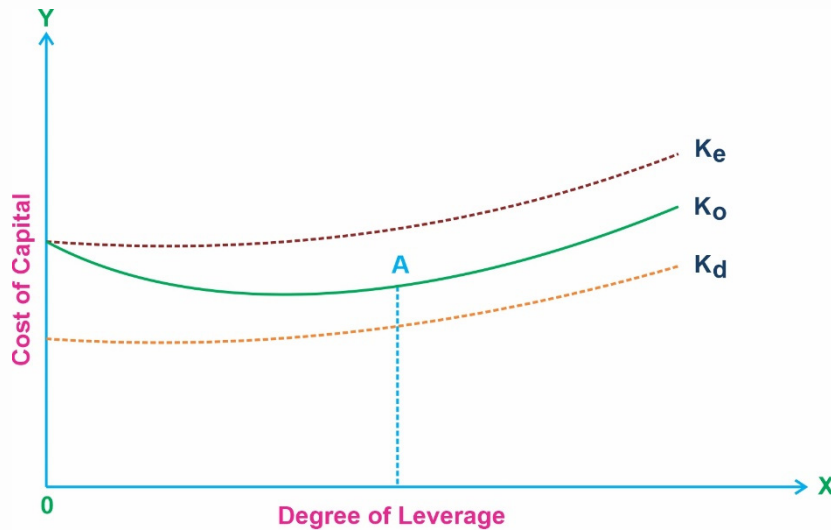
The above diagram shows that K_o (Overall capitalisation rate) and (debt – capitalisation rate) are constant and K_e (Cost of equity) increases with leverage.

C. Traditional Approach

- ❖ Traditional approach favours that as a result of financial leverage up to some point, cost of capital comes down and value of firm increases. However, beyond that point, reverse trends emerge.
- ❖ Under this approach it is believed that there is an optimal capital structure which minimizes the cost of capital.
- ❖ At the optimal capital structure, the real marginal cost of debt and equity is the same.
- ❖ Before the optimal point, the real marginal cost of debt is less than real marginal cost of equity and beyond this optimal point the real marginal cost of debt is more than real marginal cost of equity.



Optimum capital structure occurs at the point where value of the firm is highest and the cost of capital is the lowest.



The main highlights of traditional approach are mentioned as below:

a) Capital Structure:

- ❖ The firm should strive to reach the optimal capital structure and its total valuation through a judicious use of the both debt and equity in capital structure.
- ❖ At the optimal capital structure, the overall cost of capital will be minimum and the value of the firm will be maximum.

b) Financial Leverage:

- ❖ Value of the firm increases with financial leverage up to a certain point.
- ❖ Beyond this point the increase in financial leverage will increase its overall cost of capital and hence the value of firm will decline.
- ❖ This is because the benefits of use of debt may be so large that even after offsetting the effect of increase in cost of equity, the overall cost of capital may still go down.
- ❖ However, if financial leverage increases beyond an acceptable limit, the risk of debt investor may also increase, consequently cost of debt also starts increasing.
- ❖ The increasing cost of equity owing to increased financial risk and increasing cost of debt makes the overall cost of capital to increase.

D. Modigliani-Miller Approach (MM)

- ❖ The NOI approach is definitional or conceptual and lacks behavioural significance. It does not provide operational justification for irrelevance of capital structure.
- ❖ However, Modigliani-Miller approach provides behavioural justification for constant overall cost of capital and therefore, total value of the firm.



MM Approach- 1958: without tax:

- ❖ This approach describes, in a perfect capital market where there is no transaction cost and no taxes, the value and cost of capital of a company remain unchanged irrespective of change in the capital structure.
- ❖ The approach is based on further additional assumptions like:
 - Capital markets are perfect.
 - All information is freely available
 - there are no transaction costs.
 - All investors are rational.
 - Firms can be grouped into 'Equivalent risk classes' on the basis of their business risk.
 - Non-existence of corporate taxes.

Based on the above assumptions, Modigliani-Miller derived the following three propositions:

- (i) Total market value of a firm is equal to its expected net operating income divided by the discount rate appropriate to its risk class decided by the market.

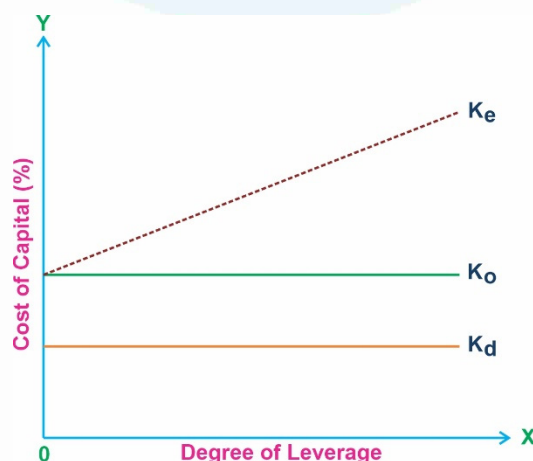
$$\text{Value of levered firm (Vg)} = \text{Value of unlevered firm (Vu)}$$

$$\text{Value of a firm} = \frac{\text{Net Operating Income (NOI)}}{K_0}$$

- (ii) A firm having debt in capital structure has higher cost of equity than an un-levered firm. The cost of equity will include risk premium for the financial risk. The cost of equity in a levered firm is determined as under:

$$K_e = K_0 + (K_0 - K_d) \frac{\text{Debt}}{\text{Equity}}$$

- (iii) The structure of the capital (financial leverage) does not affect the overall cost of capital. The cost of capital is only affected by the business risk.





It is evident from the above diagram that the average cost of the capital (K_0) is a constant and not affected by leverage.

- ❖ The operational justification of Modigliani-Miller hypothesis is explained through the functioning of the arbitrage process and substitution of corporate leverage by personal leverage.
- ❖ Arbitrage refers to buying asset or security at lower price in one market and selling it at a higher price in another market. As a result, equilibrium is attained in different markets.
- ❖ This is illustrated by taking two identical firms of which one has debt in the capital structure while the other does not.
- ❖ Investors of the firm whose value is higher will sell their shares and instead buy the shares of the firm whose value is lower.
- ❖ They will be able to earn the same return at lower outlay with the same perceived risk or lower risk. They would, therefore, be better off.
- ❖ The value of the levered firm can neither be greater nor lower than that of an unlevered firm according to this approach.
- ❖ The two must be equal. There is neither advantage nor disadvantage in using debt in the firm's capital structure.
- ❖ No matter how the capital structure of a firm is divided (among debt, equity etc.), there is a conservation of investment value.
- ❖ Since the total investment value of a corporation depends upon its underlying profitability and risk, it is invariant with respect to relative changes in the firm's financial capitalization.
- ❖ According to MM, since the sum of the parts must equal the whole, therefore, regardless of the financing mix, the total value of the firm stays the same.

The main shortcoming of this approach is that the arbitrage process as suggested by Modigliani-Miller will fail to work because of:

- a) Imperfections in capital market
- b) Existence of transaction cost and
- c) Presence of corporate income taxes.

MM Approach- 1963: with tax

- ❖ In 1963, MM model was amended by incorporating tax.
- ❖ They recognized that the value of the firm will increase or cost of capital will decrease where corporate taxes exist.
- ❖ As a result, there will be some difference in the earnings of equity and debt-holders in levered and unlevered firm and value of levered firm will be greater than the value of unlevered firm by an amount equal to amount of debt multiplied by corporate tax rate.
- ❖ MM has developed the following formulae for computation of cost of capital (K_0), cost of equity (K_e) for the levered firm.

(i) **Value of levered company = Value of an unlevered company + Tax benefit**

Or

$$V_g = V_u + TB$$

(ii) **Cost of equity in a levered company**

$$(K_{eg}) = K_{eu} + (K_{eu} - K_d) \frac{\text{Debt}}{\text{Debt} + \text{Equity}}$$

Where,

K_{eg} = Cost of equity in a levered company

K_{eu} = Cost of equity in an unlevered company



K_d = Cost of debt
 t = Tax rate

(iii)

$$\text{WACC in a levered company } (K_{og}) = K_{eu} (1-tL)$$

Where,

K_{eg} = WACC of a levered company

K_{eu} = Cost of equity in an unlevered company

t = Tax rate

$$L = \frac{\text{Debt}}{\text{Debt} + \text{Equity}}$$

The trade-off theory:

- ❖ The trade-off theory of capital structure refers to the idea that a company chooses how much debt finance and how much equity finance to use by balancing the costs and benefits.
- ❖ An important purpose of the trade-off theory of capital structure is to explain the fact that corporations usually are financed partly with debt and partly with equity.
- ❖ It states that there is an advantage to financing with debt, the tax benefits of debt and there is a cost of financing with debt, the costs of financial distress including bankruptcy costs of debt and non-bankruptcy costs (e.g. staff leaving, suppliers demanding disadvantageous payment terms, bondholder/stockholder infighting, etc.).
- ❖ The marginal benefit of further increases in debt declines as debt increases, while the marginal cost increases, so that a firm that is optimizing its overall value will focus on this trade-off when choosing how much debt and equity to use for financing.
- ❖ According to Modigliani and Miller, the attractiveness of debt decreases with the personal tax on the interest income.

Trade-off theory of capital structure primarily deals with the two concepts –

I. Financial Distress cost or Bankruptcy cost of debt:

- ❖ A firm experiences financial distress when the firm is unable to cope with the debt holders' obligations.
- ❖ If the firm continues to fail in making payments to the debt holders, the firm can even be insolvent.
- ❖ The direct cost of financial distress refers to the cost of insolvency of a company.
- ❖ Once the proceedings of insolvency start, the assets of the firm may have to be sold at distress price, which is generally much lower than the current values of the assets.
- ❖ Also a huge amount of administrative and legal costs is also associated with the insolvency.
- ❖ Even if the company is not insolvent, the financial distress of the company may include a number of indirect costs like – cost of employees, cost of customers, cost of suppliers, cost of investors, cost of managers and cost of shareholders.

II. Agency Cost:

- ❖ The firms may often experience a dispute of interests among the management of the firm, debt holders and shareholders.
- ❖ These disputes generally give birth to agency problems that in turn give rise to the agency costs.
- ❖ The agency costs may affect the capital structure of a firm.
- ❖ There may be two types of conflicts - shareholders-managers conflict and shareholders- debt-holders conflict.

Pecking order theory:

- ❖ This theory is based on Asymmetric information, which refers to a situation in which different parties have different information.
- ❖ In a firm, managers will have better information than investors.



- ❖ This theory states that firms prefer to issue debt when they are positive about future earnings. Equity is issued when they are doubtful and internal finance is insufficient.
- ❖ The pecking order theory argues that the capital structure decision is affected by manager's choice of a source of capital that gives higher priority to sources that reveal the least amount of information.
- ❖ The name '**PECKING ORDER**' theory is given as there is no well-defined debt equity target and there are two kind of equity internal and external.
- ❖ Pecking order theory suggests that managers may use various sources for raising fund in the following order.
 1. Managers first choice is to use internal finance
 2. In absence of internal finance they can use secured debt, unsecured debt, hybrid debt etc.
 3. Managers may issue new equity shares as a last option.
- ❖ So briefly under this theory rules are

Rule 1: Use internal financing first.

Rule 2: Issue debt next

Rule 3: Issue of new equity shares at last



QUESTION 1

Rupa Company's EBIT is ₹ 5,00,000. The company has 10%, 20 lakh debentures. The equity capitalization rate i.e. K_e is 16%.

You are required to calculate:

- (i) Market value of equity and value of firm
- (ii) Overall cost of capital.

QUESTION 2

Amita Ltd's operating income is ₹5,00,000. The firm's cost of debt is 10% and currently the firm employs ₹15,00,000 of debt. The overall cost of capital of the firm is 15%.

You are required to determine:

- (i) Total value of the firm.
- (ii) Cost of equity.

QUESTION 3

Alpha Limited and Beta Limited are identical except for capital structures.

Alpha has 50 per cent debt and 50 per cent equity, whereas Beta has 20 per cent debt and 80 per cent equity. (All percentages are in market-value terms). The borrowing rate for both companies is 8 per cent in a no-tax world, and capital markets are assumed to be perfect.

- (a)
 - (i) If you own 2 per cent of the stock of Alpha, what is your return if the company has net operating income of ₹ 3,60,000 and the overall capitalisation rate of the company, K_o is 18 per cent?
 - (ii) What is the implied required rate of return on equity?
- (b) Beta has the same net operating income as Alpha.
 - (i) What is the implied required equity return of Beta?
 - (ii) Why does it differ from that of Alpha?

QUESTION 4

There are two firms N and M, having same earnings before interest and taxes i.e. EBIT of ₹ 20,000. Firm M is levered company having a debt of ₹1,00,000 @ 7% rate of interest. The cost of equity of N company is 10% and of M Company is 11.50%.

Find out how arbitrage process will be carried on?

QUESTION 5

There are two firms U and L having same NOI of ₹20,000 except that the firm L is a levered firm having a debt of ₹1,00,000 @ 7% and cost of equity of U & L are 10% and 18% respectively.

Show how arbitrage process will work.

QUESTION 6

One-third of the total market value of Sanghmani Limited consists of loan stock, which has a cost of 10 per cent. Another company, Samsui Limited, is identical in every respect to Sanghmani Limited, except that its capital structure is all-equity, and its cost of equity is 16 per cent. According to Modigliani and Miller, if we ignored taxation and tax relief on debt capital, what would be the cost of equity of Sanghmani Limited?

QUESTION 7

Best of Luck Ltd., a profit making company, has a paid-up capital of ₹100 lakhs consisting of 10 lakhs ordinary shares of ₹10 each. Currently, it is earning an annual pre-tax profit of ₹60 lakhs. The company's shares are listed and are quoted in the range of ₹50 to ₹80. The management wants to diversify production and has approved a project which will cost ₹50 lakhs and which is expected to yield a pre-tax income of ₹40 lakhs per annum. To raise this additional capital, the following options are under consideration of the management:

- a) To issue equity capital for the entire additional amount. It is expected that the new shares (face value of ₹10) can be sold at a premium of ₹15.
- b) To issue 16% non-convertible debentures of ₹100 each for the entire amount.



c) To issue equity capital for ₹25 lakhs (face value of ₹10) and 16% non-convertible debentures for the balance amount. In this case, the company can issue shares at a premium of ₹40 each.

You are required to advise the management as to how the additional capital can be raised, keeping in mind that the management wants to maximise the earnings per share to maintain its goodwill. The company is paying income tax at 50%.

QUESTION 8

Shah ji Steels Limited requires ₹25,00,000 for a new plant. This plant is expected to yield earnings before interest and taxes of ₹5,00,000. While deciding about the financial plan, the company considers the objective of maximizing earnings per share. It has three alternatives to finance the project - by raising debt of ₹2,50,000 or ₹10,00,000 or ₹15,00,000 and the balance, in each case, by issuing equity shares. The company's share is currently selling at ₹150, but is expected to decline to ₹125 in case the funds are borrowed in excess of ₹10,00,000. The funds can be borrowed at the rate of 10 percent upto ₹2,50,000, at 15 percent over ₹2,50,000 and upto ₹10,00,000 and at 20 percent over ₹10,00,000. The tax rate applicable to the company is 50 percent. Which form of financing should the company choose?

QUESTION 9

Ganesha Limited is setting up a project with a capital outlay of ₹60,00,000. It has two alternatives in financing the project cost.

Alternative

- (a) 100% equity finance Alternative
- (b) Debt-equity ratio 2:1

The rate of interest payable on the debts is 18% p.a. The corporate tax rate is 40%. Calculate the indifference point between the two alternative methods of financing.

QUESTION 10

Ganpati Limited is considering three financing plans. The key information is as follows:

- a) Total investment to be raised ₹2,00,000
- b) Plans of Financing Proportion:

Plans	Equity	Debt	Preference Shares
A	100%	—	—
B	50%	50%	—
C	50%	—	50%

- c) Cost of debt 8%
- d) Cost of preference shares 8%
- e) Tax rate 50%
- f) Equity shares of the face value of ₹10 each will be issued at a premium of ₹10 per share.
- g) Expected EBIT is ₹80,000.

You are required to determine for each plan: -

- (i) Earnings per share (EPS)
- (ii) The financial break-even point.
- (iii) Indicate if any of the plans dominate and compute the EBIT range among the plans for indifference.

QUESTION 11

Yoyo Limited presently has ₹36,00,000 in debt outstanding bearing an interest rate of 10 per cent. It wishes to finance a ₹40,00,000 expansion programme and is considering three alternatives: additional debt at 12 per cent interest, preferred stock with an 11 per cent dividend, and the sale of common stock at ₹16 per share. The company presently has 8,00,000 shares of common stock outstanding and is in a 40 per cent tax bracket.

- a) If earnings before interest and taxes are presently ₹ 15,00,000, DETERMINE earnings per share for the three alternatives, assuming no immediate increase in profitability?
- b) ANALYSE which alternative do you prefer. COMPUTE how much would EBIT need to increase before the next alternative would be best.

QUESTION 12

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

- (i) To issue Equity Shares of ₹100 each (at par) amounting to ₹60 lakh and borrow the balance amount at the interest of 12% p.a.; or
- (ii) To issue Equity Shares of ₹100 each (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.

QUESTION 13

Calculate the level of earnings before interest and tax (EBIT) at which the EPS indifference point between the following financing alternatives will occur.

- (i) Equity share capital of ₹6,00,000 and 12% debentures of ₹4,00,000 Or
- (ii) Equity share capital of ₹4,00,000, 14% preference share capital of ₹2,00,000 and 12% debentures of ₹4,00,000.

Assume the corporate tax rate is 35% and par value of equity share is ₹10 in each case.

QUESTION 14

Xylo Ltd. is considering the following two alternative financing plans:

	Plan – I	Plan – II
	₹	₹
Equity shares of ₹10 each	8,00,000	8,00,000
12% Debentures	4,00,000	—
Preference Shares of ₹100 each	—	4,00,000
	12,00,000	12,00,000

The indifference point between the plans is ₹4,80,000. Corporate tax rate is 30%. Calculate the rate of dividend on preference shares.

QUESTION 15

A&R Ltd. is an all equity financed company with a market value of ₹25,000 lakh and cost of equity (K_e) 18%. The company wants to buyback equity shares worth ₹5,000 lakh by issuing and raising 10% debentures redeemable at 10% premium after 5 years. Rate of tax may be taken as 35%. Applying Modigliani-Miller (MM) (with taxes), you are required to CALCULATE after restructuring:

- (i) Market value of A&R Ltd.
- (ii) Cost of Equity (K_e)
- (iii) Weighted average cost of capital (using market weights).

QUESTION 16

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 ₹ 100 lakhs.

Assuming that :

- (i) All assumptions of M-M model are met;
- (ii) Income-tax rate is 30%;
- (iii) EBIT is ₹ 25,00,000 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.

QUESTION 17

The management of RT 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

Proposal	% of equity	% of debt	% of preference shares
P	100	-	-
Q	50	50	-
R	50	-	50

- (i) Cost of debt and preference shares is 12% each.
- (ii) Tax rate –40%
- (iii) Equity shares of the face value of ₹10 each will be issued at a premium of ₹10 per share.
- (iv) Total investment to be raised ₹8,00,00,000.
- (v) Expected earnings before interest and tax ₹3,60,00,000.

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..

QUESTION 18

A Company needs ₹ 31,25,000 for the construction of new plant. The following three plans are feasible:

Plan I: The Company may issue 3,12,500 equity shares at ₹ 10 per share.

Plan II: The Company may issue 1,56,250 ordinary equity shares at ₹ 10 per share and 15,625 debentures of ₹. 100 denominations bearing a 8% rate of interest.

Plan III: The Company may issue 1,56,250 equity shares at ₹ 10 per share and 15,625 preference shares at ₹ 100 per 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 & Plan II and Plan I & Plan III.

QUESTION 19

Kee Ltd. and Lee Ltd. are identical in every respect except for capital structure. Kee Ltd. does not employ debt in its capital structure, whereas Lee Ltd. employs 12% debentures amounting to ₹ 20 lakhs. Assuming that:

- (i) All assumptions of MM model are met;
- (ii) The income tax rate is 30%;
- (iii) EBIT is ₹ 5,00,000 and
- (iv) The equity capitalization rate of Kee Ltd. is 25%.

CALCULATE the average value of both the Companies

QUESTION 20

Y Limited requires ₹ 50,00,000 for a new project. This project is expected to yield earnings before interest and taxes of ₹ 10,00,000. While deciding about the financial plan, the company considers the objective of maximizing earnings per' share. It has two alternatives to finance the project - by raising debt ₹ 5,00,000 or ₹ 20,00,000 and the balance, in each case, by issuing Equity Shares. The company's share is currently selling at ₹ 300, but is expected to decline to ₹ 250 in case the funds are borrowed in excess of ₹ 20,00,000. The funds can be borrowed at the rate of 12 percent upto ₹ 5,00,000 and at 10 percent over ₹ 5,00,000. The tax rate applicable to the company is 25 percent.

Which form of financing should the company choose?



QUESTION 21

The following data relate to two companies belonging to the same risk class :

Particulars			A Ltd.	B Ltd.
Expected Net Operating Income			₹ 18,00,000	₹ 18,00,000
12% Debt			₹ 54,00,000	-
Equity Capitalization Rate			-	18

Required

- Determine the total market value, Equity capitalization rate and weighted average cost of capital for each company assuming no taxes as per M.M. Approach.
- Determine the total market value, Equity capitalization rate and weighted average cost of capital for each company assuming 40% taxes as per M.M. Approach.

QUESTION 22

A Company earns a profit of ₹6,00,000 per annum after meeting its interest liability of ₹1,20,000 on 12% debentures. The Tax rate is 50%. The number of Equity Shares of ₹10 each are 80,000 and the retained earnings amount to ₹18,00,000. The company proposes to take up an expansion scheme for which a sum of ₹8,00,000 is required. It is anticipated that after expansion, the company will be able to achieve the same return on investment as at present. The funds required for expansion can be raised either through debt at the rate of 12% or by issuing equity shares at par.

Required:

- COMPUTE the Earnings per Share (EPS), if:
 - The additional funds were raised as debt
 - The additional funds were raised by issue of equity shares.
- ADVISE the company as to which source of finance is preferable .

QUESTION 23

Akash Limited provides you the following information:

	(₹)
Profit (EBIT)	2,80,000
Less: Interest on Debenture @ 10%	(40,000)
EBT	2,40,000
Less Income Tax @ 50%	(1,20,000)
	1,20,000
No. of Equity Shares (₹ 10 each)	30,000
Earnings per share (EPS)	4
Price /EPS (PE) Ratio	10

The company has reserves and surplus of ₹ 7,00,000 and required ₹ 4,00,000 further for modernisation. Return on Capital Employed (ROCE) is constant. Debt (Debt/ Debt + Equity) Ratio higher than 40% will bring the P/E Ratio down to 8 and increase the interest rate on additional debts to 12%. You are required to ASCERTAIN the probable price of the share.

- If the additional capital are raised as debt; and
- If the amount is raised by issuing equity shares at ruling market price.

QUESTION 24

Blue Ltd., an all equity financed company is considering the repurchase of ₹ 275 lakhs equity shares and to replace it with 15% debentures of the same amount. Current market value of the company is ₹ 1,750 lakhs with its cost of capital of 20%. The company's Earnings before Interest and Taxes (EBIT) are expected to remain constant in future years. The company also has a policy of distributing its entire earnings as dividend.

Assuming the corporate tax rate as 30%, you are required to CALCULATE the impact on the following on account of the change in the capital structure as per Modigliani and Miller (MM) Approach:



- (i) Market value of the company
- (ii) Overall Cost of capital
- (iii) Cost of equity

QUESTION 25

Sun Ltd. is considering two financing plans. Details of which are as under:

- (i) Fund's requirement – ₹ 100 Lakhs
- (ii) Financial Plan

Plan	Equity	Debt
I	100%	-
II	25%	75%

- (iii) Cost of debt – 12% p.a.
- (iv) Tax Rate – 30%
- (v) Equity Share ₹ 10 each, issued at a premium of ₹ 15 per share
- (vi) Expected Earnings before Interest and Taxes (EBIT) ₹ 40 Lakhs

You are required to compute:

- a) EPS in each of the plan
- b) The Financial Break Even Point
- c) Indifference point between Plan I and II

QUESTION 26

Company P and Q are identical in all respects including risk factors except for debt/equity, company P having issued 10% debentures of ₹ 18 lakhs while company Q is unlevered. Both the companies earn 20% before interest and taxes on their total assets of ₹ 30 lakhs.

Assuming a tax rate of 50% and capitalization rate of 15% from an all-equity company.

Required:

CALCULATE the value of companies' P and Q using

- (i) Net Income Approach and
- (ii) Net Operating Income Approach.

QUESTION 27

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

- (i) To issue Equity Shares of ₹ 100 each (at par) amounting to ₹ 60 lakh and borrow the balance amount at the interest of 12% p.a., or
- (ii) To issue Equity Shares of ₹ 100 each (at par) and 12% Debentures in equal proportion.

The Income-tax rate is 30%.

IDENTIFY the point of indifference between the available two modes of financing and state which option will be beneficial in different situations.

QUESTION 28

J 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 J Ltd.
- (ii) Cost of Equity K_e
- (iii) Weighted average cost of capital (using market weights) and comment on it.

QUESTION 29

The proportion and required return of debt and equity was recorded for a company with its increased financial leverage as below:



Debt (%)	Required return (Kd) (%)	Equity (%)	Required Return (Ke) (%)	Weighted Average Cost of Capital (WACC) (Ko)(%)
0	5	100	15	15
20	6	80	16	?
40	7	60	18	?
60	10	40	23	?
80	15	20	35	?

You are required to complete the table and IDENTIFY which capital structure is most beneficial for this company. (Based on traditional theory, i.e., capital structure is relevant).

QUESTION 30

DETERMINE the optimal capital structure of a company from the following information:

Options	Cost of Debt (Kd) in %	Cost of Equity (Ke) in %	Percentage of Debt on total value (Debt + Equity)
1	11.0	13.0	0.0
2	11.0	13.0	0.1
3	11.6	14.0	0.2
4	12.0	15.0	0.3
5	13.0	16.0	0.4
6	15.0	18.0	0.5
7	18.0	20.0	0.6

QUESTION 31

Following data is available in respect of two companies having same business risk: Capital employed = ₹ 2,00,000, EBIT = ₹ 30,000 and $K_e = 12.5\%$

Sources	Levered Company (₹)	Unlevered Company (₹)
Debt (@10%)	1,00,000	Nil
Equity	1,00,000	2,00,000

An investor is holding 15% shares in levered company. CALCULATE the increase in annual earnings of investor if he switches his holding from Levered to Unlevered company.

QUESTION 32

There are two companies U Ltd. and L Ltd., having same NOI of ₹ 20,000 except that L Ltd. is a levered company having a debt of ₹ 1,00,000 @ 7% and cost of equity of U Ltd. & L Ltd. are 10% and 18% respectively.

COMPUTE how arbitrage process will work.

QUESTION 33

Following data is available in respect of two companies having same business risk: Capital employed = ₹ 2,00,000, EBIT = ₹ 30,000

Sources	Levered Company (₹)	Unlevered Company (₹)
Debt (@10%)	1,00,000	Nil
Equity	1,00,000	2,00,000
K_e	20%	12.5%

An investor is holding 15% shares in Unlevered company. CALCULATE the increase in annual earnings of investor if he switches his holding from Unlevered to Levered Company.

QUESTION 34

Suppose that a firm has an all equity capital structure consisting of 1,00,000 ordinary shares of ₹ 10 per share. The firm wants to raise ₹ 2,50,000 to finance its investments and is considering three alternative methods of financing – (i) to issue 25,000 ordinary shares at ₹ 10 each, (ii) to borrow ₹ 2,50,000 at 8 per



cent rate of interest, (iii) to issue 2,500 preference shares of ₹ 100 each at an 8 per cent rate of dividend. If the firm's earnings before interest and taxes after additional investment are ₹ 3,12,500 and the tax rate is 50 per cent, FIND the effect on the earnings per share under the three financing alternatives.

QUESTION 35

The following data are presented in respect of Quality Automation Ltd.:

	Amount (₹)
Profit before interest and tax	52,00,000
Less: Interest on debentures @ 12%	12,00,000
Profit before tax	40,00,000
Less: Income tax @ 50%	20,00,000
Profit After tax	20,00,000
No. of equity shares (of ₹ 10 each)	8,00,000
EPS	2.5
PE Ratio	10
Market price per share	25

The company is planning to start a new project requiring a total capital outlay of ₹ 40,00,000. You are informed that a debt equity ratio (D/D+E) higher than 35%, pushes the K_e up to 12.5%, means reducing the PE ratio to 8 and rises the interest rate on additional amount borrowed to 14%. FIND OUT the probable price of share if:

- the additional funds are raised as a loan.
 - the amount is raised by issuing equity shares.
- (Note: Retained earnings of the company is ₹ 1.2 crore)

QUESTION 36

Aaina Ltd. is considering a new project which requires a capital investment of ₹ 9 crores. Interest on term loan is 12% and Corporate Tax rate is 30%.

CALCULATE the point of indifference for the project considering the Debt Equity ratio insisted by the financing agencies being 2 : 1.

QUESTION 37

Sinha Steel Ltd. requires ₹ 30,00,000 for a new plant which expects to yield earnings before interest and taxes of ₹ 5,00,000. While deciding about the financial plan, the company considers the objective of maximizing earnings per share. It has three alternatives to finance the project as follows -

Alternative	Debt	Equity Shares
1	₹ 2,50,000	balance
2	₹ 10,00,000	balance
3	₹ 15,00,000	balance

The company's share is currently selling at ₹ 200, but is expected to decline to ₹ 160 in case the funds are borrowed in excess of ₹ 10,00,000.

Slab wise interest rate for fund borrowed are as follows -

Fund Limit	Applicable Interest rate
up-to ₹ 2,50,000	10%
over ₹ 2,50,000 and up-to ₹ 10,00,000	15%
over ₹ 10,00,000	20%

The tax rate applicable to the company is 50 percent.

ANALYSE which form of financing should the company choose?

QUESTION 38

In respect of two companies having same business risk, following information is given: Capital employed = ₹ 4,00,000; EBIT = ₹ 60,000; K_e = 12%



Sources	Levered Company (₹)	Unlevered Company (₹)
Debt (@10%)	1,50,000	Nil
Equity	1,50,000	3,00,000

Investor is holding 20% shares in levered company. CALCULATE increase in annual earnings of investor if he switches his holding from Levered to Unlevered company.

QUESTION 39

Sophisticated Limited is considering three financing plans. The key information is as follows:

- Total investment amount to be raised ₹ 4,00,000
- Plans of Financing Proportion:

Plans	Equity	Debt	Preference Shares
A	100%	-	-
B	50%	50%	-
C	50%	-	50%

- Cost of debt 10%
- Cost of preference shares 10%
- Tax rate 30%
- Equity shares of the face value of ₹ 10 each will be issued at a premium of ₹ 10 per share.
- Expected EBIT is ₹ 10,00,000.

You are required to DETERMINE for each plan: -

- Earnings per share (EPS)
- The financial break-even point.
- Indicate if any of the plans dominate and compute the EBIT range among the plans for indifference.

QUESTION 40

ABC Limited is setting up a project with a capital outlay of ₹ 90,00,000. It has two alternatives in financing the project cost.

Alternative-I: 100% equity finance by issuing equity shares of ₹ 10 each Alternative-II: Debt-equity ratio 2:1 (issuing equity shares of ₹ 10 each)

The rate of interest payable on the debts is 18% p.a. The corporate tax rate is 30%. CALCULATE the indifference point between the two alternative methods of financing.

QUESTION 41

Vasudev Pure Chemicals (VPC) Ltd. requires ₹25,00,000 for a new plant. This plant is expected to yield earnings before interest and taxes of ₹ 5,00,000. While deciding about the financial plan, the company considers the objective of maximising earnings per share. It has three alternatives to finance the project by raising debt of ₹ 2,50,000 or ₹ 10,00,000 or ₹ 15,00,000 and the balance, in each case, by issuing equity shares. The company's share is currently selling at ₹ 150, but is expected to decline to ₹125 in case the funds are borrowed in excess of ₹10,00,000. The funds can be borrowed at the rate of 10% upto ₹ 2,50,000, at 15% over ₹ 2,50,000 and upto ₹10,00,000 and at 20% over ₹ 10,00,000. The tax rate applicable to the company is 50%. Which form of financing should the company choose?



NOTES



CHAPTER EIGHT

FINANCING DECISIONS - LEVERAGES

Business Risk & Financial Risk :

- ❖ Risk faced by the common shareholders is primarily of two types, namely business risk and financial risk. Therefore, the risk faced by common shareholders is a function of these two risks, i.e. {Business Risk, Financial Risk}

Business Risk:-

- ❖ It refers to the risk associated with the firm's operations.
- ❖ It is the uncertainty about the future operating income (EBIT), i.e. how well can we predict operating incomes?
- ❖ Business risk can be measured by the standard deviation of the Basic Earning Power ratio.

Financial Risk:-

- ❖ It refers to the additional risk placed on the firm's shareholders as a result of debt use i.e. the additional risk a shareholder bears when a company uses debt in addition to equity financing.
- ❖ Companies that issue more debt instruments would have higher financial risk than companies financed mostly or entirely by equity.

Debt Versus Equity Financing:

Financing a business through borrowing is cheaper than using equity. This is because:

- ❖ Lenders require a lower rate of return than ordinary shareholders. Debt financial securities present a lower risk than shares for the finance providers because they have prior claims on annual income and liquidation.
- ❖ A profitable business effectively pays less for debt capital than equity for another reason: the debt interest can be offset against pre-tax profits before the calculation of the corporate tax, thus reducing the tax paid.
- ❖ Issuing and transaction costs associated with raising and servicing debt are generally less than for ordinary shares.

Meaning and Types of Leverage:

- ❖ Leverage refers to the ability of a firm in employing long term funds having a fixed cost, to enhance returns to the owners.
- ❖ In other words, leverage is the amount of debt that a firm uses to finance its assets.
- ❖ A firm with a lot of debt in its capital structure is said to be highly levered. A firm with no debt is said to be unlevered.
- ❖ The term Leverage in general refers to a relationship between two interrelated variables.
- ❖ In financial analysis it represents the influence of one financial variable over some other related financial variable.
- ❖ These financial variables may be costs, output, sales revenue, Earnings before Interest and Tax (EBIT), Earning per share (EPS) etc.

There are three commonly used measures of leverage in financial analysis. These are:

- Operating Leverage
- Financial Leverage
- Combined Leverage



Chart Showing Operating Leverage, Financial Leverage and Combined leverage

Profitability Statement		
Sales	xxx	
Less: Variable Cost	(xxx)	
Contribution	xxx	} Operating Leverage
Less: Fixed Cost	(xxx)	
Operating Profit/ EBIT	xxx	} Financial Leverage
Less: Interest	(xxx)	
Earnings Before Tax (EBT)	xxx	
Less: Tax	(xxx)	} Combined Leverage
Profit After Tax (PAT)	xxx	
Less: Pref. Dividend (if any)	(xxx)	
Net Earnings available to equity shareholders/ PAT	xxx	
No. Equity shares (N)		
Earnings per Share (EPS) = (PAT ÷ N)		

i. Operating leverage (OL):

- ❖ Operating leverage (OL) may be defined as the employment of an asset
- ❖ with a fixed cost in the hope that sufficient revenue will be generated to cover all the fixed and variable costs.
- ❖ The use of assets for which a company pays a fixed cost is called operating leverage.
- ❖ With fixed costs the percentage change in profits accompanying a change in volume is greater than the percentage change in volume.
- ❖ The higher the turnover of operating assets, the greater will be the revenue in relation to the fixed charge on those assets.
- ❖ Operating leverage is a function of three factors:
 - a) Amount of fixed cost
 - b) Variable contribution margin and
 - c) Volume of sales.

$$\text{Operating Leverage (OL)} = \frac{\text{Contribution (C)}}{\text{Earning before interest and tax (EBIT)}}$$

Where,

Contribution (C) = Sales - Variable Cost

EBIT = Sales - Variable Cost - Fixed Cost

Break-even Analysis:

Break-even analysis is a generally used technique to study the Cost Volume Profit analysis. This technique can be explained in two ways:

- i. It is concerned with computing the break-even point. At this point of production level and sales there will be no profit and loss i.e. total cost is equal to total sales revenue.
- ii. This technique is used to determine the possible profit/loss at any given level of production or sales.



$$\text{Break – even point in units} = \frac{\text{Fixed Cost}}{\text{Contribution per unit}}$$

The relationship between leverage, break-even point and fixed cost as under:

Leverage	Break-even point
1. Firm with leverage	1. Higher Break-even point
2. Firm with no leverage	2. Lower Break-even point
Fixed cost	Operating leverage
1. High fixed cost	1. High degree of operating leverage
2. Lower fixed cost	2. Lower degree of operating leverage

Degree of operating leverage (DOL):

- ❖ The operating leverage may be defined as “the firm’s ability to use fixed operating cost to magnify the effects of changes in sales on its earnings before interest and taxes.”

$$\text{Degree of Operating Leverage (DOL)} = \frac{\text{Percentage change in EBIT}}{\text{Percentage change in Sales}}$$

Or,

$$\text{DOL} = \frac{\frac{\Delta \text{EBIT}}{\text{EBIT}}}{\frac{\Delta \text{Sales}}{\text{Sales}}}$$

Where,

Δ EBIT = Change in EBIT

Δ Sales = Change in Sales

Situation 1: No Fixed Cost

$$\text{DOL} = 1$$

Situation 2: If fixed cost exists:

DOL is more than one, operating leverage exists. More is the DOL higher is operating leverage.

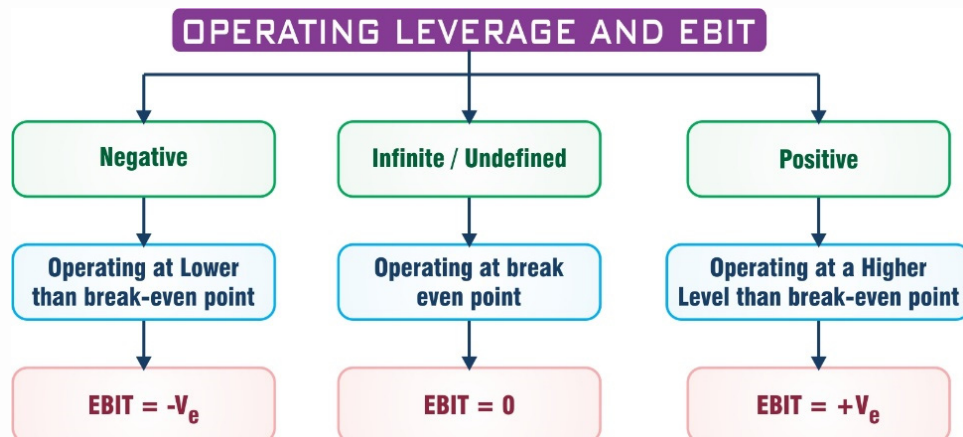
A positive DOL/OL means that the firm is operating at higher level than the breakeven level and both sales and EBIT moves in the same direction.

In case of negative DOL/OL firm operates at lower than the break-even and EBIT is negative.

Situation 3 : When EBIT is Nil (contribution = fixed cost)

DOL = Undefined

The relationship between operating leverage, fixed cost and EBIT





Analysis and Interpretation of operating leverage

S. No.	Situation	Result
1	No Fixed Cost	No operating leverage
2.	Higher Fixed cost	Higher Break-even point
3.	Higher than Break-even level	Positive operating leverage
4.	Lower than Break-even level	Negative operating leverage

ii. Financial Leverage:

- ❖ Financial leverage (FL) maybe defined as 'the use of funds with a fixed cost in order to increase earnings per share.'
- ❖ In other words, it is the use of company funds on which it pays a limited return.
- ❖ Financial leverage involves the use of funds obtained at a fixed cost in the hope of increasing the return to common stockholders.

$$\text{Financial Leverage (FL)} = \frac{\text{Earning before interest tax (EBIT)}}{\text{Earning before tax (EBIT)}}$$

Where,

EBIT = Sales - (Variable cost + Fixed Cost)

EBT = EBIT - Interest

Degree of Financial Leverage (DFL)

- ❖ Degree of financial leverage is the ratio of the percentage increase in earnings per share (EPS) to the percentage increase in earnings before interest and taxes (EBIT).
- ❖ Financial Leverage (FL) is also defined as "the ability of a firm to use fixed financial charges to magnify the effect of changes in EBIT on EPS.

$$\text{Degree of Financial Leverage (DFL)} = \frac{\text{Percentage change in earning as per share (EPS)}}{\text{Percentage change in earning before interest and tax (EBIT)}}$$

Or,

$$\text{DFL} = \frac{\frac{\Delta \text{EPS}}{\text{EPS}}}{\frac{\Delta \text{EBIT}}{\text{EBIT}}}$$

Where,

ΔEPS = Change in EPS

ΔEBIT = Change in EBIT

Situation 1: No Fixed Interest Cost

$$\text{DFL} = 1$$

Situation 2: If fixed interest cost exists:

DFL is more than one (1), financial leverage exists. More is DFL higher is financial leverage.

A positive DFL/ FL means firm is operating at a level higher than break- even point and EBIT and EPS moves in the same direction.

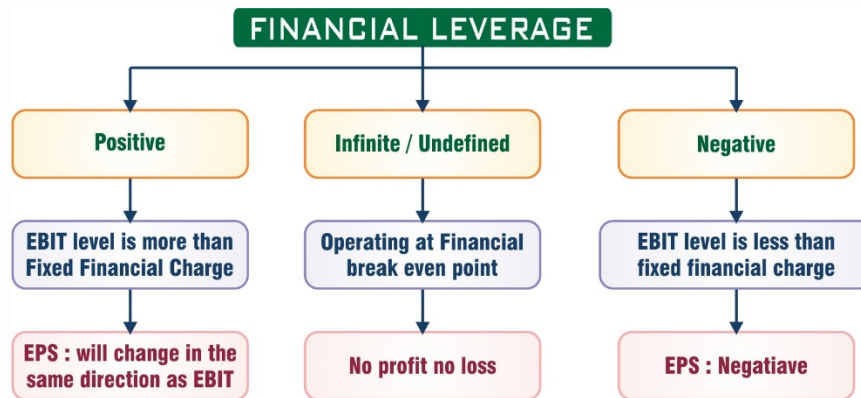
Negative DFL/ FL indicates the firm is operating at lower than break- even point and EPS is negative.

Situation 3: When EBT is nil (EBIT = Fixed Interest)

$$\text{DFL} = \text{Undefined}$$



The relationship between financial leverage, fixed cost and EBIT



The analysis and interpretation of financial leverage is provided as follows:

Sr. No.	Situation	Result
1.	No Fixed Financial Cost	No financial leverage
2.	Higher Fixed Financial Cost	Higher financial leverage
3.	When EBIT is higher than Financial Break-even point	Positive financial leverage
4.	When EBIT is lower than Financial Break-even point	Negative financial leverage

iii. Combined leverage:

Combined leverage maybe defined as the potential use of fixed costs, both operating and financial, which magnifies the effect of sales volume change on the earning per share of the firm.

Combined Leverage (CL) = Operating Leverage (OL) × Financial Leverage (FL)

$$\begin{aligned}
 &= \frac{C}{EBIT} \times \frac{EBIT}{EBT} \\
 &= \frac{C}{EBT}
 \end{aligned}$$

Degree of combined leverage (DCL).

Degree of combined leverage (DCL) is the ratio of percentage change in earning per share to the percentage change in sales.

❖ It indicates the effect the sales changes will have on EPS.

$$DCL = DOL \times DFL$$

$$\begin{aligned}
 &= \frac{\% \text{Change in EBIT}}{\% \text{Change in Sales}} \times \frac{\% \text{Change in EPS}}{\% \text{Change in EBIT}} \\
 &= \frac{\% \text{Change in EPS}}{\% \text{Change in Sales}}
 \end{aligned}$$



- ❖ Like operating leverage and financial leverage, combined leverage can also be positive and negative combined leverage.

Analysis and interpretation of combined leverage.

Sl. No.	Situation	Result
1	No Fixed Cost and Fixed Financial Fixed Cost	No Combined leverage
2.	Higher Fixed cost	Higher Combined Leverage
3.	Sales level higher than break-even level	Positive combined leverage
4.	Sales leverage lower than break-even level	Negative Combined leverage



QUESTION 1

A Company produces and sells 10,000 shirts. The selling price per shirt is ₹ 500. Variable cost is ₹200 per shirt and fixed operating cost is ₹ 25,00,000.

- Calculate operating leverage.
- If sales are up by 10%, then what is the impact on EBIT?

QUESTION 2

Calculate the operating leverage for each of the four firms A, B, C and D from the following price and cost data.

	Firms			
	A ₹	B ₹	C ₹	D ₹
Sale price per unit	20	32	50	70
Variable cost per unit	6	16	20	50
Fixed operating cost	60,000	40,000	2,00,000	Nil

What calculations can you draw with respect to levels of fixed cost and the degree of operating leverage result? Explain. Assume number of units sold is 5,000.

QUESTION 3

A firm's details are as under:

Firm U	Firm I
Sales (@100 per unit)	₹ 24,00,000
Variable Cost	50%
Fixed Cost	₹10,00,000

It has borrowed ₹10,00,000 @ 10% p.a. and its equity share capital is ₹10,00,000 (₹100 each)

Calculate:

- Operating Leverage
- Financial Leverage
- Combined Leverage
- Return on Investment
- If the sales increases by ₹6,00,000; what will the new EBIT?

QUESTION 4

Betatronics Ltd. has the following balance sheet and income statement information:

Balance Sheet as on March 31st

Liabilities	(₹)	Assets	(₹)
Equity capital (₹10 per share)	8,00,000	Net fixed assets	10,00,000
10% Debt	6,00,000	Current assets	9,00,000
Retained earnings	3,50,000		
Current liabilities	1,50,000		
	19,00,000		19,00,000

Income Statement for the year ending March 31

	(₹)
Sales	3,40,000
Operating expenses (including ₹60,000 depreciation)	1,20,000
EBIT	2,20,000
Less: Interest	60,000
Earnings before tax	1,60,000
Less: Taxes	56,000
Net Earnings (EAT)	1,04,000

- Determine the degree of operating, financial and combined leverages at the current sales level, if all operating expenses, other than depreciation, are variable costs.
- If total assets remain at the same level, but sales (i) increase by 20 percent and (ii) decrease by 20 percent, what will be the earnings per share at the new sales level?

**QUESTION 5**

Calculate the operating leverage, financial leverage and combined leverage from the following data under Situation I and II and Financial Plan A and B:

Installed Capacity	4,000 units	
Actual Production and Sales	75% of the Capacity	
Selling Price	₹30 Per Unit	
Variable Cost	₹15 Per Unit	
Fixed Cost:		
Under Situation I	₹15,000	
Under Situation-II	₹20,000	
Capital Structure:		
	Financial Plan	
	A	B
	₹	₹
Equity	10,000	15,000
Debt (Rate of Interest at 20%)	10,000	5,000
	20,000	20,000

QUESTION 6

A Company had the following Balance Sheet as on March 31, 2021:

Liabilities and Equity	(₹in crores)	Assets	(₹in crores)
Equity Share Capital (50 lakh shares of ₹10 each)	5	Fixed assets (Net)	12.5
Reserves and Surplus	1		
15% Debentures	10	Current assets	7.5
Current Liabilities	4		
	20		20

The additional information given is as under:

Fixed Costs per annum (excluding interest)	₹4 crores
Variable operating costs 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.

QUESTION 7

From the following information extracted from the books of accounts of Imax Ltd., CALCULATE percentage change in earnings per share, if sales increase by 10% and Fixed Operating cost is ₹ 1,57,500:

	₹in lakhs
EBIT (Earnings before Interest and Tax)	31,50,000
Earnings before Tax (EBT)	14,00,000

QUESTION 8

The data relating to two Companies are as given below:



	Company A	Company B
Equity Capital	₹6,00,00,000	₹3,50,00,000
12% Debentures	₹4,00,00,000	₹6,50,00,000
Output (units) per annum	6,00,000	1,50,000
Selling price/ unit	₹60	₹500
Fixed Costs per annum	₹70,00,000	₹1,40,00,000
Variable Cost per unit	₹30	₹275

You are required to calculate the Operating leverage, financial leverage and combined leverage of two COMPANIES.

QUESTION 9

The following summarises the percentage changes in operating income, percentage changes in revenues, and betas for four listed firms.

Firm	Change in revenue	Change in operating income	Beta
A Ltd.	35%	22%	1.00
B Ltd.	24%	35%	1.65
C Ltd.	29%	26%	1.15
D Ltd.	32%	30%	1.20

Required:

- CALCULATE the degree of operating leverage for each of these firms. Comment also.
- Use the operating leverage to EXPLAIN why these firms have different beta.

QUESTION 10

The following details of a company for the year ended 31st March, 2021 are given below:

Operating leverage	2:1
Combined leverage	2.5:1
Fixed Cost excluding interest	₹ 3.4 lakhs
Sales	₹ 50 lakhs
8% Debentures of ₹ 100 each	₹ 30.25 lakhs
Equity Share Capital of ₹ 10 each	34 lakhs
Income Tax Rate	30%

CALCULATE:

- Financial Leverage
- P/V ratio and Earning per Share (EPS)
- If the company belongs to an industry, whose assets turnover is 1.5, does it have a high or low assets turnover?
- At what level of sales, the Earning before Tax (EBT) of the company will be equal to zero?

QUESTION 11

The information related to XYZ Company Ltd. for the year ended 31st March, 2020 are as follows:

Equity Share Capital of ₹ 100 each ₹ 50 Lakhs

12% Bonds of ₹ 1000 each ₹ 30 Lakhs

Sales ₹ 84 Lakhs

Fixed Cost (Excluding Interest) ₹ 7.5 Lakhs

Financial Leverage 1.39

Profit-Volume Ratio 25%

Market Price per Equity Share ₹ 200

Income Tax Rate Applicable 30%

You are required to compute the following:

- Operating Leverage



- (ii) Combined Leverage
- (iii) Earning per share
- (iv) Earning Yield

QUESTION 12

The capital structure of ABC Ltd. as at 31.3.2019 consisted of ordinary share capital of ₹ 5,00,000 (face value ₹ 100 each) and 10% debentures of ₹ 5,00,000 (₹ 100 each). In the year ended with March 2019, sales decreased from 60,000 units to 50,000 units. During this year and in the previous year, the selling price was ₹ 12 per unit; variable cost stood at ₹ 8 per unit and fixed expenses were at ₹ 1,00,000 p.a. The income tax rate was 30%.

You are required to calculate the following:

- (i) The percentage of decrease in earnings per share.
- (ii) The degree of operating leverage at 60,000 units and 50,000 units.
- (iii) The degree of financial leverage at 60,000 units and 50,000 units.

QUESTION 13

A firm has sales of ₹ 75,00,000 variable cost is 56% and fixed cost is ₹ 6,00,000. It has a debt of ₹ 45,00,000 at 9% and equity of ₹ 55,00,000.

- (i) What is the firm's ROI?
- (ii) Does it have favourable financial leverage?
- (iii) If the firm belongs to an industry whose capital turnover is 3, does it have a high or low capital turnover?
- (iv) What are the operating, financial and combined leverages of the firm?
- (v) If the sales is increased by 10% by what percentage EBIT will increase?
- (vi) At what level of sales the EBT of the firm will be equal to zero?
- (vii) If EBIT increases by 20%, by what percentage EBT will increase?

QUESTION 14

You are given the following information of 5 firms of the same industry:

Name of the Firm	Change in Revenue	Change in Operating Income	Change in Earning per share
M	28%	26%	32%
N	27%	34%	26%
P	25%	38%	23%
Q	23%	43%	27%
R	25%	40%	28%

You are required to **CALCULATE** for all firms:

- (i) Degree of operating leverage and
- (ii) Degree of combined leverage.

QUESTION 15

From the following, prepare Income Statement of Company X and Y

Company	X	Y
Financial leverage	3:1	4:1
Interest	₹200	₹300
Operating leverage	4:1	5:1
Variable Cost as a Percentage to Sales	66 $\frac{2}{3}$ %	75%
Income tax Rate	45%	45%

QUESTION 16

Following is the Balance Sheet of Soni Ltd. as on 31st March, 2018 :

Liabilities	Amount in ₹
Shareholder's Fund	
Equity Share Capital (₹ 10 each)	25,00,000
Reserve and Surplus	5,00,000
Non-Current Liabilities (12 Debentures)	50,00,000
Current Liabilities	20,00,000
Total	1,00,00,000
Assets	Amount in ₹
Non-Current Assets	60,00,000
Current Assets	40,00,000
Total	1,00,00,000

Additional Information:

- (i) Variable Cost is 60% of Sales.
- (ii) Fixed Cost p.a. excluding interest ₹ 20,00,000.
- (iii) Total Asset Turnover Ratio is 5 times.
- (iv) Income Tax Rate 25%

You are required to:

- (1) Prepare Income Statement
- (2) Calculate the following and comment:
 - (a) Operating Leverage
 - (b) Financial Leverage
 - (c) Combined Leverage

QUESTION 17

A Company has Sales of ₹ 1,00,00,000; Variable Cost is 55% of Sales and fixed Cost is ₹ 6,00,000. The Capital Structure of the company is: Equity ₹ 1,20,00,000 and 8% Debt ₹ 80,00,000.

Required:

- (i) Calculate Company's Operating, Financial and Combined Leverages.
- (ii) If the Sales amount is increased by 12%, by what percentage EBIT will increase?

QUESTION 18

A Company had the following Balance Sheet as on March 31, 2019:

Equity and Liabilities	(₹ in crore)	Assets	(₹ in crore)
Equity Share Capital (10 crore shares of ₹10 each)	100	Fixed Assets (Net)	250
Reserves and Surplus	20	Current Assets	150
15% Debentures	200		
Current Liabilities	80		
	400		400

The additional information given is as under:	
Fixed Costs per annum (excluding interest)	₹ 80 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

QUESTION 19

The following data have been extracted from the books of LM Ltd:

Sales	₹100 lakhs
Interest Payable per annum	₹ 10 lakhs
Operating leverage	1.2
Combined leverage	2.16

You are required to calculate:

- (i) The financial leverage,
- (ii) Fixed cost and
- (iii) P/V ratio

QUESTION 20

Following are the selected financial information of A Ltd. and B Ltd. for the year ended March 31, 2021:

	A Ltd.	B Ltd.
Variable Cost Ratio	60%	50%
Interest	₹ 20,000	₹ 1,00,000
Operating Leverage	5	2
Financial Leverage	3	2
Tax Rate	30%	30%

You are required to find out

- (i) EBIT
- (ii) Sales
- (iii) Fixed Cost
- (iv) Identify the company which is better placed with reasons based on leverages.

QUESTION 21

The following information is related to YiZi Company Ltd. for the year ended 31st March, 2021:

Equity share capital (of ₹ 10 each)	₹ 50 lakhs
12% Bonds of ₹ 1,000 each	₹ 37 lakhs
Sales	₹ 84 lakhs
Fixed cost (excluding interest)	₹ 6.96 lakhs
Financial leverage	1.49
Profit-volume Ratio	27.55%
Income Tax Applicable	40%

You are required to CALCULATE:

- (i) Operating Leverage;
- (ii) Combined leverage; and
- (iii) Earnings per share.

(Show calculations upto two decimal points.)

QUESTION 22

Consider the following information for Mega Ltd.:

Production level	2,500 units
Contribution per unit	₹ 150
Operating leverage	6



Combined leverage	24
Tax rate	30%

Required:

COMPUTE its earnings after tax.

QUESTION 23

From the following information, prepare Income Statement of Company A & B:

Particulars	Company A	Company B
Margin of safety	0.20	0.25
Interest	₹ 3,000	₹ 2,000
Profit volume ratio	25%	33.33%
Financial Leverage	4	3
Tax rate	45%	45%

QUESTION 24

The capital structure of PS Ltd. for the year ended 31st March 2021 consisted as follows:

Particulars	Amount in (₹)
Equity share capital (face value ₹ 100 each)	10,00,000
10% debentures (₹ 100 each)	10,00,000

During the year 2020-21, sales decreased to 1,00,000 units as compared to 1,20,000 units in the previous year. However, the selling price stood at ₹ 12 per unit and variable cost at ₹ 8 per unit for both the years. The fixed expenses were at ₹ 2,00,000 p.a. and the income tax rate is 30%.

You are required to CALCULATE the following:

- The degree of financial leverage at 1,20,000 units and 1,00,000 units.
- The degree of operating leverage at 1,20,000 units and 1,00,000 units.
- The percentage change in EPS.

QUESTION 25

The Sale revenue of TM excellence Ltd. @ ₹ 20 Per unit of output is ₹ 20 lakhs and Contribution is ₹ 10 lakhs. At the present level of output, the DOL of the company is 2.5. The company does not have any Preference Shares. The number of Equity Shares are 1 lakh. Applicable corporate Income Tax rate is 50% and the rate of interest on Debt Capital is 16% p.a. CALCULATE the EPS (at sales revenue of ₹ 20 lakhs) and amount of Debt Capital of the company if a 25% decline in Sales will wipe out EPS.

QUESTION 26

Following information has been extracted from the accounts of newly incorporated Textyl Pvt. Ltd. for the Financial Year 2020-21:

Sales ₹ 15,00,000

P/V ratio 70%

Operating Leverage 1.4 times

Financial Leverage 1.25 times

Using the concept of leverage, find out and verify in each case:

- The percentage change in taxable income if sales increase by 15%.
- The percentage change in EBIT if sales decrease by 10%.
- The percentage change in taxable income if EBIT increase by 15%

QUESTION 27

The Balance Sheet of Gitashree Ltd. is given below:

Liabilities		(₹)
Shareholders' fund		
Equity share capital of ₹ 10 each	₹ 1,80,000	
Retained earnings	₹ 60,000	2,40,000



Non-current liabilities 10% debt	2,40,000
Current liabilities	1,20,000
	6,00,000
Assets	
Fixed Assets	4,50,000
Current Assets	1,50,000
	6,00,000

The company's total asset turnover ratio is 4. Its fixed operating cost is ₹ 2,00,000 and its variable operating cost ratio is 60%. The income tax rate is 30%.

Calculate:

- (i) (a) Degree of Operating leverage.
(b) Degree of Financial leverage.
(c) Degree of Combined leverage.
- (ii) Find out EBIT if EPS is (a) ₹ 1 (b) ₹ 2 and (c) ₹ 0..

QUESTION 28

The following data is available for Stone Ltd. :

	(₹)
Sales	5,00,000
(-) Variable cost @ 40%	2,00,000
Contribution	3,00,000
(-) Fixed cost	2,00,000
EBIT	1,00,000
(-) Interest	25,000
Profit before tax	75,000

Using the concept of leverage, find out

- (i) The percentage change in taxable income if EBIT increases by 10%.
 - (ii) The percentage change in EBIT if sales increases by 10%.
 - (iii) The percentage change in taxable income if sales increases by 10%.
- Also verify the results in each of the above case.

QUESTION 29

Following data of MT Ltd. under Situations 1, 2 and 3 and Financial Plan A and B is given:

Installed Capacity (units)	3,600
Actual Production and Sales (units)	2,400
Selling price per unit (₹)	30
Variable cost per unit (₹)	20
Fixed Costs (₹):	
Situation 1	3,000
Situation 2	6,000
Situation 3	9,000

Capital Structure :

Particulars	Financial Plan	
	A	B
Equity Debt	₹ 15,000	₹ 22,500
Cost of Debt	₹ 15,000	₹ 7,500
	12%	12%

Required:

- (i) CALCULATE the operating leverage and financial leverage.
- (ii) FIND out the combinations of operating and financial leverage which give the highest value and the least value.



QUESTION 30

Following information are related to four firms of the same industry:

Firm	Change in Revenue	Change in Operating Income	Change in Earning per Share
P	25%	23%	30%
Q	27%	30%	26%
R	24%	36%	20%
S	20%	30%	20%

For all the firms, FIND OUT:

- (i) Degree of operating leverage, and
- (ii) Degree of combined leverage.

QUESTION 31

Following information has been provided by ABC Private Limited:

	(₹)
Sales	80,00,000
Variable Cost	46,00,000
Fixed Costs	6,50,000
11% Borrowed Capital	50,00,000
Equity Capital	45,00,000
Retained earnings	15,00,000

Required :

- (i) What is the firm's Return on Investment (ROI)?
- (ii) Does it have favourable financial leverage?
- (iii) If the firm belongs to an industry whose asset turnover is 3, does it have a high or low asset leverage?
- (iv) If the sales drop to ₹ 60,00,000, what will be the new EBIT?
- (v) At what level of sales, will the EBT of the firm be equal to zero?

QUESTION 32

The data of SM Limited for the year ended 31st March 2020 is given below:

Fixed Cost (Excluding Interest)	₹ 2.25 Lakhs
Sales	₹ 45 Lakhs
Equity Share Capital of ₹ 10 each	₹ 38.50 Lakhs
12% Debentures of ₹ 500 each	₹ 20 Lakhs
Operating Leverage	1.2
Combined Leverage	4.8
Income tax rate	30%
Required:	

Required :

- (i) Calculate P/V ratio, Earning per share, Financial leverage and Assets turnover.
- (ii) If asset turnover of an industry is 1.1, then comment on adequacy of assets turnover of SM Limited.
- (iii) At what level of sales the Earning before tax (EBT) of SM Limited will be equal to zero?

QUESTION 33

The following particulars relating to Navya Ltd. for the year ended 31st March 2021 is given:

Output	1,00,000 units at normal capacity
Selling price per unit	₹ 40
Variable cost per unit	₹ 20
Fixed cost	₹ 10,00,000

The capital structure of the company as on 31st March, 2021 is as follows:

Particulars	₹
Equity share capital (1,00,000 shares of ₹ 10 each)	10,00,000



Reserves and surplus	5,00,000
7% debentures	10,00,000
Current liabilities	5,00,000
Total	30,00,000

Navya Ltd. has decided to undertake an expansion project to use the market potential, that will involve ₹ 10 lakhs. The company expects an increase in output by 50%. Fixed cost will be increased by ₹ 5,00,000 and variable cost per unit will be decreased by 10%. The additional output can be sold at the existing selling price without any adverse impact on the market.

The following alternative schemes for financing the proposed expansion programme are planned:

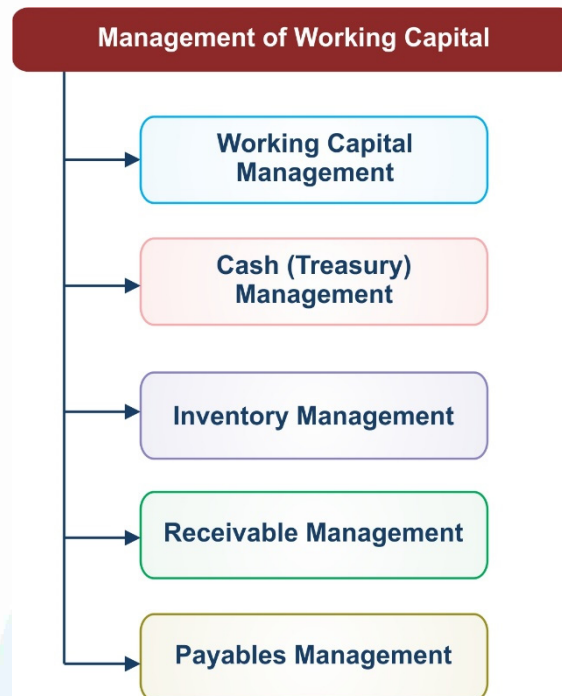
- (i) Entirely by equity shares of ₹ 10 each at par.
- (ii) ₹ 5 lakh by issue of equity shares of ₹ 10 each and the balance by issue of 6% debentures of ₹ 100 each at par.
- (iii) Entirely by 6% debentures of ₹ 100 each at par.

FIND out which of the above-mentioned alternatives would you recommend for Navya Ltd. with reference to the risk and return involved, assuming a corporate tax of 40%.



CHAPTER NINE

WORKING CAPITAL MANAGEMENT



UNIT-I : INTRODUCTION TO WORKING CAPITAL MANAGEMENT

LOS 1 : MEANING OF THE TERM “WORKING CAPITAL”

- ❖ In accounting term working capital is the difference between the current assets and current liabilities.
- ❖ If we break down the components of working capital we will find working capital as follows:

$$\text{Working Capital} = \text{Current Assets} - \text{Current Liabilities}$$

LOS 2 : OPERATING CYCLE

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:

$$\text{Operating Cycle} = R + W + F + D - C$$

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.



LOS 3 : DIFFERENT COMPONENTS OF WORKING CAPITAL

- 1) Raw Material Storage Period = $\frac{\text{Average stock of raw material}}{\text{Average Cost of Raw Material Consumption per day}}$
- 2) Work-in-progress holding period = $\frac{\text{Average Work-in-progress inventory}}{\text{Average Cost of Production per day}}$
- 3) Finished goods storage period = $\frac{\text{Average stock of finished goods}}{\text{Average cost of goods sold per day}}$
- 4) Receivables (Debtors) collection period = $\frac{\text{Average Receivables}}{\text{Average Credit Sales per day}}$
- 5) Payables (Creditors) collection period = $\frac{\text{Average Payables}}{\text{Average Credit Purchases per day}}$

LOS 4 : ESTIMATION OF WORKING CAPITAL REQUIREMENTS HAS BEEN ILLUSTRATED AS BELOW:

		Amount	Amount	Amount
I	Current Assets:			
	Inventories:			
	- Raw Materials	---		
	- Work-in-process	---		
	- Finished goods	---	---	
	Receivables:			
	- Trade Debtors	---		
	- Bills	---	---	
	Minimum cash balance		---	
	Gross Working Capital		---	---
II	Current Liabilities			
	Trade Payables			---
	Bills Payables		---	
	Wages Payables		---	
	Payables for overheads		---	---
III	Excess of Current Assets over Current Liabilities [I-II]			---
IV	Add: Safety Margin			---
V	Net Working Capital [III + IV]			---

LOS 5 : ESTIMATES OF VARIOUS COMPONENTS OF WORKING CAPITAL
Estimation of Current Assets
i. Raw Materials Inventory:

- The funds to be invested in raw materials inventory may be estimated on the basis of production budget, the estimated cost per unit and average holding period of raw material inventory.
- It can be calculated using the following formula:

$$= \frac{\text{Estimated Production (units)}}{12 \text{ months or } 365 \text{ days}^*} \times \text{Estimated Cost per unit} \times \text{Average raw material storage period}$$

ii. Work-in-Progress Inventory:

- The funds to be invested in work-in-progress can be estimated by the following formula:

$$= \frac{\text{Estimated Production (units)}}{12 \text{ months or } 365 \text{ days}^*} \times \text{Estimated WIP cost per unit} \times \text{Average WIP holding period}$$

iii. Finished Goods:

- The funds to be invested in finished goods inventory can be estimated with the help of following formula:

$$= \frac{\text{Estimated Production (units)}}{12 \text{ months or } 365 \text{ days}^*} \times \text{Estimated cost of production per unit} \times \text{Average finished goods storage period}$$

iv. Receivables (Debtors):

- Funds to be invested in trade receivables (debtors) may be estimated with the help of following formula:

$$= \frac{\text{Estimated Credit Sales (units)}}{12 \text{ months or } 365 \text{ days}^*} \times \text{Cost of Sales (excluding depreciation) per unit} \times \text{Average receivable collection period}$$

v. Cash and Cash equivalents:

- Minimum desired Cash and Bank balance to be maintained by the firm has to be added in the current assets for the computation of working capital.

Estimation of current liabilities

Current liabilities are deducted from the current assets to get working capital. Hence, the amount of working capital is lowered to the extent of current liabilities (other than bank credit) arising in the normal course of business.

The important current liabilities like trade payables, wages and overheads can be estimated as follows:

i. Trade Payables:

- Trade payable can be estimated on the basis of material purchase budget and the credit purchase. Estimated credit suppliers

- It is given by,

$$= \frac{\text{Estimated Credit Purchase}}{12 \text{ months or } 365 \text{ days}^*} \times \text{Credit period allowed by suppliers}$$

ii. Direct Wages:

- It is estimated with the help of direct wages budget.

- It is given by,

$$= \frac{\text{Estimated Labour hours}}{12 \text{ months or } 365 \text{ days}^*} \times \text{wages rate per hour} \times \text{Average time lag in payment of wages}$$

iii. Overheads (other than depreciation and amortization):

- It is given by,

$$= \frac{\text{Estimated Overheads}}{12 \text{ months or } 365 \text{ days}^*} \times \text{Average time lag in payment of wages}$$

NOTE: *Number of days in a year may be taken as 365 or 360 days.

**QUESTION 1 :**

A firm has the following data for the year ending 31st March, 2021:

	(₹)
Sales (1,00,000 @ ₹ 20)	20,00,000
Earnings before Interest and Taxes	2,00,000
Fixed Assets	5,00,000

The three possible current assets holdings of the firm are ₹5,00,000/-, ₹ 4,00,000/- and ₹ 3,00,000. It is assumed that fixed assets level is constant and profits do not vary with current assets levels. The effect of the three alternative current assets policies is as follows:

QUESTION 2 :

From the following information of XYZ Ltd., you are required to calculate:

- Net operating cycle period.
- Number of operating cycles in a year.

		₹
(i)	Raw material inventory consumed during the year	6,00,000
(ii)	Average stock of raw material	50,000
(iii)	Work-in-progress inventory	5,00,000
(iv)	Average work-in-progress inventory	30,000
(v)	Cost of goods sold during the year	8,00,000
(vi)	Average finished goods stock held	40,000
(vii)	Average collection period from debtors	45 days
(viii)	Average credit period availed	30 days
(ix)	No. of days in a year	360 days

QUESTION 3 :

On 1st January, the Managing Director of Naureen Ltd. wishes to know the amount of working capital that will be required during the year. From the following information prepare the working capital requirements forecast.

Production during the previous year was 60,000 units. It is planned that this level of activity would be maintained during the present year.

The expected ratios of the cost to selling prices are Raw materials 60%, Direct wages 10% and Overheads 20%.

Raw materials are expected to remain in store for an average of 2 months before issue to production.

Each unit is expected to be in process for one month, the raw materials being fed into the pipeline immediately and the labour and overhead costs accruing evenly during the month.

Finished goods will stay in the warehouse awaiting dispatch to customers for approximately 3 months.

Credit allowed by creditors is 2 months from the date of delivery of raw material. Credit allowed to debtors is 3 months from the date of dispatch.

Selling price is ₹ 5 per unit.

There is a regular production and sales cycle.

Wages and overheads are paid on the 1st of each month for the previous month. The company normally keeps cash in hand to the extent of ₹ 20,000.

QUESTION 4 :

The following annual figures relate to XYZ Co.

	(₹)
Sales (at two months' credit)	36,00,000
Materials consumed (suppliers extend two months' credit)	9,00,000

Wages paid (1 month lag in payment)	7,20,000
Cash manufacturing expenses (expenses are paid one month in arrear)	9,60,000
Administrative expenses (1 month lag in payment)	2,40,000
Sales promotion expenses (paid quarterly in advance)	1,20,000

The company sells its products on gross profit of 25% counting depreciation as part of the cost of production. It keeps one months' stock each of raw materials and finished goods, and a cash balance of ₹ 1,00,000.

Assuming a 20% safety margin, work out the working capital requirements of the company on cash cost basis. Ignore work-in-process.

QUESTION 5 :

Samreen Enterprises has been operating its manufacturing facilities till 31.3.2021 on a single shift working with the following cost structure:

	Per unit (₹)
Cost of Materials	6.00
Wages (out of which 40% fixed)	5.00
Overheads (out of which 80% fixed)	5.00
Profit	2.00
Selling Price	18.00
Sales during 2020-21 – ₹ 4,32,000.	

As at 31.3.2021 the company held:

	(₹)
Stock of raw materials (at cost)	36,000
Work-in-progress (valued at prime cost)	22,000
Finished goods (valued at total cost)	72,000
Sundry debtors	1,08,000

In view of increased market demand, it is proposed to double production by working an extra shift. It is expected that a 10% discount will be available from suppliers of raw materials in view of increased volume of business. Selling price will remain the same. The credit period allowed to customers will remain unaltered. Credit availed of from suppliers will continue to remain at the present level i.e., 2 months. Lag in payment of wages and expenses will continue to remain half a month.

You are required to assess the additional working capital requirements, if the policy to increase output is implemented.

QUESTION 6 :

PQ Ltd., a company newly commencing business in 2020-21 has the under-mentioned projected Profit and Loss Account:

	(₹)	(₹)
Sales		2,10,000
Cost of goods sold		1,53,000
Gross Profit		57,000
Administrative Expenses	14,000	
Selling Expenses	13,000	27,000
Profit before tax		30,000
Provision for taxation		10,000
Profit after tax		20,000
The cost of goods sold has been arrived at as under:		



Materials used	84,000	
Wages and manufacturing Expenses	62,500	
Depreciation	23,500	
	1,70,000	
Less: Stock of Finished goods (10% of goods produced not yet sold)	17,000	
	1,53,000	

The figure given above relate only to finished goods and not to work-in-progress. Goods equal to 15% of the year's production (in terms of physical units) will be in process on the average requiring full materials but only 40% of the other expenses. The company believes in keeping materials equal to two months' consumption in stock.

Average time-lag in payment of all expenses is 1 month. Suppliers of materials will extend 1-1/2 months credit. Sales will be 20% for cash and the rest at two months' credit. 70% of the Income tax will be paid in advance in quarterly instalments. The company wishes to keep ₹8,000 in cash. 10% has to be added to the estimated figure for unforeseen contingencies. Prepare an estimate of working capital.

Note: All workings should form part of the answer.

QUESTION 7 :

M.A. Limited is commencing a new project for manufacture of a plastic component. The following cost information has been ascertained for annual production of 12,000 units which is the full capacity:

Costs per unit	₹
Materials	40
Direct labour and variable expenses	20
Fixed manufacturing expenses	6
Depreciation	10
Fixed administration expenses	4
Total	80

The selling price per unit is expected to be ₹ 96 and the selling expenses ₹ 5 per unit. 80% of which is variable. In the first two years of operations, production and sales are expected to be as follows:

Year	Production (No. of units)	Sales (No. of units)
1	6,000	5,000
2	9,000	8,500

To assess the working capital requirements, the following additional information is available:

- Stock of materials 2.25 months' average consumption
- Work-in-process Nil
- Debtors 1 month's average sales.
- Cash balance ₹ 10,000
- Creditors for supply of materials 1 month's average purchase during the year.
- Creditors for expenses 1 month's average of all expenses during the year.

Prepare, for the two years:

- A projected statement of Profit/Loss (Ignoring taxation); and
- A projected statement of working capital requirements.

QUESTION 8 :

Aneja Limited, 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:

Estimated level of activity: 1,04,000 completed units of production plus 4,000 units of work-in-progress. Based on the above activity, estimated cost per unit is:



Raw material	₹ 80 per unit
Direct wages	₹ 30 per unit
Overheads (exclusive of depreciation)	₹ 60 per unit
Total cost	₹ 170 per unit
Selling price	₹ 200 per unit

Raw materials in stock: Average 4 weeks consumption, work-in-progress (assume 50% completion stage in respect of conversion cost) (materials issued at the start of the processing).

Finished goods in stock	8,000 units
Credit allowed by suppliers	Average 4 weeks
Credit allowed to debtors/receivables	Average 8 weeks
Lag in payment of wages	Average 1.5 weeks
Cash at banks (for smooth operation) is expected to be	₹ 25,000.

Assume that production is carried on evenly throughout the year (52 weeks) and wages and overheads accrue similarly. All sales are on credit basis only.

You are required to calculate the net working capital required.

QUESTION 9 :

A company is considering its working capital investment and financial policies for the next year. Estimated fixed assets and current liabilities for the next year are ₹ 2.60 crores and ₹2.34 crores respectively. Estimated Sales and EBIT depend on current assets investment, particularly inventories and book-debts. The financial controller of the company is examining the following alternative Working Capital Policies:

Working Capital Policy	Investment in Current Assets	Estimated Sales	EBIT
Conservative	4.50	12.30	1.23
Moderate	3.90	11.50	1.15
Aggressive	2.60	10.00	1.00

After evaluating the working capital policy, the Financial Controller has advised the adoption of the moderate working capital policy. The company is now examining the use of long-term and short-term borrowings for financing its assets. The company will use ₹ 2.50 crores of the equity funds. The corporate tax rate is 35%. The company is considering the following debt alternatives.

Financing Policy	Short-term Debt	Long-term Debt
Conservative	0.54	1.12
Moderate	1.00	0.66
Aggressive	1.50	0.16
Interest rate-Average	12%	16%

You are required to calculate the following:

- (1) Working Capital Investment for each policy:
 - (a) Net Working Capital position
 - (b) Rate of Return
 - (c) Current ratio
- (2) Financing for each policy:
 - (a) Net Working Capital position.
 - (b) Rate of Return on Shareholder's equity.
 - (c) Current ratio.

QUESTION 10 :

A proforma cost sheet of a Company provides the following particulars:

	Amount per unit (₹)
Raw materials cost	100
Direct labour cost	37.5
Overheads cost	75



Total cost	212.5
Profit	37.5
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.

QUESTION 11 :

Following information is forecasted by R Limited for the year ending 31st March, 2021:

	Balance as at 31st March, 2021 (₹ in lakh)	Balance as at 31st March, 2020 (₹ in lakh)
Raw Material	65	45
Work-in-progress	51	35
Finished goods	70	60
Receivables	135	112
Payables	71	68
Annual purchases of raw material (all credit)	400	
Annual cost of production	450	
Annual cost of goods sold	525	
Annual operating cost	325	
Annual sales (all credit)	585	

You may take one year as equal to 365 days. You are required to CALCULATE:

- Net operating cycle period.
- Number of operating cycles in the year.
- Amount of working capital requirement.

QUESTION 12 :

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: Estimated level of activity: 1,04,000 completed units of product ion plus 4,000 units of work-in progress. Based on the above activity, estimated cost per unit is:

Raw material	₹ 80 per unit
Direct wages	₹ 30 per unit
Overheads (exclusive of depreciation)	₹ 60 per unit
Total cost	₹ 170 per unit
Selling price	₹ 200 per unit

Raw materials in stock: Average 4 weeks consumption, work-in-progress (assume 50% completion stage in respect of conversion cost) (materials issued at the start of the processing).

Finished goods in stock	8,000 units
Credit allowed by suppliers	Average 4 weeks
Credit allowed to debtors/receivables	Average 8 weeks
Lag in payment of wages	Average 1.5 weeks

Cash at banks (for smooth operation) is expected to be ₹25,000 Assume that production is carried on evenly throughout the year (52 weeks) and wages and overheads accrue similarly. All sales are on credit basis only.

CALCULATE

Net Working Capital required;

Maximum Permissible Bank finance under first and second methods of financing as per Tandon Committee Norms.

QUESTION 13 :

The following figures and ratios are related to a company:

(i) Sales for the year (all credit)	₹ 90,00,000
(ii) Gross Profit ratio	35 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	1.5:1
(vi) Current ratio	2.5:1
(vii) Receivables (Debtors) collection period	1 month
(viii) Reserves and surplus to Share capital	1:1.5
(ix) Capital gearing ratio	0.7875
(x) Fixed assets to net worth	1.3 : 1

You are required to PREPARE:

- Balance Sheet of the company on the basis of above details.
- The statement showing working capital requirement, if the company wants to make a provision for contingencies @15 percent of net working capital.

QUESTION 14 :

The management of Trux Company Ltd. is planning to expand its business and consults you to prepare an estimated working capital statement. The records of the company reveals the following annual information:

	(₹)
Sales – Domestic at one month's credit	18,00,000
Export at three month's credit (sales price 10% below domestic price)	8,10,000
Materials used (suppliers extend two months credit)	6,75,000
Lag in payment of wages – ½ month	5,40,000
Lag in payment of manufacturing expenses (cash) – 1 month	7,65,000
Lag in payment of Administration Expenses – 1 month	1,80,000
Selling expenses payable quarterly in advance	1,12,500
Income tax payable in four installments, of which one falls in the next financial year	1,68,000

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 10% margin for contingencies on computed figure.

You are required to PREPARE the estimated working capital statement for the next year.

QUESTION 15 :

TN 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 March, 2021 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
Ratio of cost to sales price	
Raw materials	60%
Direct wages	10%
Overheads	20%

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.

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 cash cost basis.

QUESTION 16 :

The following information is provided by MNP Ltd. for the year ending 31st March, 2020:

Raw Material Storage period 45 days

Work-in-Progress conversion period 20 days

Finished Goods storage period 25 days

Debt Collection period 30 days

Creditors payment period 60 days

Annual Operating Cost ₹ 25,00,000

(Including Depreciation of ₹ 2,50,000)

Assume 360 days in a year.

You are required to calculate:

- Operating Cycle period
- Number of Operating Cycle in a year.
- Amount of working capital required for the company on a cost basis.
- The company is a market leader in its product and it has no competitor in the market. Based on a market survey it is planning to discontinue sales on credit and deliver products based on pre-payments in order to reduce its working capital requirement substantially. You are required to compute the reduction in working capital requirement in such a scenario.

QUESTION 17 :

The following data relating to an auto component manufacturing company is available for the year 2020-21:

Raw material held in storage	20 days
Receivables' collection period	30 days
Conversion process period (raw material – 100%, other costs – 50% complete)	10 days
Finished goods storage period	45 days
Credit period from suppliers	60 days
Advance payment to suppliers	5 days
Total cash operating expenses per annum	₹ 800 lakhs

75% of the total cash operating expenses are for raw material. 360 days are assumed in a year.

You are required to CALCULATE:

- Each item of current assets and current liabilities,
- The working capital requirement, if the company wants to maintain a cash balance of ₹ 10 lakhs at all times.



QUESTION 18 :

Following information is forecasted by the Puja Limited for the year ending 31st March, 20X8:

	Balance as at 1st April, 20X7 (₹)	Balance as at 31st March, 20X8 (₹)
Raw Material	45,000	65,356
Work-in-progress	35,000	51,300
Finished goods	60,181	70,175
Debtors	1,12,123	1,35,000
Creditors	50,079	70,469
Annual purchases of raw material (all credit)		4,00,000
Annual cost of production		7,50,000
Annual cost of goods sold		9,15,000
Annual operating cost		9,50,000
Annual sales (all credit)		11,00,000

You may take one year as equal to 365 days.

Required:

CALCULATE

- (i) Net operating cycle period.
- (ii) Number of operating cycles in the year.
- (iii) Amount of working capital requirement using operating cycles.

QUESTION 19 :

Following are cost information of KG Ltd., which has commenced a new project for an annual production of 24,000 units which is the full capacity:

	Costs per unit (₹)
Materials	80.00
Direct labour and variable expenses	40.00
Fixed manufacturing expenses	12.00
Depreciation	20.00
Fixed administration expenses	8.00
	160.00

The selling price per unit is expected to be ₹192 and the selling expenses ₹10 per unit, 80% of which is variable.

In the first two years of operations, production and sales are expected to be as follows:

Year	Production (No. of units)	Sales (No. of units)
1	12,000	10,000
2	18,000	17,000

To assess the working capital requirements, the following additional information is available:

- | | | |
|-----|-----------------------------------|--|
| (a) | Stock of materials | 2 months' average consumption |
| (b) | Work-in-process | Nil |
| (c) | Debtors | 2 month's average sales. |
| (d) | Cash balance | ₹ 1,00,000 |
| (e) | Creditors for supply of materials | 1 month's average purchase during the year. |
| (f) | Creditors for expenses | 1 month's average of all expenses during the year. |

PREPARE, for the two years:

- (i) A projected statement of Profit/Loss (Ignoring taxation); and
- (ii) A projected statement of working capital requirements

**QUESTION 20 :**

Day Ltd., a newly formed company has applied to the Private Bank for the first time for financing its Working Capital Requirements. The following information is available about the projections for the current year:

Estimated Level of Activity	Completed Units of Production 31,200 plus unit of work in progress 12,000
Raw Material Cost	₹ 40 per unit
Direct Wages Cost	₹ 15 per unit
Overhead	₹ 40 per unit (inclusive of Depreciation ₹10 per unit)
Selling Price	₹ 130 per unit
Raw Material in Stock	Average 30 days consumption
Work in Progress Stock	Material 100% and Conversion Cost 50%
Finished Goods Stock	24,000 Units
Credit Allowed by the supplier	30 days
Credit Allowed to Purchasers	60 days
Direct Wages (Lag in payment)	15 days
Expected Cash Balance	₹ 2,00,000

Assume that production is carried on evenly throughout the year (360 days) and wages and overheads accrue similarly. All sales are on the credit basis. You are required to CALCULATE the Net Working Capital Requirement on Cash Cost Basis

QUESTION 21 :

MT Ltd. has been operating its manufacturing facilities till 31.3.2021 on a single shift working with the following cost structure:

	Per unit (₹)
Cost of Materials	24
Wages (out of which 60% variable)	20
Overheads (out of which 20% variable)	20
	64
Profit	8
Selling Price	72

As at 31.3.2021 with the sales of ₹ 17,28,000, the company held:

	(₹)
Stock of raw materials (at cost)	1,44,000
Work-in-progress (valued at prime cost)	88,000
Finished goods (valued at total cost)	2,88,000
Sundry debtors	4,32,000

In view of increased market demand, it is proposed to double production by working an extra shift. It is expected that a 10% discount will be available from suppliers of raw materials in view of increased volume of business. Selling price will remain the same. The credit period allowed to customers will remain unaltered. Credit availed from suppliers will continue to remain at the present level i.e. 2 months. Lag in payment of wages and overheads will continue to remain at one month.

You are required to CALCULATE the additional working capital requirements, if the policy to increase output is implemented, to assess the impact of double shift for long term as a matter of production policy.

QUESTION 22 :

While applying for financing of working capital requirements to a commercial bank, TN Industries Ltd. projected the following information for the next year:

Cost Element	Per unit (₹)	Per unit (₹)
Raw materials		
X	30	



Y	7	
Z	6	43
Direct Labour		25
Manufacturing and administration overheads (excluding depreciation)		20
Depreciation		10
Selling overheads		15
		113

Additional Information:

- Raw Materials are purchased from different suppliers leading to different credit period allowed as follows:
- X – 2 months; Y– 1 months; Z – ½ month
- Production cycle is of ½ month. Production process requires full unit of X and Y in the beginning of the production. Z is required only to the extent of half unit in the beginning and the remaining half unit is needed at a uniform rate during the production process.
- X is required to be stored for 2 months and other materials for 1 month.
- Finished goods are held for 1 month.
- 25% of the total sales is on cash basis and remaining on credit basis. The credit allowed by debtors is 2 months.
- Average time lag in payment of all overheads is 1 months and ½ months for direct labour.
- Minimum cash balance of ₹ 8,00,000 is to be maintained.

CALCULATE the estimated working capital required by the company on cash cost basis if the budgeted level of activity is 1,50,000 units for the next year. The company also intends to increase the estimated working capital requirement by 10% to meet the contingencies. (You may assume that production is carried on evenly throughout the year and direct labour and other overheads accrue similarly.)

QUESTION 23 :

PK Ltd., a manufacturing company, provides the following information:

	(₹)
Sales	1,08,00,000
Raw Material Consumed	27,00,000
Labour Paid	21,60,000
Manufacturing Overhead (Including Depreciation for the year ₹ 3,60,000)	32,40,000
Administrative & Selling Overhead	10,80,000

Additional Information:

- Receivables are allowed 3 months' credit.
- Raw Material Supplier extends 3 months' credit.
- Lag in payment of Labour is 1 month.
- Manufacturing Overhead are paid one month in arrear.
- Administrative & Selling Overhead is paid 1 month advance.
- Inventory holding period of Raw Material & Finished Goods are of 3 months.
- Work-in-Progress is Nil.
- PK Ltd. sells goods at Cost plus 33⅓%.
- Cash Balance ₹ 3,00,000.
- Safety Margin 10%.

You are required to compute the Working Capital Requirements of PK Ltd. on Cash Cost basis.

QUESTION 24 :

The following information is provided by the P Ltd. for the year ending 31st March, 2020. Raw Material storage period 52 days

Work in progress conversion period	18 days
Finished Goods storage period	20 days



Debt Collection period	75 days
Creditors' payment period	25 days
Annual Operating Cost	45 Crore

(Including depreciation of ₹42,00,000) (1 year = 360 days)

You are required to CALCULATE Operating Cycle period and Number of Operating Cycles in a year.

QUESTION 25 :

PREPARE monthly cash budget for the first six months of 2021 on the basis of the following information:

(i) Actual and estimated monthly sales are as follows:

Actual	(₹)	Estimated	(₹)
October 2020	2,00,000	January 2021	60,000
November 2020	2,20,000	February 2021	80,000
December 2020	2,40,000	March 2021	1,00,000
		April 2021	1,20,000
		May 2021	80,000
		June 2021	60,000
		July 2021	1,20,000

(ii) Operating Expenses (including salary & wages) are estimated to be payable as follows:

Month	(₹)	Month	(₹)
January 2021	22,000	April 2021	30,000
February 2021	25,000	May 2021	25,000
March 2021	30,000	June 2021	24,000

(iii) Of the sales, 75% is on credit and 25% for cash. 60% of the credit sales are collected after one month, 30% after two months and 10% after three months.

(iv) Purchases amount to 80% of sales and are made on credit and paid for in the month preceding the sales.

(v) The firm has 12% debentures of ₹1,00,000. Interest on these has to be paid quarterly in January, April and so on.

(vi) The firm is to make an advance payment of tax of ₹ 5,000 in April.

(vii) The firm had a cash balance of ₹ 40,000 at 31st Dec. 2020, which is the minimum desired level of cash balance. Any cash surplus/deficit above/below this level is made up by temporary investments/liquidation of temporary investments or temporary borrowings at the end of each month (interest on these to be ignored).

QUESTION 26 :

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) Receivables (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.

QUESTION 27 :

The following information has been extracted from the books of ABS Limited:

	1st April, 2017	31st March, 2018
	(₹)	(₹)
Raw Material	1,00,000	70,000
Works-in-progress	1,40,000	2,00,000
Finished goods	2,30,000	2,70,000

Other information for the year:

	₹
Average receivables	2,10,000
Average payables	3,14,000
Purchases	15,70,000
Wages and overheads	17,50,000
Selling expenses	3,20,000
Sales	42,00,000

All purchases and sales are on credit basis. Company is willing to know:

- Net operating cycle period
- Amount of working capital requirements (Assume 360 days in a year)

QUESTION 28 :

The capital structure of Bright Ltd. as on 31.03.2019 is as follows:

	₹ in lakhs
Equity share capital: 7,50,000 equity shares of ₹ 100 each	750
Retained Earnings	250
13.5% Preference share capital	240
12.5% Debentures	360

The current market price per equity share is ₹ 350. The prevailing default risk free interest rate is 6% and rate of return on market portfolio is 15%. The Beta of the company is 1.289.

The corporate tax rate is 30%. The average tax rate of shareholders is 25% and brokerage cost is 2% that they have to pay while investing dividends in alternative securities.

Required: Calculate the weighted average cost of capital on the basis of book value weights.

QUESTION 29 :

Calculate the amount of working capital required for XYZ Ltd. from the following information:

Elements of Cost	Per unit (₹)
Raw Material	80.00
Direct Labour	30.00
Overheads	60.00
Total Cost	170.00
Profit	30.00
Sales	200.00

Raw materials are held in stock on an average for one month. Work-in progress (completion stage 50 per cent), on an average half a month. Finished goods are in stock on an average for one month. Credit allowed by suppliers is one month and credit allowed to debtors is two months. Time lag in payment of wages is 1 ½ weeks. Time lag in payment of overheads is one month. One fourth of the sales are made on cash basis.

Cash in hand and at bank is expected to be ₹ 50,000.



You are required to prepare statement showing the working capital needed to finance a level of activity of 52,000 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.

QUESTION 30 :

RB Limited is working as market leader and there is no competitor of the company in the market. The following information is provided by the RB Limited for the year ended on 31st March, 2020 :

Raw Material storage period	30 days
Work in progress conversion period	15 days
Finished goods storage period	18 days
Debt Collection period	30 days
Creditor's payment period	45 days
Annual operating cost (Including depreciation ₹ 2,00,000)	₹ 20,00,000
You are required to calculate:	

- (i) Operating cycle period
 - (ii) Number of operating cycle period
 - (iii) Amount of working capital required for the company on a cash cost basis.
 - (iv) Amount of reduction/addition in working capital requirement if:
 - (a) All purchases are made on cash basis only.
 - (b) All sales are made on a cash basis only.
- (Assume 360 days in a year)

QUESTION 31 :

Jensen and spencer pharmaceutical is in the business of manufacturing pharmaceutical drugs including the newly invented Covid vaccine. Due to increase in demand of Covid vaccines, the production had increased at all time high level and the company urgently needs a loan to meet the cash and investment requirements. It had already submitted a detailed loan proposal and project report to Expo-Impo bank, along with the financial statements of previous three years as follows:

Statement of Profit and Loss

(In ₹ '000)

	2018-19	2019-20	2020-21
Sales			
Cash	400	960	1,600
Credit	3,600	8,640	14,400
Total sales	4,000	9,600	16,000
Cost of goods sold	2,480	5,664	9,600
Gross profit	1,520	3,936	6,400
Operating expenses:			
General, administration, and selling expenses	160	900	2,000
Depreciation	200	800	1,320
Interest expenses (on borrowings)	120	316	680
Profit before tax (PBT)	1,040	1,920	2,400
Tax @ 30%	312	576	720
Profit after tax (PAT)	728	1,344	1,680

BALANCE SHEET

(In ₹ '000)

	2018-19	2019-20	2020-21
Assets			
Non-Current Assets			
Fixed assets (net of depreciation)	3,800	5,000	9,400



Current Assets			
Cash and cash equivalents	80	200	212
Accounts receivable	600	3,000	4,200
Inventories	640	3,000	4,500
Total	5,120	11,200	18,312
Equity & Liabilities			
Equity share capital (shares of ₹10 each)	2,400	3,200	4,000
Other Equity	728	2,072	3,752
Non-Current borrowings	1,472	2,472	5,000
Current liabilities	520	3,456	5,560
Total	5,120	11,200	18,312

INDUSTRY AVERAGE OF KEY RATIOS

Ratio	Sector Average
Current ratio	2.30:1
Acid test ratio (quick ratio)	1.20:1
Receivable turnover ratio	7 times
Inventory turnover ratio	4.85 times
Long-term debt to total debt	24%
Debt-to-equity ratio	35%
Net profit ratio	18%
Return on total assets	10%
Interest coverage ratio (times interest earned)	10

As a loan officer of Expo-Impo Bank, you are **REQUIRED** to apprise the loan proposal on the basis of comparison with industry average of key ratios considering closing balance for accounts receivable of ₹ 6,00,000 and inventories of ₹ 6,40,000 respectively as on 31st March, 2018.



UNIT – II : TREASURY AND CASH MANAGEMENT

LOS 6 : DIFFERENT METHODS WHICH CAN BE USED TO PREPARE A CASH BUDGET.

1. Receipts and Payments Method:

- In this method all the expected receipts and payments for budget period are considered.
- All the cash inflow and outflow of all functional budgets including capital expenditure budgets are considered.
- Accruals and adjustments in accounts will not affect the cash flow budget.
- Anticipated cash inflow is added to the opening balance of cash and all cash payments are deducted from this to arrive at the closing balance of cash.
- This method is commonly used in business organizations.

2. Adjusted Income Method:

- In this method the annual cash flows are calculated by adjusting the sales revenues and cost figures for delays in receipts and payments (change in debtors and creditors) and eliminating non- cash items such as depreciation.

3. Adjusted Balance Sheet Method:

- In this method, the budgeted balance sheet is predicted by expressing each type of asset and short-term liabilities as percentage of the expected sales.
- The profit is also calculated as a percentage of sales, so that the increase in owner's equity can be forecasted.
- Known adjustments, may be made to long-term liabilities and the balance sheet will then show if additional finance is needed.

NOTE:

- ❖ It is important to note that the capital budget will also be considered in the preparation of cash flow budget because the annual budget may disclose a need for new capital investments and
- ❖ Also, the costs and revenues of any new projects coming on stream will have to be incorporated in the short-term budgets.
- ❖ The Cash Budget can be prepared for short period or for long period.

LOS 7 : CASH BUDGET FOR SHORT PERIOD.

Preparation of cash budget month by month would require the following estimates:

a) As regards receipts:

1. Receipts from debtors;
2. Cash Sales; and
3. Any other source of receipts of cash (say, dividend from a subsidiary company)

b) As regards payments:

1. Payments to be made for purchases;
2. Payments to be made for expenses;
3. Payments that are made periodically but not every month;
 - (i) Debenture interest;
 - (ii) Income tax paid in advance;
 - (iii) Sales tax etc.
4. Special payments to be made in a particular month, for example, dividends to shareholders, redemption of debentures, repayments of loan, payment of assets acquired, etc.



Format of cash budget.

.....Co. Ltd.
Cash Budget
Period.....

	Month 1	Month 2	Month 3	Month 12
Receipts:					
1. Opening Balance					
2. Collection from debtors					
3. Cash Sales					
4. Loans from Banks					
5. Share Capital					
6. Miscellaneous receipts					
7. Other Items					
Total					
Payments:					
1. Payment to creditors					
2. Wages					
3. Overheads					
(a)					
(b)					
(c)					
4. Interest					
5. Dividend					
6. Corporate Tax					
7. Capital Expenditure					
8. Other items					
Total					
Closing Balance					
[Surplus(+) Shortfall (-)]					

LOS 8 : CASH BUDGET FOR LONG PERIOD

The following procedure may be adopted to prepare long-range cash forecasts:

- i) Take the cash at bank and in the beginning of the year:**
- ii) Add:**
 - a) Trading profit (before tax) expected to be earned;
 - b) Depreciation and other development expenses incurred to be written off;
 - c) Sale proceeds of assets’;
 - d) Proceeds of fresh issue of shares or debentures; and
 - e) Reduction in working capital that is current assets (except cash) less current liabilities.
- iii) Deduct:**
 - a) Dividends to be paid.
 - b) Cost of assets to be purchased.
 - c) Taxes to be paid.
 - d) Debentures or shares to be redeemed.
 - e) Increase in working capital.



LOS 9 : CASH MANAGEMENT MODELS

William J. Baumol's Economic Order Quantity Model, (1952).

- ❖ According to this 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 optimum cash balance according to this model will be that point where these two costs are minimum.
- ❖ The formula for determining optimum cash balance is:

$$C = \sqrt{\frac{2U \times P}{S}}$$

Where,

C = Optimum cash balance

U = Annual (or monthly) cash disbursement

P = Fixed cost per transaction

S = Opportunity cost of one rupee p.a. (or p.m.)

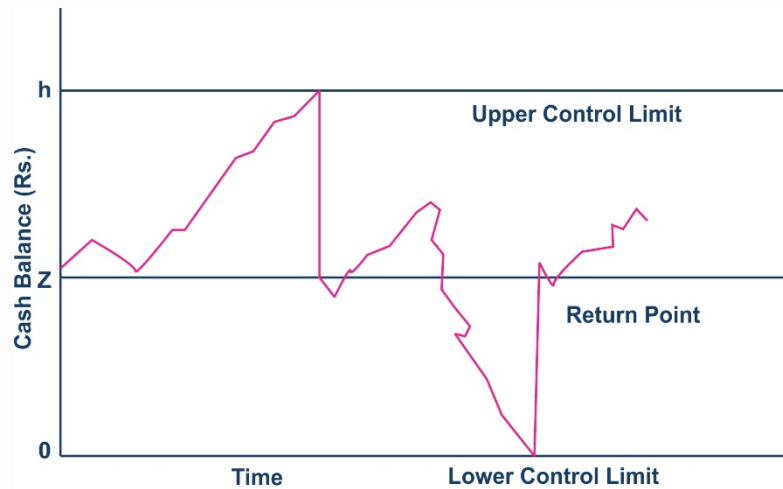
The model is based on the following assumptions:

- (i) Cash needs of the firm are known with certainty.
- (ii) The cash is used uniformly over a period of time and it is also known with certainty.
- (iii) The holding cost is known and it is constant.
- (iv) The transaction cost also remains constant.

Miller-Orr Cash Management Model (1966).

- ❖ According to this model the net cash flow is completely stochastic (not known in advance).
- ❖ 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.
 - 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 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.

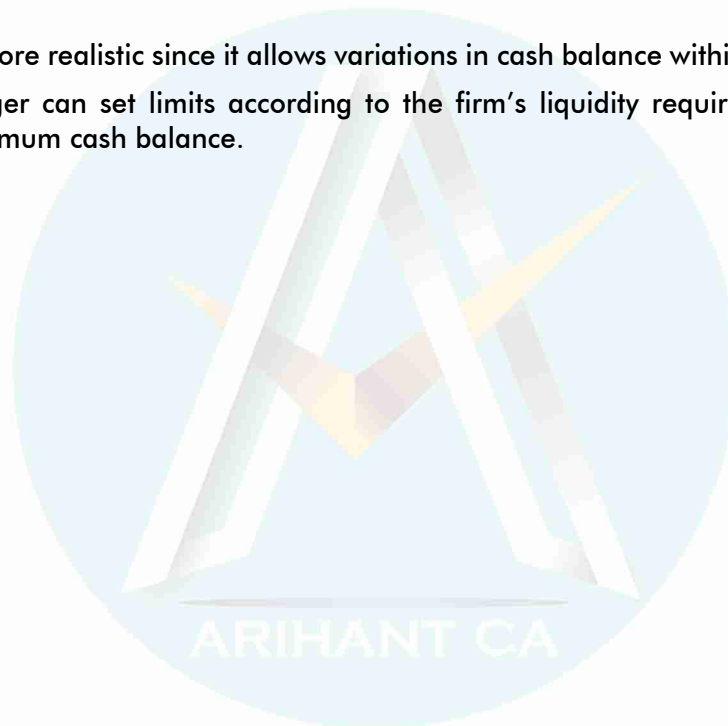




MILLER-ORR CASH MANAGEMENT MODEL

Note:

- ❖ The MO Model is more realistic since it allows variations in cash balance within lower and upper limits.
- ❖ The finance manager can set limits according to the firm's liquidity requirements i.e., maintaining minimum and maximum cash balance.



**QUESTION 32 :**

Prepare monthly cash budget for six months beginning from April 2021 on the basis of the following information:-

(i) Estimated monthly sales are as follows:-

	₹		₹
January	1,00,000	June	80,000
February	1,20,000	July	1,00,000
March	1,40,000	August	80,000
April	80,000	September	60,000
May	60,000	October	1,00,000

(ii) Wages and salaries are estimated to be payable as follows:-

	₹		₹
April	9,000	July	10,000
May	8,000	August	9,000
June	10,000	September	9,000

- (iii) Of the sales, 80% is on credit and 20% for cash. 75% of the credit sales are collected within one month and the balance in two months. There are no bad debt losses.
- (iv) Purchases amount to 80% of sales and are made and paid for in the month preceding the sales.
- (v) The firm has 10% debentures of ₹ 1,20,000. Interest on these has to be paid quarterly in January, April and so on.
- (vi) The firm is to make an advance payment of tax of ₹ 5,000 in July, 2021.
- (vii) The firm had a cash balance of ₹ 20,000 on April 1, 2021, which is the minimum desired level of cash balance. Any cash surplus/deficit above/below this level is made up by temporary investments/liquidation of temporary investments or temporary borrowings at the end of each month (interest on these to be ignored).

QUESTION 33 :

From the following information relating to a departmental store, you are required to prepare for the three months ending 31st March, 2021:-

- (a) Month-wise cash budget on receipts and payments basis; and
 (b) Statement of Sources and uses of funds for the three months period.

It is anticipated that the working capital at 1st January, 2021 will be as follows:-

	₹ in '000's
Cash in hand and at bank	545
Short term investments	300
Debtors	2,570
Stock	1,300
Trade creditors	2,110
Other creditors	200
Dividends payable	485
Tax due	320
Plant	800

Budgeted Profit Statement:

	January	February	₹ in '000's March
Sales	2,100	1,800	1,700
Cost of sales	1,635	1,405	1,330



Gross Profit	465	395	370
Administrative, Selling and Distribution Expenses	315	270	255
Net Profit before tax	150	125	115

Budgeted balances at the end of each months:

	31 st January	29 th February	₹in '000's 31 st March
Short term investments	700	---	200
Debtors	2,600	2,500	2,350
Stock	1,200	1,100	1,000
Trade creditors	2,000	1,950	1,900
Other creditors	200	200	200
Dividends payable	485	--	--
Tax due	320	320	320
Plant (depreciation ignored)	800	1,600	1,550

Depreciation amount to ₹ 60,000 is included in the budgeted expenditure for each month.

QUESTION 34 :

You are given below the Profit & Loss Accounts for two years for a company:

Profit and Loss Account					
	Year 1 (₹)	Year 2 (₹)		Year 1 (₹)	Year 2 (₹)
To Opening stock	80,00,000	1,00,00,000	By Sales	8,00,00,000	10,00,00,000
To Raw materials	3,00,00,000	4,00,00,000	By Closing stock	1,00,00,000	1,50,00,000
To Stores	1,00,00,000	1,20,00,000	By Misc. Income	10,00,000	10,00,000
To Manufacturing Expenses	1,00,00,000	1,60,00,000			
To Other Expenses	1,00,00,000	1,00,00,000			
To Depreciation	1,00,00,000	1,00,00,000			
To Net Profit	1,30,00,000	1,80,00,000			
Total	9,10,00,000	11,60,00,000	Total	9,10,00,000	11,60,00,000

Sales are expected to be ₹ 12,00,00,000 in year 3. As a result, other expenses will increase by ₹ 50,00,000 besides other charges. Only raw materials are in stock. Assume sales and purchases are in cash terms and the closing stock is expected to go up by the same amount as between year 1 and 2. You may assume that no dividend is being paid.

The Company can use 75% of the cash generated to service a loan. How much cash from operations will be available in year 3 for the purpose? Ignore income tax.

QUESTION 35 :

Prachi Ltd is a manufacturing company producing and selling a range of cleaning products to wholesale customers. It has three suppliers and two customers. Prachi Ltd relies on its cleared funds forecast to manage its cash.

You are an accounting technician for the company and have been asked to prepare a cleared funds forecast for the period Saturday 7 August to Wednesday 11 August 2021 inclusive. You have been provided with the following information:

1. Receipts from customers

	Credit terms	Payment method	7 Aug 2021 sales	7 Jul 2021 sales
W Ltd	1 calendar month	BACS	₹ 150,000	₹ 130,000



X Ltd	None	Cheque	₹ 180,000	₹ 160,000
-------	------	--------	-----------	-----------

- a) Receipt of money by BACS (Bankers' Automated Clearing Services) is instantaneous.
 b) X Ltd's cheque will be paid into Prachi Ltd's bank account on the same day as the sale is made and will clear on the third day following this (excluding day of payment).

2. Payments to suppliers

Supplier name	Credit terms	Payment method	7 Aug 2021 purchases	7 Jul 2021 purchases	7 Jun 2021 purchases
A Ltd	1 calendar month	Standing order	₹ 65,000	₹ 55,000	₹ 45,000
B Ltd	2 calendar months	Cheque	₹ 85,000	₹ 80,000	₹ 75,000
C Ltd	None	Cheque	₹ 95,000	₹ 90,000	₹ 85,000

- a) Prachi Ltd has set up a standing order for ₹ 45,000 a month to pay for supplies from A Ltd. This will leave Prachi's bank account on 7 August. Every few months, an adjustment is made to reflect the actual cost of supplies purchased (you do NOT need to make this adjustment).
 b) Prachi Ltd will send out, by post, cheques to B Ltd and C Ltd on 7 August. The amounts will leave its bank account on the second day following this (excluding the day of posting).

3. Wages and salaries

	July 2021	August 2021
Weekly wages	₹ 12,000	₹ 13,000
Monthly Salaries	₹ 56,000	₹ 59,000

- a) Factory workers are paid cash wages (weekly). They will be paid one week's wages, on 11 August, for the last week's work done in July (i.e. they work a week in hand).
 b) All the office workers are paid salaries (monthly) by BACS. Salaries for July will be paid on 7 August.

4. Other miscellaneous payments

- a) Every Saturday morning, the petty cashier withdraws ₹ 200 from the company bank account for the petty cash. The money leaves Prachi's bank account straight away.
 b) The room cleaner is paid ₹ 30 from petty cash every Monday morning.
 c) Office stationery will be ordered by telephone on Sunday 8 August to the value of ₹ 300. This is paid for by company debit card. Such payments are generally seen to leave the company account on the next working day.
 d) Five new softwares will be ordered over the Internet on 10 August at a total cost of ₹ 6,500. A cheque will be sent out on the same day. The amount will leave Prachi Ltd's bank account on the second day following this (excluding the day of posting).

5. Other information

The balance on Prachi's bank account will be ₹ 200,000 on 7 August 2021. This represents both the book balance and the cleared funds.

PREPARE a cleared funds forecast for the period Saturday 7th August to Wednesday 11th August 2021 inclusive using the information provided. Show clearly the uncleared funds float each day.

QUESTION 36 :

The following information relates to Zeta Limited, a publishing company: The selling price of a book is ₹ 15, and sales are made on credit through a book club and invoiced on the last day of the month. Variable costs of production per book are materials (₹ 5), labour (₹ 4), and overhead (₹ 2) The sales manager has forecasted the following volumes:

	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
No. of Books	1,000	1,000	1,000	1,250	1,500	2,000	1,900	2,200	2,200	2,300

Customers are expected to pay as follows:

- One month after the sale 40%
 Two months after the sale 60%

The company produces the books two months before they are sold and the creditors for materials are paid two months after production.



Variable overheads are paid in the month following production and are expected to increase by 25% in April; 75% of wages are paid in the month of production and 25% in the following month. A wage increase of 12.5% will take place on 1st March.

The company is going through a restructuring and will sell one of its freehold properties in May for ₹ 25,000, but it is also planning to buy a new printing press in May for ₹ 10,000.

Depreciation is currently ₹ 1,000 per month, and will rise to ₹ 1,500 after the purchase of the new machine. The company's corporation tax (of ₹ 10,000) is due for payment in March. The company presently has a cash balance at bank on 31 December 2020, of ₹ 1,500.

You are required to prepare a cash budget for the six months from January to June 2021.

QUESTION 37 :

From the information and the assumption that the cash balance in hand on 1st January 2021 is ₹ 72,500. Prepare a cash budget. Assume that 50 per cent of total sales are cash sales. Assets are to be acquired in the months of February and April. Therefore, provisions should be made for the payment of ₹ 8,000 and ₹ 25,000 for the same. An application has been made to the bank for the grant of a loan of ₹ 30,000 and it is hoped that the loan amount will be received in the month of May.

It is anticipated that a dividend of ₹ 35,000 will be paid in June. Debtors are allowed one month's credit. Creditors for materials purchased and overheads grant one month's credit. Sales commission at 3 per cent on sales is paid to the salesman each month.

Month	Sales (₹)	Materials Purchases (₹)	Salaries & Wages (₹)	Production Overheads (₹)	Office and Selling Overheads (₹)
January	72,000	25,000	10,000	6,000	5,500
February	97,000	31,000	12,100	6,300	6,700
March	86,000	25,500	10,600	6,000	7,500
April	88,600	30,600	25,000	6,500	8,900
May	1,02,500	37,000	22,000	8,000	11,000
June	1,08,700	38,800	23,000	8,200	11,500

QUESTION 38 :

A firm maintains a separate account for cash disbursement. Total disbursement are ₹1,05,000 per month or ₹ 12,60,000 per year. Administrative and transaction cost of transferring cash to disbursement account is ₹ 20 per transfer. Marketable securities yield is 8% per annum. Determine the optimum cash balance according to William J Baumol model.

QUESTION 39 :

The following information is available in respect of Sai Trading Company:

- (i) On an average, debtors are collected after 45 days; inventories have an average holding period of 75 days and creditor's payment period on an average is 30 days.
- (ii) The firm spends a total of ₹ 120 lakhs annually at a constant rate.
- (iii) It can earn 10 per cent on investments.

From the above information, you are required to calculate:

- (a) The cash cycle and cash turnover,
- (b) Minimum amounts of cash to be maintained to meet payments as they become due,
- (c) Savings by reducing the average inventory holding period by 30 days.

QUESTION 40 :

Consider the balance sheet of Maya Limited as on 31 December, 2020. The company has received a large order and anticipates the need to go to its bank to increase its borrowings. As a result, it has to forecast its cash requirements for January, February and March, 2021. Typically, the company collects 20 per cent of its sales in the month of sale, 70 per cent in the subsequent month, and 10 per cent in the second month after the sale. All sales are credit sales.



Equity & liabilities	Amount (₹ in '000)	Assets	Amount (₹ in '000)
Equity shares capital	100	Net fixed assets	1,836
Retained earnings	1,439	Inventories	545
Long-term borrowings	450	Accounts receivables	530
Accounts payables	360	Cash and bank	50
Loan from banks	400		
Other liabilities	212		
	2,961		2,961

Purchases of raw materials are made in the month prior to the sale and amounts to 60 per cent of sales. Payments for these purchases occur in the month after the purchase. Labour costs, including overtime, are expected to be ₹ 1,50,000 in January, ₹ 2,00,000 in February, and ₹ 1,60,000 in March. Selling, administrative, taxes, and other cash expenses are expected to be ₹ 1,00,000 per month for January through March. Actual sales in November and December and projected sales for January through April are as follows (in thousands):

Month	₹	Month	₹	Month	₹
November	500	January	600	March	650
December	600	February	1,000	April	750

On the basis of this information:

- PREPARE a cash budget and DETERMINE the amount of additional bank borrowings necessary to maintain a cash balance of ₹ 50,000 at all times for the months of January, February, and March.
- PREPARE a pro forma balance sheet for March 31.

QUESTION 41 :

Slide Ltd. is preparing a cash flow forecast for the three months period from January to the end of March. The following sales volumes have been forecasted:

Months	December	January	February	March	April
Sales (units)	1,800	1,875	1,950	2,100	2,250

Selling price per unit is ₹ 600. Sales are all on one month credit. Production of goods for sale takes place one month before sales. Each unit produced requires two units of raw materials costing ₹ 150 per unit. No raw material inventory is held. Raw materials purchases are on one month credit. Variable overheads and wages equal to ₹ 100 per unit are incurred during production and paid in the month of production. The opening cash balance on 1st January is expected to be ₹ 35,000. A long term loan of ₹ 2,00,000 is expected to be received in the month of March. A machine costing ₹ 3,00,000 will be purchased in March.

- Prepare a cash budget for the months of January, February and March and calculate the cash balance at the end of each month in the three months period.
- Calculate the forecast current ratio at the end of the three months period.



UNIT – III : MANAGEMENT OF INVENTORY

QUESTION 42 :

A company's requirements for ten days are 6,300 units. The ordering cost per order is ₹ 10 and the carrying cost per unit is ₹ 0.26. You are required to calculate the economic order quantity.

QUESTION 43 :

Marvel Limited uses a large quantity of salt in its production process. Annual consumption is 60,000 tonnes over a 50-week working year. It costs ₹ 100 to initiate and process an order and delivery follow two weeks later. Storage costs for the salt are estimated at 10 paise per tonne per annum. The current practice is to order twice a year when the stock falls to 10,000 tonnes. Recommend an appropriate ordering policy for Marvel Limited, and contrast it with the cost of the current policy.

QUESTION 44 :

Pureair Company is a distributor of air filters to retail stores. It buys its filters from several manufacturers. Filters are ordered in lot sizes of 1,000 and each order costs ₹40 to place. Demand from retail stores is 20,000 filters per month, and carrying cost is ₹ 0.10 a filter per month.

- (a) What is the optimal order quantity with respect to so many lot sizes?
- (b) What would be the optimal order quantity if the carrying cost were ₹ 0.05 a filter per month?
- (c) What would be the optimal order quantity if ordering costs were ₹ 10?

QUESTION 45 :

The total credit sales of a company are ₹ 12,80,000. It has a gross profit margin of 15% and a current ratio of 1.75.

Other informations are as follows:

Current liabilities	₹1,92,000
Closing Inventories	₹96,000
Cash balance	₹32,000
Inventory turnover	4 times
Opening debtors	₹4,32,000

You are required to calculate:

- (i) The average inventory to be carried by the company.
 - (ii) Average collection period.
- (Assume a 360 day year)



UNIT IV : MANAGEMENT OF RECEIVABLES

Los 10 : APPROACHES TO EVALUATION OF CREDIT POLICIES

There are basically two methods of evaluating the credit policies to be adopted by a Company :

- 1) Total Approach
- 2) Incremental Approach

Statement showing the Evaluation of Credit Policies (based on Total Approach)

Particulars	Present Policy (₹)	Proposed Policy I (₹)	Proposed Policy II (₹)	Proposed Policy III (₹)
A. Expected Profit:				
(a) Credit Sales				
(b) Total Cost other than Bad Debts				
(i) Variable Costs				
(ii) Fixed Costs				
(c) Bad Debts				
(d) Cash discount				
(e) Expected Net Profit before Tax (a-b-c-d)				
(f) Less: Tax				
(g) Expected Profit after Tax				
B. Opportunity Cost of Investments in Receivables locked up in Collection Period				
Net Benefits (A – B)				

Advise: The Policy..... should be adopted since the net benefits under this policy are higher as compared to other policies.

Statement showing the Evaluation of Credit Policies (based on Incremental Approach)

Particulars	Present Policy Day (₹)	Proposed Policy I (₹ Day)	Proposed Policy II (₹ Day)	Proposed Policy III (₹ Day)
A. Incremental Expected Profit:				
Credit Sales				
(a) Incremental Credit Sales				
(b) Less: Incremental Costs of Credit sales				
(i) Variable Costs				
(ii) Fixed Costs				
(c) Incremental Bad Debt Losses				
(d) Incremental Cash Discount				
(e) Incremental Expected Profit (a-b-c-d)				
(f) Less: Tax				
(g) Incremental Expected Profit after Tax				
B. Required Return on Incremental Investments:				
(a) Cost of Credit Sales				
(b) Collection Period (in days)				



(c) Investment in Receivable (a x b/365 or 360)				
d) Incremental Investment in Receivables				
(e) Required Rate of Return (in %)				
(f) Required Return on Incremental Investments (d x e)				
Net Benefits (A – B)				

Advise: The Policyshould be adopted since net benefits under this policy are higher as compared to other policies.

Here

(i) Total Fixed Cost = [Average Cost per unit – Variable Cost per unit] x No. of units sold on credit under Present Policy

(ii) Opportunity Cost = Total Cost of Credit Sales $\times \frac{\text{Collection period (Days)}}{365 \text{ or } 360} \times \frac{\text{Required Rate of Return}}{100}$

LOS 11 : FACTORING

- ❖ Factoring is a new concept in financing of accounts receivables. This refers to out right sale of accounts receivables to a factor or a financial agency.
- ❖ A factor is a firm that acquires the receivables of other firms. The factoring agency bears the right of collection and services the accounts for a fee.

Types of Factoring :

Non-Recourse Factoring & Recourse Factoring

- ❖ **Non-Recourse Factoring:** Normally, factoring is the arrangement on a non-recourse basis where in the event of default the loss is borne by the factor. i.e if there are bad debts, it will be borne by the factor.
- ❖ **Recourse Factoring:** In this type of factoring. the risk of bad debt is borne by the client and not factor.

Type 1 : Cost Benefit Analysis

a) Benefits of Factoring

- Reduction of Bad Debts
- Reduction in Admin cost
- Reduction in Debtors collection period which will reduce blockage of funds and will save our opportunity cost of interest (Early Recovery)
{Interest saved due to reduction in Average collection period [Cost of Annual Credit Sales \times Rate of Interest \times (Present Collection Period – New Collection Period)/360* days]}
- If company is dependent on Over Draft then it can save interest, if company receives advance from Factor.

b) Cost of Factoring

- Commission / brokerage
- Interest paid to Factor if advances taken

Net Benefit of Factoring

Decision :

If net benefit if positive company should go for factoring arrangement.

Note : Debtors collection period = $\frac{\text{Debtors}}{\text{Average daily credit sales}}$



Type 2 : Effective Cost of Factoring (%age)

$$\text{Effective Cost of Factoring} = \frac{\text{Net Cos of Factoring}}{\text{Net Advance Received}} \times 100$$

a) Net Advance received from factor

Annual Credit Sale × DCP = Debtors amount received in advance	xxx
- reserve required	xxx
- commission charged	xxx
Amount of advance	xxx
- Interest on amount of advance	xxx
Net advance received from factor	xxx

b) Net cost of factoring

Factor commission	xxx
+ interest cost	xxx
- Bad Debt saved	xxx
- admin cost saved	xxx
Net cost of factoring	xxx

Advise:

1. The company should avail Factoring services if rate of effective Cost of Factoring to the firm is less than the existing cost of borrowing or if availing services of factoring results in to positive Net Annual **Benefits**.
2. The company should not avail Factoring services if the Rate of Effective Cost of Factoring to the Firm is more than the existing cost of borrowing.

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QUESTION 46 :

A trader whose current sales are in the region of ₹ 6 lakhs per annum and an average collection period of 30 days wants to pursue a more liberal policy to improve sales. A study made by a management consultant reveals the following information:-

Credit Policy	Increase in collection period	Increase in sales	Present default anticipated
A	10 days	₹ 30,000	1.5%
B	20 days	₹ 48,000	2%
C	30 days	₹ 75,000	3%
D	45 days	₹ 90,000	4%

The selling price per unit is ₹ 3. Average cost per unit is ₹ 2.25 and variable costs per unit are ₹2. The current bad debt loss is 1%. Required return on additional investment is 20%. Assume a 360 days year. Which of the above policies would you recommend for adoption?

QUESTION 47 :

XYZ Corporation is considering relaxing its present credit policy and is in the process of evaluating two proposed policies. Currently, the firm has annual credit sales of ₹50 lakhs and accounts receivable turnover ratio of 4 times a year. The current level of loss due to bad debts is ₹ 1,50,000. The firm is required to give a return of 25% on the investment in new accounts receivables. The company's variable costs are 70% of the selling price. Given the following information, which is the better option?

	(Amount in ₹)		
	Present Policy	Policy Option I	Policy Option II
Annual credit sales	50,00,000	60,00,000	67,50,000
Accounts receivable turnover ratio	4 times	3 times	2.4 times
Bad debt losses	1,50,000	3,00,000	4,50,000

QUESTION 48 :

A Factoring firm has credit sales of ₹ 360 lakhs and its average collection period is 30 days. The financial controller estimates, bad debt losses are around 2% of credit sales. The firm spends ₹ 1,40,000 annually on debtors administration. This cost comprises of telephonic and fax bills along with salaries of staff members. These are the avoidable costs. A Factoring firm has offered to buy the firm's receivables. The factor will charge 1% commission and will pay an advance against receivables on an interest @15% p.a. after withholding 10% as reserve. What should the firm do? Assume 360 days in a year.

QUESTION 49 :

Mosaic Limited has current sales of ₹ 1.5 lakh per year. Cost of sales is 75 per cent of sales and bad debts are one per cent of sales. Cost of sales comprises 80 per cent variable costs and 20 per cent fixed costs, while the company's required rate of return is 12 per cent. Mosaic Limited currently allows customers 30 days' credit, but is considering increasing this to 60 days' credit in order to increase sales.

It has been estimated that this change in policy will increase sales by 15 per cent, while bad debts will increase from one per cent to four per cent. It is not expected that the policy change will result in an increase in fixed costs and creditors and stock will be unchanged.

Should Mosaic Limited introduce the proposed policy?

ANALYSE (Assume a 360 days year)

QUESTION 50 :

The Dolce Company purchases raw materials on terms of 2/10, net 30. A review of the company's records by the owner, Mr. Gautam, revealed that payments are usually made 15 days after purchases are made. When asked why the firm did not take advantage of its discounts, the accountant, Mr. Rohit, replied that it cost only 2 per cent for these funds, whereas a bank loan would cost the company 12 per cent.

a) ANALYSE what mistake is Rohit making?



- b) If the firm could not borrow from the bank and was forced to resort to the use of trade credit funds, what suggestion might be made to Rohit that would reduce the annual interest cost? IDENTIFY.

QUESTION 51 :

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. Cost of funds is 10 percent.

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.

QUESTION 52 :

As a part of the strategy to increase sales and profits, the sales manager of a company proposes to sell goods to a group of new customers with 10% risk of non-payment. This group would require one and a half months credit and is likely to increase sales by ₹ 1,00,000 p.a. Production and Selling expenses amount to 80% of sales and the income-tax rate is 50%. The company's minimum required rate of return (after tax) is 25%.

Should the sales manager's proposal be accepted? Also find the degree of risk of non-payment that the company should be willing to assume if the required rate of return (after tax) were (i) 30%, (ii) 40% and (iii) 60%.

QUESTION 53 :

Slow Payers are regular customers of Goods Dealers Ltd., Calcutta and have approached the sellers for extension of a credit facility for enabling them to purchase goods from Goods Dealers Ltd. On an analysis of past performance and on the basis of information supplied, the following pattern of payment schedule emerges in regard to Slow Payers:

Period	Pattern
At the end of 30 days	15% of the bill
At the end of 60 days	34% of the bill.
At the end of 90 days	30% of the bill.
At the end of 100 days	20% of the bill.
Non-recovery	1% of the bill.

Slow Payers want to enter into a firm commitment for purchase of goods of ₹ 15 lakhs in 2020-21, deliveries to be made in equal quantities on the first day of each quarter in the calendar year.

The price per unit of commodity is ₹ 150 on which a profit of ₹ 5 per unit is expected to be made. It is anticipated by Goods Dealers Ltd., that taking up of this contract would mean an extra recurring expenditure of ₹ 5,000 per annum. If the opportunity cost of funds in the hands of Goods Dealers is 24% per annum, would you as the finance manager of the seller recommend the grant of credit to Slow Payers? Workings should form part of your answer. Assume year of 360 days.

QUESTION 54 :

The Alliance Ltd., a Petrochemical sector company had just invested huge amount in its new expansion project. Due to huge capital investment, the company is in need of an additional ₹ 1,50,000 in working capital immediately. The Finance Manger has determined the following three feasible sources of working capital funds:

- (i) **Bank loan:** The Company's bank will lend ₹ 2,00,000 at 15%. A 10% compensating balance will be required, which otherwise would not be maintained by the company.



- (ii) **Trade credit:** The company has been offered credit terms from its major supplier of 3/30, net 90 for purchasing raw materials worth ₹ 1,00,000 per month.
- (iii) **Factoring:** A factoring firm will buy the company's receivables of ₹ 2,00,000 per month, which have a collection period of 60 days. The factor will advance up to 75% of the face value of the receivables at 12% on an annual basis. The factor will also charge commission of 2% on all receivables purchased. It has been estimated that the factor's services will save the company a credit department expense and bad debt expense of ₹ 1,250 and ₹ 1,750 per month respectively. On the basis of annual percentage cost, ADVISE which alternative should the company select? Assume 360 days year.

QUESTION 55 :

A bank is analysing the receivables of Jackson Company in order to identify acceptable collateral for a short-term loan. The company's credit policy is 2/10 net 30. The bank lends 80 percent on accounts where customers are not currently overdue and where the average payment period does not exceed 10 days past the net period. A schedule of Jackson's receivables has been prepared. How much will the bank lend on pledge of receivables, if the bank uses a 10 per cent allowance for cash discount and returns?

Account	Amount ₹	Days Outstanding in days	Average Payment Period historically
74	25,000	15	20
91	9,000	45	60
107	11,500	22	24
108	2,300	9	10
114	18,000	50	45
116	29,000	16	10
123	14,000	27	48
	1,08,800		

QUESTION 56 :

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).

QUESTION 57 :

Tony Limited, manufacturer of Colour TV sets is considering the liberalization of existing credit terms to three of their large customers A, B and C. The credit period and likely quantity of TV sets that will be sold to the customers in addition to other sales are as follows:

Quantity sold (No. of TV Sets)

Credit Period (Days)	A	B	C
0	1,000	1,000	-
30	1,000	1,500	-
60	1,000	2,000	1,000
90	1,000	2,500	1,500

The selling price per TV set is ₹ 9,000. The expected contribution is 20% of the selling price. The cost of carrying receivable averages 20% per annum.

**You are required:**

- COMPUTE the credit period to be allowed to each customer (Assume 360 days in a year for calculation purposes).
- DEMONSTRATE the other problems the company might face in allowing the credit period as determined in (a) above?

QUESTION 58 :

A regular customer of your company has approached to you for extension of credit facility for purchasing of goods. On analysis of past performance and on the basis of information supplied, the following pattern of payment schedule emerges:

Pattern of Payment Schedule	
At the end of 30 days	20% of the bill
At the end of 60 days	30% of the bill.
At the end of 90 days	30% of the bill.
At the end of 100 days	18% of the bill.
Non-recovery	2% of the bill.

The customer wants to enter into a firm commitment for purchase of goods of ₹30 lakhs in 2019, deliveries to be made in equal quantities on the first day of each quarter in the calendar year. The price per unit of commodity is ₹300 on which a profit of ₹10 per unit is expected to be made. It is anticipated that taking up of this contract would mean an extra recurring expenditure of ₹10,000 per annum. If the opportunity cost is 18% per annum, would you as the finance manager of the company RECOMMEND the grant of credit to the customer? Assume 1 year = 360 days.

QUESTION 59 :

TM Limited, a manufacturer of colour TV sets is considering the liberalization of existing credit terms to three of their large customers A, B and C. The credit period and likely quantity of TV sets that will be sold to the customers in addition to other sales are as follows:

Quantity sold (No. of TV Sets)

Credit Period (Days)	A	B	C
0	10,000	10,000	-
30	10,000	15,000	-
60	10,000	20,000	10,000
90	10,000	25,000	15,000

The selling price per TV set is ₹15,000. The expected contribution is 50% of the selling price. The cost of carrying receivable averages 20% per annum.

You are required to COMPUTE the credit period to be allowed to each customer. (Assume 360 days in a year for calculation purposes).

QUESTION 60 :

A company wants to follow a more prudent policy to improve its sales for the region which is ₹ 9 lakhs per annum at present, having an average collection period of 45 days. After certain researches, the management consultant of the company reveals the following information:

Credit Policy	Increase in collection period	Increase in sales	Present default anticipated
W	15 days	₹ 60,000	1.5%
X	30 days	₹ 90,000	2%
Y	45 days	₹ 1,50,000	3%
Z	70 days	₹ 2,10,000	4%

The selling price per unit is ₹ 3. Average cost per unit is ₹ 2.25 and variable costs per unit are ₹ 2. The current bad debt loss is 1%. Required return on additional investment is 20%. (Assume 360 days year) ANALYSE which of the above policies would you recommend for adoption?



QUESTION 61 :

Current annual sale of SKD Ltd. is ₹ 360 lakhs. Its directors are of the opinion that company's current expenditure on receivables management is too high and with a view to reduce the expenditure they are considering following two new alternate credit policies:

	Policy X	Policy Y
Average collection period	1.5 months	1 month
% of default	2%	1%
Annual collection expenditure	₹ 12 lakh	₹ 20 lakh

Selling price per unit of product is ₹ 150. Total cost per unit is ₹ 120.

Current credit terms are 2 months and percentage of default is 3%.

Current annual collection expenditure is ₹ 8 lakh. Required rate of return on investment of SKD Ltd. is 20%. Determine which credit policy SKD Ltd. should follow.

QUESTION 62 :

WQ Limited is considering relaxing its present credit policy and is in the process of evaluating two proposed policies. Currently, the firm has annual credit sales of ₹ 180 lakh and Debtors turnover ratio of 4 times a year. The current level of loss due to bad debts is ₹ 6 lakh. The firm is required to give a return of 25% on the investment in new accounts receivables. The company's variable costs are 60% of the selling price. Given the following information, DETERMINE which is a better Policy?

(Amount in lakhs)

	Present Policy	Proposed Policy	
		Option I	Option II
Annual credit sales (₹)	180	220	280
Debtors turnover ratio	4	3.2	2.4
Bad debt losses (₹)	6	18	38

QUESTION 63 :

HT Ltd. has sales of ₹ 960 lakhs. Selling price per unit is ₹ 80 and variable operating cost is 75% of selling price and average cost per unit is ₹ 70. The cost of funds is 12%. Average collection period is 75 days, bad debt losses are 4% of sales and collection expenses are ₹ 15.60 lakhs. Company is considering whether collection policies should be made strict. Due to rigorous collection procedures, sales are expected to decline to ₹ 920 lakhs. Average collection period will reduce to 60 days and bad debts will reduce to 2.5% of sales. Annual collection expenses will increase to ₹ 22.50 lakhs.

Required: Should the company carry out the proposal?

(Assume 360 days in a year and investment in debtors are calculated on total cost)

QUESTION 64 :

XYZ Ltd. is making a turnover of ₹ 70 lakhs out of which 60% is made on credit. The company allows credit for 30 days. The company is considering proposals to liberalize the credit policy. Information regarding options available are as under:

	Proposal-A	Proposal-B
Credit period	45 days	60 days
Anticipated credit sales	₹ 65 lakh	₹ 80 lakh

The product yield an average contribution of 20% on sales. Fixed costs are ₹ 6 lakh per annum. The company expects a pre-tax return of 18% on capital employed. At present company makes a provision for bad debts@ 0.5% which is expected to go up to 1% for Proposal-A and to 2% for Proposal-B. Assume 360 days in a year.

Evaluate the proposals and give your recommendations.

**QUESTION 65 :**

Zeta Limited has a current credit sales of ₹ 7,20,000. It is considering revising its credit policy. The proposed terms of credit will be "2/10, net 30" against the present policy of "net 30".

As a result, Zeta Limited's credit sales are expected to increase by ₹ 20,000 and the average collection period will reduce from 30 days to 20 days. It is also expected that 50 percent of the customers will take the discounts and pay on the 10 th day and rest of the customers will pay on the 30th day. Bad debt losses will remain at 2 percent of sales. The variable cost ratio is 70 percent.

Its corporate tax rate is 50 percent and opportunity cost of investment in receivables is 10 percent.

Advise whether Zeta Limited should change its credit period?

QUESTION 66 :

Navya Ltd has annual credit sales of ₹ 45 lakhs. Credit terms are 30 days, but its management of receivables has been poor and the average collection period is 50 days, Bad debt is 0.4 per cent of sales. A factor has offered to take over the task of debt administration and credit checking, at an annual fee of 1 per cent of credit sales. Navya Ltd. estimates that it would save ₹ 35,000 per year in administration costs as a result. Due to the efficiency of the factor, the average collection period would reduce to 30 days and bad debts would be zero. The factor would advance 80 per cent of invoiced debts at an annual interest rate of 11 per cent. Navya Ltd. is currently financing receivables from an overdraft costing 10 per cent per year.

If occurrence of credit sales is throughout the year, COMPUTE whether the factor's services should be accepted or rejected. Assume 365 days in a year.

QUESTION 67 :

A company is considering to engage a factor. The following information is available:

- ❖ The current average collection period for the company's debtors is 90 days and ½% of debtors default. The factor has agreed to pay money due after 60 days and will take the responsibility of any loss on account of bad debts.
- ❖ The annual charge for factoring is 2% of turnover. Administration cost saving is likely to be ₹ 1,00,000 per annum.
- ❖ Annual credit sales are ₹ 1,20,00,000. Variable cost is 80% of sales price. The company's cost of borrowing is 15% per annum. Assume 360 days in a year.
- ❖ Should the company enter into a factoring agreement?

QUESTION 68 :

A company is considering the use of factoring to manage its trade receivables. It currently has a balance outstanding on trade receivables of ₹36,00,000 and annual sales revenue of ₹2,19,00,000. It anticipates that this level of sales revenue and trade receivables will continue for at least the next year. It estimates that the use of the factoring, company will result in a reduction in credit control costs of ₹5,00,000 per annum.

The factoring company will charge a fee of 2.5% of invoiced sales. It will give an advance of 90% of invoiced sales and charge interest at a rate of 12% per annum.

The company currently finances its accounts receivables with a bank overdraft at an interest rate of 15% per annum.

Required:

- (i) Calculate the annual cost of factoring net of credit control cost savings.
 - (ii) Calculate whether there is a financial benefit from using the factor.
- (Assume that there are no bad debts and all sales are on credit)

QUESTION 69 :

During the financial year 2020-21, KPO Ltd. had total sales of ₹ 250 lakhs of which 64% is on credit. At present, the company is offering credit terms of 2/40, net 120. Of the total, 60% of customer avails the discount and the balance pay in 120 days. Past experience of the company indicates that bad debt losses are around 2% of credit sales. The company spends about

₹ 3,00,000 per annum to administer its credit sales. These costs may be avoided if a factor is prepared to buy the firm's receivables. However, the factor will charge 3% commission and will pay advance against receivables to the company at an interest rate of 18% after withholding 5% as reserve.

- (i) What is the effective cost of factoring? Consider number of days in a year as 360 days.
- (ii) If bank finance for working capital is available at 12% interest, should the company avail of factoring service.





UNIT – V : MANAGEMENT OF PAYABLES (CREDITORS)

LOS 12 : COMPUTE THE COST OF PAYABLES

- ❖ By using the trade credit judiciously, a firm can reduce the effect of growth or burden on investments in Working Capital.
- ❖ Now question arises how to calculate the cost of not taking the discount.
- ❖ The following equation can be used to calculate nominal cost, on an annual basis of not taking the discount:

$$= \frac{d}{100-d} \times \frac{365 \text{ days}}{t}$$

- ❖ However the above formula does not take into account the compounding effect and therefore, the cost of credit shall be even higher.
- ❖ The cost of lost cash discount can be estimated by the formula:

$$= \left(\frac{100}{100-d} \right)^{\frac{365}{t}} - 1$$

Where,

d = Size of discount i.e. for 6% discount, d=6

t = the reduction in the payment period in days, necessary to obtain the early discount or Days Credit Outstanding – Discount Period.

QUESTION 70 :

Suppose ABC Ltd. has been offered credit terms from its major supplier of 2/10, net 45. Hence the company has the choice of paying ₹ 10 per ₹ 100 or to invest the ₹ 98 for an additional 35 days and eventually pay the supplier ₹ 100 per ₹ 100. The decision as to whether the discount should be accepted depends on the opportunity cost of investing ₹ 98 for 35 days. What should the company do?

QUESTION 71 :

A Ltd. is in the manufacturing business and it acquires raw material from X Ltd. on a regular basis. As per the terms of agreement the payment must be made within 40 days of purchase. However, A Ltd. has a choice of paying ₹ 98.50 per ₹ 100 it owes to X Ltd. on or before 10th day of purchase.

Required:

EXAMINE whether A Ltd. should accept the offer of discount assuming average billing of A Ltd. with X Ltd. is ₹ 10,00,000 and an alternative investment yield a return of 15% and company pays the invoice.





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CHAPTER ONE

SCOPE & OBJECTIVE OF FINANCIAL MANAGEMENT

Q. 1 : EXPLAIN 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.

Q. 2 : DIFFERENTIATE 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.

1. 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.

2. 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.

Q. 3 : EXPLAIN THE LIMITATIONS OF PROFIT MAXIMIZATION OBJECTIVE OF FINANCIAL MANAGEMENT.

- (a) Time factor is ignored.
- (b) It is vague because it is not cleared whether the term relates to economics profit, accounting profit, profit after tax or before tax.
- (c) The term maximisation is also ambiguous
- (d) It ignore, the risk factor.

Q. 4 : DISCUSS THE CONFLICTS IN PROFIT VERSUS WEALTH MAXIMIZATION PRINCIPLE OF THE FIRM. OR

DISTINGUISH BETWEEN PROFIT MAXIMISATION VS WEALTH MAXIMISATION OBJECTIVE OF THE FIRM. OR

WRITE TWO MAIN OBJECTIVES OF FINANCIAL MANAGEMENT.

1. Profit maximisation

- 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.

2. Wealth maximisation

- Wealth maximisation as an objective, 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.

Q. 5 : EXPLAIN AS TO HOW THE WEALTH MAXIMISATION OBJECTIVE IS SUPERIOR TO THE PROFIT MAXIMISATION OBJECTIVE.**A firm's financial management may often have the following as their objectives:**

- (i) The maximisation of firm's profit.
- (ii) The maximisation of firm's value / wealth.
- ❖ The maximisation of profit is often considered as an implied objective of a firm. To achieve the aforesaid objective various type of financing decisions may be taken. Options resulting into maximisation of profit may be selected by the firm's decision makers. They even sometime may adopt policies yielding exorbitant profits in short run which may prove to be unhealthy for the growth, survival and overall interests of the firm. The profit of the firm in this case is measured in terms of its total accounting profit available to its shareholders.
- ❖ The value/wealth of a firm is defined as the market price of the firm's stock. The market price of a firm's stock represents the focal judgment of all market participants as to what the value of the particular firm is. It takes into account present and prospective future earnings per share, the timing and risk of these earnings, the dividend policy of the firm and many other factors that bear upon the market price of the stock.
- ❖ The value maximisation objective of a firm is superior to its profit maximisation objective due to following reasons.



1. The value maximisation objective of a firm considers all future cash flows, dividends, earning per share, risk of a decision etc. whereas profit maximisation objective does not consider the effect of EPS, dividend paid or any other returns to shareholders or the wealth of the shareholder.
 2. A firm that wishes to maximise the shareholders wealth may pay regular dividends whereas a firm with the objective of profit maximisation may refrain from dividend payment to its shareholders.
 3. Shareholders would prefer an increase in the firm's wealth against its generation of increasing flow of profits.
 4. The market price of a share reflects the shareholders expected return, considering the long-term prospects of the firm, reflects the differences in timings of the returns, considers risk and recognizes the importance of distribution of returns.
- ❖ The maximisation of a firm's value as reflected in the market price of a share is viewed as a proper goal of a firm. The profit maximisation can be considered as a part of the wealth maximisation strategy.

Q. 6 : "THE PROFIT MAXIMIZATION IS NOT AN OPERATIONALLY FEASIBLE CRITERION." COMMENT ON IT.

"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.

Q. 7 : "THE INFORMATION AGE HAS GIVEN A FRESH PERSPECTIVE ON THE ROLE OF FINANCE MANAGEMENT AND FINANCE MANAGERS. WITH THE SHIFT IN PARADIGM IT IS IMPERATIVE THAT THE ROLE OF CHIEF FINANCIAL OFFICER (CFO) CHANGES FROM A CONTROLLER TO A FACILITATOR." CAN YOU DESCRIBE THE EMERGENT ROLE WHICH IS DESCRIBED BY THE SPEAKER/AUTHOR?

- ❖ The information age has given a fresh perspective on the role financial management and finance managers. With the shift in paradigm it is imperative that the role of Chief Finance Officer (CFO) changes from a controller to a facilitator. In the emergent role Chief Finance Officer acts as a catalyst to facilitate changes in an environment where the organisation succeeds through self-managed teams.
- ❖ The Chief Finance Officer must transform himself to a front-end organiser and leader who spends more time in networking, analysing the external environment, making strategic decisions, managing and protecting cash flows. In due course, the role of Chief Finance Officer will shift from an operational to a strategic level. Of course on an operational level the Chief Finance Officer cannot be excused from his backend duties.
- ❖ The knowledge requirements for the evolution of a Chief Finance Officer will extend from being aware about capital productivity and cost of capital to human resources initiatives and competitive environment analysis. He has to develop general management skills for a wider focus encompassing all aspects of business that depend on or dictate finance.



Q. 8 : DISCUSS THE 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 & behaviour of share prices.

Q. 9 : WRITE SHORT NOTES ON :**INTER RELATIONSHIP BETWEEN INVESTMENT, FINANCING AND DIVIDEND DECISIONS.****Inter-relationship between Investment, Financing and Dividend Decisions:**

- ❖ The finance functions are divided into three major decisions, viz., investment, financing and dividend decisions. It is correct to say that these decisions are inter-related because the underlying objective of these three decisions is the same, i.e. maximisation of shareholders' wealth.
- ❖ Since investment, financing and dividend decisions are all interrelated, one has to consider the joint impact of these decisions on the market price of the company's shares and these decisions should also be solved jointly.
- ❖ The decision to invest in a new project needs the finance for the investment. The financing decision, in turn, is influenced by and influences dividend decision because retained earnings used in internal financing deprive shareholders of their dividends.
- ❖ An efficient financial management can ensure optimal joint decisions. This is possible by evaluating each decision in relation to its effect on the shareholders' wealth.
- ❖ The above three decisions are briefly examined below in the light of their inter-relationship and to see how they can help in maximising the shareholders' wealth i.e. market price of the company's shares.

1. Investment decision:

- ❖ The investment of long term funds is made after a careful assessment of the various projects through capital budgeting and uncertainty analysis. However, only that investment proposal is to be accepted which is expected to yield at least so much return as is adequate to meet its cost of financing. This have an influence on the profitability of the company and ultimately on its wealth.

2. Financing decision:

- ❖ Funds can be raised from various sources. Each source of funds involves different issues. The finance manager has to maintain a proper balance between long-term and short-term funds. With the total volume of long-term funds, he has to ensure a proper mix of loan funds and owner's funds. The optimum financing mix will increase return to equity shareholders and thus maximise their wealth.



3. Dividend decision:

- ❖ The finance manager is also concerned with the decision to pay or declare dividend. He assists the top management in deciding as to what portion of the profit should be paid to the shareholders by way of dividends and what portion should be retained in the business. An optimal dividend pay-out ratio maximises shareholders' wealth.
- ❖ The above discussion makes it clear that investment, financing and dividend decisions are interrelated and are to be taken jointly keeping in view their joint effect on the shareholders' wealth.

Q. 10: EXPLAIN 'FINANCE FUNCTION'.

- ❖ The finance function is most important for all business enterprises. It remains a focus of all activities. It starts with the setting up of an enterprise.
- ❖ It is concerned with raising of funds, deciding the cheapest source of finance, utilization of funds raised, making provision for refund when money is not required in the business, deciding the most profitable investment, managing the funds raised and paying returns to the providers of funds in proportion to the risks undertaken by them.
- ❖ Therefore, it aims at acquiring sufficient funds, utilizing them properly, increasing the profitability of the organization and maximizing the value of the organization and ultimately the shareholder's wealth.

Q. 11: EXPLAIN THE ROLE OF FINANCE MANAGER IN THE CHANGING SCENARIO OF FINANCIAL MANAGEMENT IN INDIA.

- ❖ In the modern enterprise, the finance manager occupies a key position and his role is becoming more and more pervasive and significant in solving the finance problems.
- ❖ The traditional role of the finance manager was confined just to raising of funds from a number of sources, but the recent development in the socio-economic and political scenario throughout the world has placed him in a central position in the business organisation.
- ❖ He is now responsible for shaping the fortunes of the enterprise, and is involved in the most vital decision of allocation of capital like mergers, acquisitions, etc. He is working in a challenging environment which changes continuously.
- ❖ Emergence of financial service sector and development of internet in the field of information technology has also brought new challenges before the Indian finance managers.
- ❖ Development of new financial tools, techniques, instruments and products and emphasis on public sector undertaking to be self-supporting and their dependence on capital market for fund requirements have all changed the role of a finance manager. His role, especially, assumes significance in the present day context of liberalization, deregulation and globalization.

Q. 12: WHAT ARE THE MAIN RESPONSIBILITIES/ROLE OF A CHIEF FINANCIAL OFFICER OF AN ORGANISATION? OR

ELUCIDATE THE RESPONSIBILITIES OF CHIEF FINANCIAL OFFICER.

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.



Q. 13 : DISCUSS EMERGING ISSUES 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.

Q. 14 : WHAT ARE THE TWO MAIN ASPECTS OF THE FINANCE FUNCTION?**Long term Finance Function Decisions****1. Investment decision**

- ❖ These decisions relate to the selection of assets in which funds will be invested by a firm. Funds procured from different sources have to be invested in various kinds of assets. Long term funds are used in a project for various fixed assets and also for current assets.

2. Financing decision

- ❖ These decisions relate to acquiring the optimum finance to meet financial objectives and seeing that fixed and working capital are effectively managed.

3. Dividend decision

- ❖ These decisions relate to the determination as to how much and how frequently cash can be paid out of the profits of an organisation as income for its owners/ shareholders. The owner of any profit-making organization looks for reward for his investment in two ways, the growth of the capital invested and the cash paid out as income; for a sole trader this income would be termed as drawings and for a limited liability company the term is dividends.

Short term Finance Function Decision

- ❖ Generally short-term decisions are reduced to management of current asset and current liability (i.e., working capital Management).

Q. 15 : WHAT ARE THE ROLES OF FINANCE EXECUTIVE IN MODERN WORLD?

- ❖ Today, the role of Financial Executive, is no longer confined to accounting, financial reporting and risk management. Some of the key activities that highlight the changing role of a Finance Executive are as follows :
 - Budgeting
 - Forecasting



- Managing M & As
- Profitability analysis relating to customers or products
- Pricing Analysis
- Decisions about outsourcing
- Overseeing the IT function.
- Overseeing the HR function.
- Strategic planning (sometimes overseeing this function).
- Regulatory compliance.
- Risk management.

Q. 16: STATE FOUR TASKS INVOLVED TO DEMONSTRATE THE IMPORTANCE OF GOOD FINANCIAL MANAGEMENT.

- ❖ The best way to demonstrate the importance of good financial management is to describe some of the tasks that it involves:
 - Taking care not to over-invest in fixed assets
 - Balancing cash-outflow with cash-inflows
 - Ensuring that there is a sufficient level of short-term working capital
 - Setting sales revenue targets that will deliver growth
 - Increasing gross profit by setting the correct pricing for products or services
 - Controlling the level of general and administrative expenses by finding more cost-efficient ways of running the day-to-day business operations, and
 - Tax planning that will minimize the taxes a business has to pay.

Q. 17: SCOPE & OBJECTIVE OF FINANCIAL MANAGEMENT

For measuring and maximising shareholders' wealth, manager should follow:

- ❖ Cash Flow approach not Accounting Profit
- ❖ Cost benefit analysis
- ❖ Application of time value of money.

Q. 18: EXPLAIN IN BRIEF THE PHASES OF THE EVOLUTION OF FINANCIAL MANAGEMENT.

- ❖ **Evolution of Financial Management:** Financial management evolved gradually over the past 50 years. The evolution of financial management is divided into three phases. Financial Management evolved as a separate field of study at the beginning of the century.

The three stages of its evolution are:

- ❖ **The Traditional Phase:** During this phase, financial management was considered necessary only during occasional events such as takeovers, mergers, expansion, liquidation, etc. Also, when taking financial decisions in the organisation, the needs of outsiders (investment bankers, people who lend money to the business and other such people) to the business was kept in mind.
- ❖ **The Transitional Phase:** During this phase, the day-to-day problems that financial managers faced were given importance. The general problems related to funds analysis, planning and control were given more attention in this phase.



- ❖ **The Modern Phase:** Modern phase is still going on. The scope of financial management has greatly increased now. It is important to carry out financial analysis for a company. This analysis helps in decision making. During this phase, many theories have been developed regarding efficient markets, capital budgeting, option pricing, valuation models and also in several other important fields in financial management. Here, financial management is viewed as a supportive and facilitative function, not only for top management but for all levels of management.





CHAPTER TWO

TYPES OF FINANCING

Q. 1 : WHAT IS DEBT SECURITISATION? EXPLAIN THE BASICS OF DEBT SECURITISATION PROCESS.

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

- 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.
 - 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.
 - 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.

Q. 2 : DISCUSS THE ELIGIBILITY CRITERIA FOR ISSUE 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.



Q. 3 : WRITE SHORT NOTES ON THE FOLLOWING:

- (1) GLOBAL DEPOSITORY RECEIPTS
- (2) EURO CONVERTIBLE BONDS.
- (3) AMERICAN DEPOSITORY RECEIPTS (ADRS)
- (4) BRIDGE FINANCE
- (5) METHODS OF VENTURE CAPITAL FINANCING
- (6) ADVANTAGES OF DEBT SECURITISATION
- (7) DEEP DISCOUNT BONDS VS. ZERO COUPON BONDS
- (8) VENTURE CAPITAL FINANCING
- (9) SEED CAPITAL ASSISTANCE
- (10) GLOBAL DEPOSITORY RECEIPTS VS. AMERICAN DEPOSITORY RECEIPTS.
- (11) FLOATING RATE BONDS
- (12) PACKING CREDIT

1. 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.

2. 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.

3. American Depository Receipts (ADRs)

- ❖ 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.

4. 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.

5. Methods of Venture Capital Financing

- ❖ The venture capital financing refers to financing and funding of the small scale enterprises, high technology and risky ventures. Some common methods of venture capital financing are as follows:
 - Equity financing:** The venture capital undertakings generally requires funds for a longer period but may not be able to provide returns to the investors during the initial stages. Therefore, the venture capital finance is generally provided by way of equity share capital. The equity contribution of venture capital firm does not exceed 49% of the total equity capital of venture capital undertakings so that the effective control and ownership remains with the entrepreneur.
 - 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. In India Venture Capital Financers charge royalty ranging between 2 to 15 per cent; actual rate depends on other factors of the venture such as gestation period, cash flow patterns, riskiness and other factors of the enterprise. Some Venture Capital financiers give a choice to the enterprise of paying a high rate of interest (which could be well above 20 per cent) instead of royalty on sales once it becomes commercially sound.
 - Income Note:** It is a hybrid security which combines the features of both conventional loan and conditional loan. The entrepreneur has to pay both interest and royalty on sales but at substantially low rates. IDBI's Venture Capital Fund provides funding equal to 80-87.5% of the project's cost for commercial application of indigenous technology or adopting imported technology to domestic applications.
 - 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 is charged upto a particular level of operations, after that, a high rate of interest is required to be paid.

6. Advantages of Debt Securitisation

- ❖ Debt securitisation is a method of recycling of funds and is especially beneficial to financial intermediaries to support lending volumes. Simply stated, under debt securitisation a group of illiquid assets say a mortgage or any asset that yields stable and regular cash flows like bank loans, consumer finance, and credit card payment are pooled together and sold to intermediary. The intermediary then issue debt securities.



- ❖ 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.

7. 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 ₹ 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.

8. 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.

9. 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 ₹ 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.

10. 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.

- ❖ Whereas, American Depository Receipts (ADR) 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.
- ❖ The Indian companies have preferred the GDRs to ADRs because the US market exposes them to a higher level of responsibility than a European listing in the areas of disclosure, costs, liabilities and timing.

11. Floating Rate Bonds

- ❖ These are the bonds where the interest rate is not fixed and is allowed to float depending upon the market conditions. These are ideal instruments which can be resorted to by the issuers to hedge themselves against the volatility in the interest rates. They have become more popular as a money market instrument and have been successfully issued by financial institutions like IDBI, ICICI etc.

12. Packing Credit

- ❖ Packing credit is an advance made available by banks to an exporter. Any exporter, having at hand a firm export order placed with him by his foreign buyer on an irrevocable letter of credit opened in his favour, can approach a bank for availing of packing credit. An advance so taken by an exporter is required to be liquidated within 180 days from the date of its commencement by negotiation of export bills or receipt of export proceeds in an approved manner. Thus Packing Credit is essentially a short-term advance.
- ❖ Normally, banks insist upon their customers to lodge the irrevocable letters of credit opened in favour of the customer by the overseas buyers. The letter of credit and firms' sale contracts not only serve as evidence of a definite arrangement for realisation of the export proceeds but also indicate the amount of finance required by the exporter. Packing Credit, in the case of customers of long standing may also be granted against firm contracts entered into by them with overseas buyers.

Q. 4 : STATE THE 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 pledged able 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 along with 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.

Q. 5 : NAME THE VARIOUS FINANCIAL INSTRUMENTS DEALT WITH 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.

Q. 6 : DISCUSS THE ADVANTAGES OF RAISING FUNDS BY ISSUE OF EQUITY SHARES.

- (i) It is a permanent source of finance. Since such shares are not redeemable, the company has no liability for cash outflows associated with its redemption.
- (ii) Equity capital increases the company's financial base and thus helps further the borrowing powers of the company.
- (iii) The company is not obliged legally to pay dividends. Hence in times of uncertainties or when the company is not performing well, dividend payments can be reduced or even suspended.
- (iv) The company can make further issue of share capital by making a right issue.

Q. 7 : "FINANCING A BUSINESS THROUGH BORROWING IS CHEAPER THAN USING EQUITY." BRIEFLY EXPLAIN.

- (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.

Q. 8 : STATE THE MAIN 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.

Q. 9 : EXPLAIN IN BRIEF THE FEATURES OF COMMERCIAL PAPER.

- ❖ 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.

Q. 10 : EXPLAIN THE TERM 'PLOUGHING BACK OF PROFITS'.

Meaning

- ❖ Ploughing back of Profits or Retained earnings means retention of profit.
- ❖ In other words, that part of surplus profit which is not distributed as dividend are termed as Retained Profit or Ploughing back of Profits.

Features

- ❖ Retained Earnings are an internal source of long term financing and are treated as long term funds.
- ❖ 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 profit every 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.

Q. 11 : DISTINGUISH BETWEEN OPERATING LEASE AND FINANCIAL 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 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.

Q. 12 : STATE THE 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.

Q. 13 : DISCUSS THE ADVANTAGES OF PREFERENCE SHARE CAPITAL AS AN INSTRUMENT OF RAISING FUNDS.

Advantages of Issue of Preference Shares are:

- (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.

Q. 14 : EXPLAIN BRIEFLY THE FEATURES OF EXTERNAL COMMERCIAL BORROWINGS (ECBS).

- ❖ 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.

Q. 15 : DISCUSS THE 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.

Q. 16 : DIFFERENTIATE 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.

Q. 17 : WHAT IS FACTORING? ENUMERATE THE MAIN ADVANTAGES OF FACTORING.

- ❖ 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.

Q. 18 : DISCUSS THE FACTORS THAT A VENTURE CAPITALIST SHOULD CONSIDER 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 exit 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.

Q. 19 : WHAT ARE MASALA BONDS?

- ❖ Masala (means spice) bond is an Indian name used for Rupee denominated bond that Indian corporate borrowers can sell to investors in overseas markets.
- ❖ These bonds are issued outside India but de-nominated in Indian Rupees.
- ❖ NTPC raised ₹2,000 crore via masala bonds for its capital expenditure in the year 2016.

Q. 20 : EXPLAIN ‘SALES & LEASE BACK’.

- ❖ Under this type of lease, the owner of an asset sells the asset to a party (the buyer), who in turn leases back the same asset to the owner in consideration of a lease rentals.
- ❖ Under this arrangement, the asset are not physically exchanged but it all happen in records only.
- ❖ The main advantage of this method is that the lessee can satisfy himself completely regarding the quality of an asset and after possession of the asset convert the sale into a lease agreement.
- ❖ Under this transaction, the seller assumes the role of lessee and the buyer assumes the role of a lessor.
- ❖ The seller gets the agreed selling price and the buyer gets the lease rentals.



Q. 21 : WHAT IS MEANT BY VENTURE CAPITAL FINANCING? STATE ITS VARIOUS METHODS.
Meaning of Venture Capital

- ❖ The venture capital financing refers to financing and funding of the small scale enterprises, high technology and risky ventures.
- ❖ Methods of Venture Capital financing

1. Equity financing

- ❖ The venture capital undertakings generally requires funds for a longer period but may not be able to provide returns to the investors during the initial stages.
- ❖ Therefore, the venture capital finance is generally provided by way of equity share capital.

2. 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.
- ❖ In India, Venture Capital Financers charge royalty ranging between 2 to 15 per cent; actual rate depends on other factors of the venture such as
 - ❖ gestation period,
 - ❖ cash flow patterns,
 - ❖ riskiness and
 - ❖ other factors of the enterprise.

3. Income Note

- ❖ It is a hybrid security which combines the features of both conventional loan and conditional loan.
- ❖ The entrepreneur has to pay both interest and royalty on sales but at substantially low rates.

4. Participating Debenture

- ❖ Such security carries charges in three phases :
 - ❖ in the startup phase, no interest is charged,
 - ❖ next stage a low rate of interest is charged upto a particular level of operations,
 - ❖ after that, a high rate of interest is required to be paid.

Q. 22 : DISTINGUISH BETWEEN THE PREFERENCE SHARES AND DEBENTURES.

Basis	Preference Share	Debenture
Ownership	Preference Share Capital is a special kind of share i.e. part of ownership.	Debenture is a type of loan which can be raised from the public.
Dividend/ Interest	It carries fixed percentage of dividend.	It carries fixed percentage of interest.
Charge or appropriation	Dividend on preference share is appropriation against profits.	Interest on debentures is charge against profits.
Nature	Preference shares are a hybrid form of financing with some characteristic of equity shares and some attributes of Debt Capital.	Debentures are instrument for raising long term capital with a period of maturity.



Q. 23 : EXPLAIN IN BRIEF FOLLOWING FINANCIAL INSTRUMENTS :

- (1) EURO BONDS
- (2) FLOATING RATE NOTES
- (3) EURO COMMERCIAL PAPER
- (4) FULLY HEDGED BOND

1. Euro Bonds

- ❖ These are the Bonds issued or traded in a country using a currency other than the one in which the bond is denominated. These are issued by multinational corporations, for example, a British company may issue a Eurobond in Germany, denominating it in U.S. dollars.

Floating Rate Notes

- ❖ These are issued up to seven years maturity. Interest rates are adjusted to reflect the prevailing exchange rates. They provide cheaper money than foreign loans.

Euro Commercial Paper

- ❖ These are short term money market instruments. They are for maturities less than one year. They are usually designated in US Dollars.

Fully Hedged Bond

- ❖ Usually in foreign bonds, the risk of currency fluctuations exists. Fully hedged bonds eliminate the risk by selling in forward markets the entire stream of principal and interest payments.

Q.24: EXPLAIN IN BRIEF THE FOLLOWING BONDS:

- I. CALLABLE BONDS
- II. PUTTABLE BONDS

- i. **Callable bonds:** A callable bond has a call option which gives the issuer the right to redeem the bond before maturity at a predetermined price known as the call price (Generally at a premium).
- ii. **Puttable bonds:** Puttable bonds give the investor a put option (i.e. the right to sell the bond) back to the company before maturity.

Q.25: EXPLAIN IN BRIEF THE FORMS OF POST SHIPMENT FINANCE

Post-shipment Finance: It takes the following forms:

- (a) **Purchase/discounting of documentary export bills:** Finance is provided to exporters by purchasing export bills drawn payable at sight or by discounting unance export bills covering confirmed sales and backed by documents including documents of the title of goods such as bill of lading, post parcel receipts, or air consignment notes.
- (b) **E.C.G.C. Guarantee:** Post-shipment finance, given to an exporter by a bank through purchase, negotiation or discount of an export bill against an order, qualifies for post-shipment export credit guarantee. It is necessary, however, that exporters should obtain a shipment or contracts risk policy of E.C.G.C. Banks insist on the exporters to take a contracts shipments (comprehensive risks) policy covering both political and commercial risks. The Corporation, on acceptance of the policy, will fix credit limits for individual exporters and the Corporation's liability will be limited to the extent of the limit so fixed for the exporter concerned irrespective of the amount of the policy.



- (c) **Advance against export bills sent for collection:** Finance is provided by banks to exporters by way of advance against export bills forwarded through them for collection, taking into account the creditworthiness of the party, nature of goods exported, usance, standing of drawee, etc.
- (d) **Advance against duty draw backs, cash subsidy, etc.:** To finance export losses sustained by exporters, bank advance against duty draw-back, cash subsidy, etc., receivable by them against export performance. Such advances are of clean nature; hence necessary precaution should be exercised.

Q.26: DEFINE SECURITY PREMIUM NOTES

- ❖ **Secured Premium Notes:** Secured Premium Notes is issued along with a detachable warrant and is redeemable after a notified period of say 4 to 7 years. The conversion of detachable warrant into equity shares will have to be done within time period notified by the company.

Q.27: BRIEFLY DESCRIBE THE FINANCIAL NEEDS OF A BUSINESS

- ❖ **Financial Needs of a Business:** Business enterprises need funds to meet their different types of requirements. All the financial needs of a business may be grouped into the following three categories-
- ❖ **Long-term financial needs:** Such needs generally refer to those requirements of funds which are for a period exceeding 5-10 years. All investments in plant, machinery, land, buildings, etc., are considered as long-term financial needs.
- ❖ **Medium- term financial needs:** Such requirements refer to those funds which are required for a period exceeding one year but not exceeding 5 years.
- ❖ **Short- term financial needs:** Such type of financial needs arises to finance current assets such as stock, debtors, cash, etc. Investment in these assets is known as meeting of working capital requirements of the concern for a period not exceeding one year.

Q.28: DISCUSS IN BRIEFLY ANY TWO LONG TERM SOURCES OF FINANCE FOR A PARTNERSHIP FIRM.

The two sources of long-term finance for a partnership firm are as follows:

- ❖ **Loans from Commercial Banks:** Commercial banks provide long term loans for the purpose of expansion or setting up of new units. Their repayment is usually scheduled over a long period of time. The liquidity of such loans is said to depend on the anticipated income of the borrowers.
- ❖ **As part of the long term funding for a partnership firm, the banks also fund the long term working capital requirement (it is also called WCTL i.e. working capital term loan).**
- ❖ **Lease financing:** Leasing is a general contract between the owner and user of the asset over a specified period of time. The asset is purchased initially by the lessor (leasing company) and thereafter leased to the user (lessee firm) which pays a specified rent at periodical intervals. Thus, leasing is an alternative to the purchase of an asset out of own or borrowed funds. Moreover, lease finance can be arranged much faster as compared to term loans from financial institutions.

Q.29: STATE IN BRIEF FOUR FEATURES OF SAMURAI BOND.

Features of Samurai Bond:

- ❖ Samurai bonds are denominated in Japanese Yen JPY
- ❖ Issued in Tokyo
- ❖ Issuer Non- Japanese Company
- ❖ Regulations: Japanese
- ❖ Purpose: Access of capital available in Japanese market



- ❖ Issue proceeds can be used to fund Japanese operation
- ❖ Issue proceeds can be used to fund a company's local opportunities
- ❖ It can also be used to hedge foreign exchange risk

Q.30: BRIEF OUT ANY FOUR TYPES OF PREFERENCE SHARES ALONG WITH ITS FEATURE

Sl. No.	Type of Preference Shares	Salient Features
1	Cumulative	Arrear Dividend will accumulate.
2	Non-cumulative	No right to arrear dividend.
3	Redeemable	Redemption should be done.
4	Participating	Can participate in the surplus which remains after payment to equity shareholders.
5	Non- Participating	Cannot participate in the surplus after payment of fixed rate of Dividend.
6	Convertible	Option of converting into equity Shares.



Q. 1 : WHAT DO YOU UNDERSTAND BY WEIGHTED AVERAGE COST OF CAPITAL?
Meaning

- ❖ The composite or overall cost of capital of a firm is the weighted average of the costs of the various sources of funds.
 - Weights are taken to be in the proportion of each source of fund in the capital structure.
 - While making financial decisions, this overall or weighted cost is used.
 - Each investment is financed from a pool of funds which represents the various sources from which funds have been raised.
 - Any decision of investment, therefore, has to be made with reference to the overall cost of capital and not with reference to the cost of a specific source of fund used in the investment decision.

Calculation

The weighted average cost of capital is calculated by :

- ❖ Calculating the cost of specific source of fund e.g. cost of debt, equity etc;
- ❖ Multiplying the cost of each source by its proportion in capital structure; and
- ❖ Adding the weighted component cost to get the firm's WACC represented by k_0 .

$$k_0 = k_1 w_1 + k_2 w_2 + \dots$$

Where,

k_1, k_2 are component costs and w_1, w_2 are weights.

Q.2 : DISTINGUISH BETWEEN UNSYSTEMATIC RISK & SYSTEMATIC RISK.

- i. **Unsystematic Risk:** This is also called company specific risk as the risk is related with the company's performance. This type of risk can be reduced or eliminated by diversification of the securities portfolio. This is also known as diversifiable risk.
- ii. **Systematic Risk:** It is the macro-economic or market specific risk under which a company operates. This type of risk cannot be eliminated by the diversification hence, it is non-diversifiable. The examples are inflation, Government policy, interest rate etc.



CHAPTER - 4

LEVERAGE

Q. 1 : WHAT DO YOU UNDERSTAND BY BUSINESS RISK AND FINANCIAL RISK?

1. Business 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.

2. Financial Risk

- ❖ 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.

Q. 2 : DISTINGUISH BETWEEN BUSINESS RISK AND FINANCIAL RISK.

Basis	Business Risk	Financial Risk
Meaning	Business Risk refers to the risk associated with the firm's operations. In other words, Business Risk is defined as risk of running a business.	Financial Risk refers to the additional risk placed on the firm's shareholders as a result of use of debt.
Type of cost	It occurs due to fixed operating cost.	It occurs due to fixed financing cost.
Avoidable or Unavoidable	Business Risk is generally unavoidable.	Financial Risk can be avoided by not using the source of finance involving fixed payment.
Higher Risk	Higher the fixed operating cost, higher the Business Risk.	Companies that issue more debt instruments would have higher financial risk than companies financed mostly or entirely by equity.

Q. 3 : "OPERATING RISK IS ASSOCIATED WITH COST STRUCTURE, WHEREAS FINANCIAL RISK IS ASSOCIATED WITH CAPITAL STRUCTURE OF A BUSINESS CONCERN." CRITICALLY EXAMINE THIS STATEMENT.

Validity of statement

- ❖ The statement is valid that "Operating risk is associated with cost structure whereas financial risk is associated with capital structure of a business concern".

Explanation

- ❖ 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.





CAPITAL STRUCTURE

Q. 1 : WHAT DO YOU UNDERSTAND BY CAPITAL STRUCTURE? HOW DOES IT DIFFER FROM FINANCIAL STRUCTURE?

1. Meaning of Capital 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.

2. Financial Structure

- ❖ 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.

Q. 2 : DISCUSS FINANCIAL BREAK-EVEN AND EBIT-EPS INDIFFERENCE ANALYSIS.

1. Financial Break Even

- ❖ 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.

2. EBIT-EPS indifference analysis

- ❖ 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.

Computation

$$\frac{(\text{EBIT} - I_1)(1 - t)}{n_1} = \frac{(\text{EBIT} - I_2)(1 - t)}{n_2}$$

Where

EBIT = Indifference point

n_1 = Number of equity shares in Alternative 1

n_2 = Number of equity shares in Alternative 2

I_1 = Interest charges in Alternative 1

I_2 = Interest charges in Alternative 2

t = Tax Rate

Alternative 1 = All equity finance

Alternative 2 = Debt-equity finance.



Q. 3: LIST THE FUNDAMENTAL PRINCIPLES GOVERNING CAPITAL STRUCTURE. OR

STATE THE PRINCIPLES THAT SHOULD BE FOLLOWED WHILE DESIGNING THE CAPITAL STRUCTURE OF A COMPANY.

1. 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).

2. 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.

3. Control Principle

- ❖ While designing a capital structure, the finance manager may also keep in mind that existing management control and ownership remains undisturbed.

4. 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.

5. Other Considerations

- ❖ Besides above principles, other factors such as nature of industry, timing of issue and competition in the industry should also be considered.

Q. 4: WHAT IS OVER CAPITALISATION? STATE ITS CAUSES AND CONSEQUENCES.

Meaning of Over Capitalisation

- ❖ 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

- ❖ Raising more money through issue of shares or debentures than company can employ profitably.
- ❖ Borrowing huge amount at higher rate than rate at which company can earn.
- ❖ Excessive payment for the acquisition of fictitious assets such as goodwill etc.
- ❖ Improper provision for depreciation, replacement of assets and distribution of dividends at a higher rate.
- ❖ Wrong estimation of earnings and capitalization.

Consequences

- ❖ Considerable reduction in the rate of dividend and interest payments.
- ❖ Reduction in the market price of shares.
- ❖ Resorting to "window dressing".



- ❖ Some companies may opt for reorganization. However, sometimes the matter gets worse and the company may go into liquidation.

Q. 5: WHAT DO YOU MEAN BY CAPITAL STRUCTURE? STATE ITS SIGNIFICANCE IN FINANCING DECISION.

Meaning of Capital Structure

- ❖ 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.

Q. 6: EXPLAIN THE PRINCIPLES OF “TRADING ON EQUITY”.

- ❖ The use of long-term fixed interest-bearing debt and preference share capital along with equity share capital is called financial leverage or trading on equity. The use of long-term debt increases the earnings per share if the firm yields a return higher than the cost of debt. The earnings per share also increase with the use of preference share capital but due to the fact that interest is allowed to be deducted while computing tax, the leverage impact of debt is much more. However, leverage can operate adversely also if the rate of interest on long-term loan is more than the expected rate of earnings of the firm. Therefore, it needs caution to plan the capital structure of a firm.

THEORIES OF CAPITAL STRUCTURE

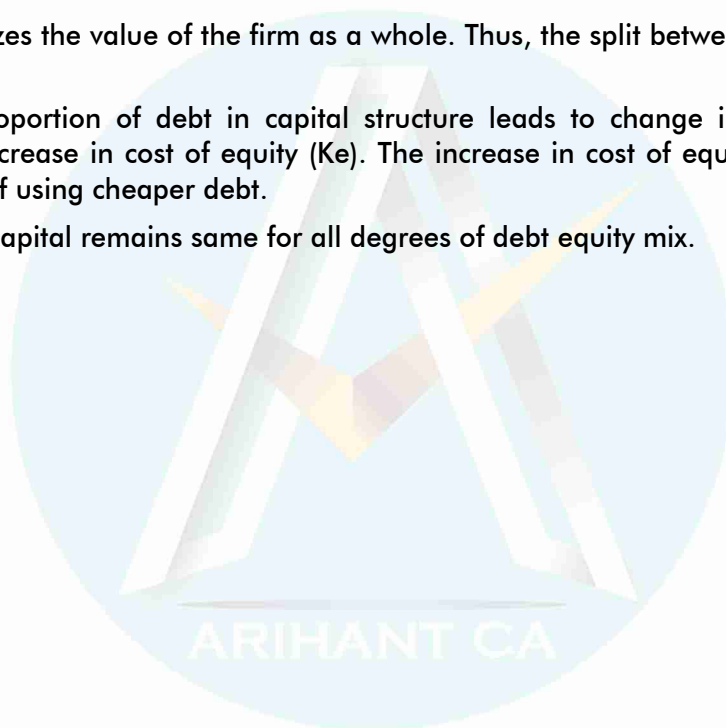
Q. 1 : WHAT IS NET OPERATING INCOME THEORY OF CAPITAL STRUCTURE? EXPLAIN THE ASSUMPTIONS ON WHICH THE NOI THEORY IS BASED.

Meaning

- ❖ According to this approach, there is no relationship between the cost of capital and value of the firm.
- ❖ The value of the firm is independent of the capital structure of the firm.

Assumptions

- ❖ There are no taxes.
- ❖ The market capitalizes the value of the firm as a whole. Thus, the split between debt and equity is not important.
- ❖ The increase in proportion of debt in capital structure leads to change in risk perception of the shareholders i.e. increase in cost of equity (K_e). The increase in cost of equity is such as completely offset the benefits of using cheaper debt.
- ❖ The overall cost of capital remains same for all degrees of debt equity mix.





INVESTMENT DECISIONS (CAPITAL BUDGETING)

Q. 1 : EXPLAIN THE TERM 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'.

Formula

$$\frac{\text{Sum of Discounted Cash Inflows}}{\text{Initial Cash Outlay or Total Discounted Cash Outflow}}$$

Acceptance Criteria

- ❖ A project is acceptable if its profitability index value is greater than 1.

Q. 2 : DISTINGUISH BETWEEN NET PRESENT VALUE METHOD AND INTERNAL RATE OF RETURN METHOD.

1. Introduction

- ❖ NPV and IRR methods differ in the sense that the results regarding the choice of an asset under certain circumstances are mutually contradictory under two methods.
- ❖ In case of mutually exclusive investment projects, in certain situations, they may give contradictory results such that if the NPV method finds one proposal acceptable, IRR favours another.

2. Causes of difference

- ❖ The different rankings given by NPV and IRR methods could be due to
 - Size disparity problem,
 - time disparity problem and
 - unequal expected lives.

3. Absolute value or percentage

- ❖ The net present value is expressed in financial values whereas internal rate of return (IRR) is expressed in percentage terms.

4. Reinvestment of cash flows

- ❖ In the net present value, cash flows are assumed to be re-invested at cost of capital rate.
- ❖ In IRR, reinvestment is assumed to be made at IRR rates.

Q. 3 : WHAT IS 'INTERNAL RATE OF RETURN'? EXPLAIN.

Meaning

- ❖ It is that rate at which discounted cash inflows are equal to the discounted cash outflows.
- ❖ Computation
- ❖ 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.

Relevance

- ❖ 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.

Q. 4: WHICH METHOD OF COMPARING A NUMBER OF INVESTMENT PROPOSALS IS MOST SUITED IF EACH PROPOSAL INVOLVES DIFFERENT AMOUNT OF CASH INFLOWS? EXPLAIN AND STATE ITS LIMITATIONS.

- ❖ Profitability Index (PI) method is best suited if each investment proposal involves different amount of cash inflows. PI considers both present value of cash inflows and present value of cash outflows.

Formula

$$\frac{\text{Sum of Discounted Cash Inflows}}{\text{Initial Cash Outlay or Total Discounted Cash Outflow}}$$

1. Acceptance Criteria

- ❖ A project is acceptable if its profitability index value is greater than 1.

2. Superiority

- ❖ PI is known as a superior method of comparing a number of investment proposal than Net present value method (NPV).

3. Limitations

- ❖ Profitability index fails as a guide in resolving capital rationing where projects are indivisible.
- ❖ Once a single large project with high NPV is selected, possibility of accepting several small projects which together may have higher NPV than the single project is excluded.
- ❖ Also, situations may arise where a project with a lower profitability index selected may generate cash flows in such a way that another project can be taken up 1 or 2 years later, the total NPV in such case being more than the one with a project with highest Profitability Index.

Q.5: DEFINE INTERNAL RATE OF RETURN (IRR)

Internal rate of return: Internal rate of return for an investment proposal is the discount rate that equates the present value of the expected cash inflows with the initial cash outflow.

Q.6: EXPLAIN THE LIMITATIONS OF AVERAGE RATE OF RETURN.

Limitations of Average Rate of Return

- ❖ The accounting rate of return technique, like the payback period technique, ignores the time value of money and considers the value of all cash flows to be equal.
- ❖ The technique uses accounting numbers that are dependent on the organization's choice of accounting procedures, and different accounting procedures, e.g., depreciation methods, can lead to substantially different amounts for an investment's net income and book values.
- ❖ The method uses net income rather than cash flows; while net income is a useful measure of profitability, the net cash flow is a better measure of an investment's performance.



- ❖ Furthermore, inclusion of only the book value of the invested asset ignores the fact that a project can require commitments of working capital and other outlays that are not included in the book value of the project.

Q.7: EXPLAIN THE TERM 'PAYBACK RECIPROCAL'.

- ❖ Financial ratios provide clues but not conclusions. These are tools only in the hands of experts because there is no standard ready-made interpretation of financial ratios
- ❖ As the name indicates it is the reciprocal of payback period. A major drawback of the payback period method of capital budgeting is that it does not indicate any cut off period for the purpose of investment decision. It is, however, argued that the reciprocal of the payback would be a close approximation of the Internal Rate of Return (later discussed in detail) if the life of the project is at least twice the payback period and the project generates equal amount of the annual cash inflows. In practice, the payback reciprocal is a helpful tool for quickly estimating the rate of return of a project provided its life is at least twice the payback period.

The payback reciprocal can be calculated as follows:

$$\text{Payback Reciprocal} = \frac{\text{Average annual cash in flow}}{\text{Initial investment}}$$



ESTIMATION OF WORKING CAPITAL

Q. 1 : DISCUSS THE ESTIMATION OF WORKING CAPITAL NEED BASED ON OPERATING CYCLE PROCESS.

Meaning

- ❖ 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 duration of working capital cycle may vary depending on the nature of the business.

Relevance

- ❖ 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.

Formula

In the form of an equation, the operating cycle process can be expressed as follows:

$$\text{Operating Cycle} = R + W + F + D - C$$

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



DEBTOR'S MANAGEMENT

Q. 1 : DIFFERENTIATE BETWEEN FACTORING AND BILLS DISCOUNTING.

Basis	Factoring	Bill Discounting
Other name	Factoring is called as "Invoice Factoring".	Bills discounting is known as 'Invoice discounting.'
Parties	In Factoring, the parties are known as the client, factor and debtor.	In Bills discounting, they are known as drawer, drawee and payee.
Purpose	Factoring is a sort of management of book debts.	Bills discounting is a sort of borrowing from commercial banks.
Relevant statute	For factoring, there is no specific act.	In the case of bills discounting, the Negotiable Instruments Act is applicable.

Q. 2 : EXPLAIN BRIEFLY THE 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.

Q. 3 : WHAT IS FACTORING? ENUMERATE THE MAIN ADVANTAGES OF FACTORING.

Meaning

- ❖ 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.
- ❖ Its operation is very simple.
- ❖ Clients enter into an agreement with the "factor" working out a factoring arrangement according to his requirements.
- ❖ The factor then takes the responsibility of monitoring, follow-up, collection and risk-taking and provision of advance.
- ❖ The factor generally fixes up a limit customer-wise for the client (seller).

Advantages

1. Convertibility

- ❖ The biggest advantages of factoring are the immediate conversion of receivables into cash.

2. Reduction in Costs

- ❖ Continuous factoring virtually eliminates the need for the credit department due to saving in collection and administration cost.

3. Certainty

- ❖ Factoring ensures a definite pattern of cash inflows.

4. No feature of loan

- ❖ There is no debt repayment, no compromise to balance sheet, no long term agreements or delays associated with other methods of raising capital.





TREASURY & CASH MANAGEMENT

Q. 1 : WRITE SHORT NOTE ON WILLIAM J. BAUMAL VS. 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.

Q. 2 : STATE THE ADVANTAGE OF ELECTRONIC CASH MANAGEMENT SYSTEM.

- ❖ Significant saving in time.
- ❖ Decrease in interest costs.
- ❖ Less paper work.
- ❖ Greater accounting accuracy.
- ❖ More control over time and funds.



- ❖ Supports electronic payments.
- ❖ Faster transfer of funds from one location to another, where required.
- ❖ Speedy conversion of various instruments into cash.
- ❖ Making available funds wherever required, whenever required.
- ❖ Reduction in the amount of 'idle float' to the maximum possible extent.
- ❖ Ensures no idle funds are placed at any place in the organization.
- ❖ It makes inter-bank balancing of funds much easier.
- ❖ It is a true form of centralised 'Cash Management'.
- ❖ Produces faster electronic reconciliation.
- ❖ Allows for detection of book-keeping errors.
- ❖ Reduces the number of cheques issued.
- ❖ Earns interest income or reduce interest expense.

Q. 3 : WHAT IS VIRTUAL BANKING? STATE ITS ADVANTAGES.

Meaning

- ❖ 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.

Advantages

- ❖ 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.
- ❖ Possibility of improved and a range of services being made available to the customer rapidly, accurately and at his convenience.

Q. 4 : 'MANAGEMENT OF MARKETABLE SECURITIES IS AN INTEGRAL PART OF INVESTMENT OF CASH.' COMMENT.

- ❖ 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.



Q. 5 : EXPLAIN THE FOLLOWING :

(1) CONCENTRATION BANKING

(2) LOCK BOX SYSTEM

1. 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 centres are deposited with their respective local banks which in turn transfer all surplus funds to the concentration bank of head office.

2. 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.

Q. 6 : EXPLAIN FOUR KINDS OF FLOAT WITH REFERENCE TO MANAGEMENT OF CASH.

1. Billing Float

- ❖ The time between the sale and the mailing of the invoice is the billing float.

2. Mail Float

- ❖ This is the time when a cheque is being processed by post office, messenger service or other means of delivery.

3. 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.

4. Bank processing float

- ❖ This is the time from the deposit of the cheque to the crediting of funds in the seller's account.

Q. 7 : EVALUATE THE ROLE OF CASH BUDGET IN EFFECTIVE CASH MANAGEMENT SYSTEM.

- ❖ Cash Budget is the most significant device to plan for and control cash receipts and payments.
- ❖ It plays a very significant role in effective Cash Management System.
- ❖ This represents cash requirements of business during the budget period.

The various roles of cash budgets in Cash Management System are :

- ❖ Coordinate the timings of cash needs. It identifies the period(s) when there might either be a shortage of cash or an abnormally large cash requirement.
- ❖ It also helps to pinpoint period(s) when there is likely to be excess cash.
- ❖ It enables firm which has sufficient cash to take advantage like cash discounts on its accounts payable. and



- ❖ Lastly, it helps to plan/ arrange adequately needed funds (avoiding excess / shortage of cash) on favourable terms.

Q. 8 : DESCRIBE THE THREE PRINCIPLES RELATING TO SELECTION OF MARKETABLE SECURITIES.

1. Safety

- ❖ Return and risks go hand in hand.
- ❖ As the objective in this investment is ensuring liquidity, minimum risk is the criterion of selection.

2. Maturity

- ❖ Matching of maturity and forecasted cash needs is essential.
- ❖ Prices of long term securities fluctuate more with changes in interest rates and are therefore, more risky.

3. Marketability

- ❖ It refers to the convenience, speed and cost at which a security can be converted into cash.
- ❖ If the security can be sold quickly without loss of time and price, it is highly liquid or marketable.

Q. 9 : EXPLAIN BRIEFLY THE FUNCTIONS OF TREASURY DEPARTMENT.

The functions of treasury department management are 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 :

Cash

- ❖ The efficient collection and payment of cash both inside the Management organisation and to third parties is the function of treasury department.
- ❖ Treasury normally manages surplus funds in an investment portfolio.

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.

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.

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.

Corporate Finance

- ❖ Treasury department is involved with both acquisition and disinvestment activities within the group.
- ❖ In addition, it is often responsible for investor relations.



WORKING CAPITAL FINANCE

Q. 1 : ENUMERATE THE VARIOUS FORMS OF BANK CREDIT IN FINANCING WORKING CAPITAL OF A BUSINESS ORGANIZATION.

1. 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, govt. securities, life insurance policies and fixed deposit receipts, etc.

2. 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.

3. 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.

4. 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.

5. 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.

6. 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.

7. 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.

8. Advance against supply of bills

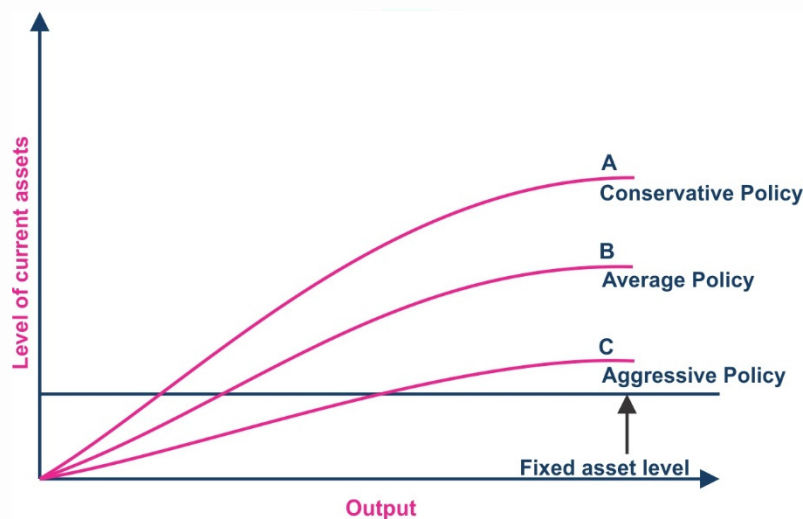
- ❖ Advances against bills for supply of goods to government or semi- government departments against firm orders after acceptance of tender fall under this category.



- ❖ 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.

Q. 2 : DISCUSS THE LIQUIDITY VS. 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.

Q. 3 : DISCUSS THE RISK-RETURN CONSIDERATIONS IN FINANCING CURRENT ASSETS.

1. Introduction

- ❖ 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.



2. Matching 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.

3. Conservative Approach

- ❖ 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.

4. Aggressive Approach

- ❖ 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.

Q.4: EXPLAIN ELECTRONIC CASH MANAGEMENT SYSTEM.

- ❖ **Electronic Cash Management System:** Most of the cash management systems now-a-days are electronically based, since 'speed' is the essence of any cash management system. Electronically, transfer of data as well as funds play a key role in any cash management system. Various elements in the process of cash management are linked through a satellite. Various places that are interlinked may be the place where the instrument is collected, the place where cash is to be transferred in company's account, the place where the payment is to be transferred etc.

Q.5: DESCRIBE THE SALIENT FEATURES OF FORFAITING.

- ❖ The Salient features of forfaiting are:
 - It motivates exporters to explore new geographies as payment is assured.
 - An overseas buyer (importer) can import goods and services on deferred payment terms.
 - The exporter enjoys reduced transaction costs and complexities of international trade transactions.
 - The exporter gets to compete in the international market and can continue to put his working capital to good use to scale up operations.
 - While importers avail of forfaiting facility from international financial institutions in order to finance their imports at competitive rates.

Q.6: EXPLAIN BILLING FLOAT AND MAIL FLOAT WITH REFERENCE TO MANAGEMENT OF CASH

- ❖ **Billing Float:** An invoice is the formal document that a seller prepares and sends to the purchaser as the payment request for goods sold or services provided. The time between the sale and the mailing of the invoice is the billing float.
- ❖ **Mail Float:** This is the time when a cheque is being processed by post office, messenger service or other means of delivery.

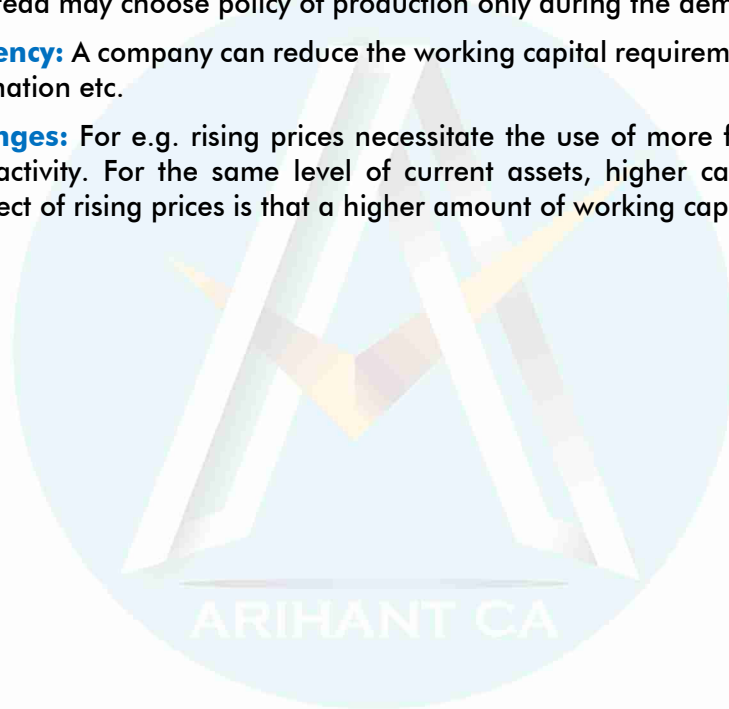
Q.7: STATE ANY FOUR FACTORS WHICH NEED TO BE CONSIDERED WHILE PLANNING FOR WORKING CAPITAL REQUIREMENT.

Some of the factors which need to be considered while planning for working capital requirement are-

- Cash: Identify the cash balance which allows for the business to meet day-to-day expenses, but reduces cash holding costs
- Inventory: Identify the level of inventory which allows for uninterrupted production but reduces the investment in raw materials and hence increases cash flow; the techniques like Just in Time (JIT) and Economic order quantity (EOQ) are used for this.



- iii. **Receivables:** Identify the appropriate credit policy, i.e., credit terms which will attract customers, such that any impact on cash flows and the cash conversion cycle will be offset by increased revenue and hence Return on Capital (or vice versa). The tools like Discounts and allowances are used for this.
- iv. **Short-term Financing Options:** Inventory is ideally financed by credit granted by the supplier; dependent on the cash conversion cycle, it may however, be necessary to utilize a bank loan (or overdraft), or to “convert debtors to cash” through “factoring” in order to finance working capital requirements.
- v. **Nature of Business:** For e.g. in a business of restaurant, most of the sales are in Cash. Therefore, need for working capital is very less.
- vi. **Market and Demand Conditions:** For e.g. if an item’s demand far exceeds its production, the working capital requirement would be less as investment in finished goods inventory would be very less.
- vii. **Technology and Manufacturing Policies:** For e.g. in some businesses the demand for goods is seasonal, in that case a business may follow a policy for steady production through out over the whole year or instead may choose policy of production only during the demand season.
- viii. **Operating Efficiency:** A company can reduce the working capital requirement by eliminating waste, improving coordination etc.
- ix. **Price Level Changes:** For e.g. rising prices necessitate the use of more funds for maintaining an existing level of activity. For the same level of current assets, higher cash outlays are required. Therefore, the effect of rising prices is that a higher amount of working capital is required.





CHAPTER - 12

RATIO ANALYSIS

Q. 1 : EXPLAIN BRIEFLY THE LIMITATIONS OF FINANCIAL RATIOS.

1. 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.

2. Financial data 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.

3. Seasonal factors

- ❖ Seasonal factors may also influence financial data.

4. Biased ratios

- ❖ 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.

5. Differences in accounting policies and accounting period

- ❖ It can make the accounting data of two firms non-comparable as also the accounting ratios.

6. No standard set of ratios

- ❖ 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.



RISK ANALYSIS IN CAPITAL BUDGETING

Q. 1 : WHAT IS CERTAINTY EQUIVALENT.

Definition

- ❖ As per CIMA terminology, "An approach to dealing with risk in a capital budgeting context.
- ❖ It involves expressing risky future cash flows in terms of the certain cashflow which would be considered, by the decision maker, as their equivalent, that is the decision maker would be indifferent between the risky amount and the (lower) riskless amount considered to be its equivalent."

Mechanism

- ❖ The certainty equivalent is a guaranteed return that the management would accept rather than accepting a higher but uncertain return.
- ❖ This approach allows the decision maker to incorporate his or her utility function into the analysis.
- ❖ In this approach, a set of risk less cash flow is generated in place of the original cash flows.

Advantages

- ❖ It is simple and easy to understand and apply.
- ❖ It can easily be calculated for different risk levels applicable to different cash flows.

Disadvantages

- ❖ There is no Statistical or Mathematical model available to estimate certainty Equivalent.
- ❖ Certainty Equivalent are subjective and vary as per each individual's estimate.

Q. 2 : WRITE TWO MAIN REASONS FOR CONSIDERING RISK IN CAPITAL BUDGETING DECISIONS.

Opportunity Cost

- ❖ There is an opportunity cost involved while investing in a project for the level of risk. Adjustment of risk is necessary to help make the decision as to whether the returns out of the project are proportionate with the risks borne and whether it is worth investing in the project over the other investment options available.

Real Value

- ❖ Risk adjustment is required to know the real value of the Cash Inflows.

Q. 3 : EXPLAIN THE STEPS OF SENSITIVITY ANALYSIS.

Sensitivity Analysis is conducted by following the steps as below:

1. Finding variables, which have an influence on the NPV (or IRR) of the project
2. Establishing mathematical relationship between the variables.
3. Analysing the effect of the change in each of the variables on the NPV (or IRR) of the project.

Q.4: RISK ANALYSIS IN CAPITAL BUDGETING

- ❖ Risk Adjusted Discount Rate: A risk adjusted discount rate is a sum of risk-free rate and risk premium. The Risk Premium depends on the perception of risk by the investor of a particular investment and risk aversion of the Investor.



- ❖ So, Risks adjusted discount rate = Risk free rate+ Risk premium.

Q.5: DISTINGUISH BETWEEN SCENARIO ANALYSIS & SENSITIVITY ANALYSIS.

- ❖ Scenario Analysis Vs Sensitivity Analysis
- ❖ Sensitivity analysis calculates the impact of the change of a single input variable on the outcome of the project viz., NPV or IRR. The sensitivity analysis thus enables to identify that single critical variable which can impact the outcome in a huge way and the range of outcomes of the project given the change in the input variable.
- ❖ Scenario analysis, on the other hand, is based on a scenario. The scenario may be recession or a boom wherein depending on the scenario, all input variables change. Scenario Analysis calculates the outcome of the project considering this scenario where the variables have changed simultaneously. Similarly, the outcome of the project would also be considered for the normal and recessionary situation. The variability in the outcome under the three different scenarios would help the management to assess the risk a project carries. Higher deviation in the outcome can be assessed as higher risk and lower to medium deviation can be assessed accordingly.
- ❖ Scenario analysis is far more complex than sensitivity analysis because in scenario analysis all inputs are changed simultaneously, considering the situation in hand while in sensitivity analysis, only one input is changed, and others are kept constant.

Q.6: ADJUSTMENT OF RISK IS REQUIRED IN CAPITAL BUDGETING DECISION, GIVE REASONS FOR IT.

Reasons for adjustment of Risk in Capital Budgeting decisions are as follows:

1. There is an opportunity cost involved while investing in a project for the level of risk. Adjustment of risk is necessary to help make the decision as to whether the returns out of the project are proportionate with the risks borne and whether it is worth investing in the project over the other investment options available.
2. Risk adjustment is required to know the real value of cash Inflows. Higher risk will lead to higher risk premium and also the expectation of higher return.

ARIHANT CA



EXAM PAPERS : FINANCIAL MANAGEMENT

PAPER 8A : MAY 2018

Question No. 1 is compulsory.

Attempt any four questions out of the remaining five questions.

In case, any candidate answers extra question(s)/ sub-question(s) over and above the required number, then only the requisite number of questions first answered in the answer book shall be valued and subsequent extra question(s) answered shall be ignored.

Working notes should form part of the answer

Question 1

- (a) Stopgo Ltd, an all equity financed company, is considering the repurchase of ₹ 200 lakhs equity and to replace it with 15% debentures of the same amount. Current market Value of the company is ₹ 1140 lakhs and it's cost of capital is 20%. It's Earnings before Interest and Taxes (EBIT) are expected to remain constant in future. It's entire earnings are distributed as dividend. Applicable tax rate is 30 per cent.

You are required to calculate the impact on the following on account of the change in the capital structure as per Modigliani and Miller (MM) Hypothesis:

- (i) The market value of the company
- (ii) It's cost of capital, and
- (iii) It's cost of equity

(5 Marks)

- (b) The following data have been extracted from the books of LM Ltd: Sales - ₹100 lakhs
Interest Payable per annum - ₹ 10 lakhs Operating leverage - 1.2
Combined leverage - 2.16 You are required to calculate:

- (i) The financial leverage,
- (ii) Fixed cost and
- (iii) P/V ratio

(5 Marks)

- (c) The accountant of Moon Ltd. has reported the following data:

Gross profit	₹ 60,000
Gross Profit Margin	20 per cent
Total Assets Turnover	0.30:1
Net Worth to Total Assets	0.90:1
Current Ratio	1.5:1
Liquid Assets to Current Liability	1:1
Credit Sales to Total Sales	0.80:1
Average Collection Period	60 days

Assume 360 days in a year



You are required to complete the following:

Balance Sheet of Moon Ltd.

Liabilities	₹	Assets	₹
Net Worth		Fixed Assets	
Current Liabilities		Stock	
		Debtors	
		Cash	
Total Liabilities		Total Assets	

(5 Marks)

(d) Sun Ltd. is considering two financing plans. Details of which are as under:

(i) Fund's requirement – ₹ 100 Lakhs

(ii) Financial Plan

Plan	Equity	Debt
I	100%	-
II	25%	75%

(iii) Cost of debt – 12% p.a.

(iv) Tax Rate – 30%

(v) Equity Share ₹ 10 each, issued at a premium of ₹ 15 per share

(vi) Expected Earnings before Interest and Taxes (EBIT) ₹ 40 Lakhs You are required to compute:

(i) EPS in each of the plan

(ii) The Financial Break Even Point

(iii) Indifference point between Plan I and II

(5 Marks)

Question 2

(a) XYZ Ltd. is presently all equity financed. The directors of the company have been evaluating investment in a project which will require ₹ 270 lakhs capital expenditure on new machinery. They expect the capital investment to provide annual cash flows of ₹ 42 lakhs indefinitely which is net of all tax adjustments. The discount rate which it applies to such investment decisions is 14% net.

The directors of the company believe that the current capital structure fails to take advantage of tax benefits of debt, and propose to finance the new project with undated perpetual debt secured on the company's assets. The company intends to issue sufficient debt to cover the cost of capital expenditure and the after tax cost of issue.

The current annual gross rate of interest required by the market on corporate undated debt of similar risk is 10%. The after tax costs of issue are expected to be ₹ 10 lakhs. Company's tax rate is 30%.

You are required to calculate:

(i) The adjusted present value of the investment,

(ii) The adjusted discount rate and

(iii) Explain the circumstances under which this adjusted discount rate may be used to evaluate future investments.

(8 Marks)

(b) What are Masala Bonds?

(2 Marks)

Question 3

Maruti Ltd. requires a plant costing ₹ 200 Lakhs for a period of 5 years. The company can use the plant for the stipulated period through leasing arrangement or the requisite amount can be borrowed to buy the plant. In case of leasing, the company received a proposal to pay annual lease rent of ₹ 48 Lakhs at the end of each year for a period of 5 years.

In case of purchase, the company would have a 12 %, 5 years loan to be paid in equated annual installment, each installment becoming due in the beginning of each year. It is estimated that plant can be sold for ₹ 40 Lakhs at the end of 5th year. The company uses straight line method of depreciation. Corporate tax rate is 30 %. Cost of Capital after tax for the company is 10%.

The PVIF @ 10% and 12% for the five years are given below:

Year	1	2	3	4	5
PVIF @ 10	0.909	0.826	0.751	0.683	0.621
PVIF @ 12	0.893	0.797	0.712	0.636	0.567

You are required to advise whether the plant should be purchased or taken on lease.

(10 Marks)

Question 4

A company is evaluating a project that requires initial investment of ₹ 60 lakhs in fixed assets and ₹ 12 lakhs towards additional working capital.

The project is expected to increase annual real cash inflow before taxes by ₹ 24,00,000 during its life. The fixed assets would have zero residual value at the end of life of 5 years. The company follows straight line method of depreciation which is expected for tax purposes also. Inflation is expected to be 6% per year. For evaluating similar projects, the company uses discounting rate of 12% in real terms. Company's tax rate is 30%.

Advise whether the company should accept the project, by calculating NPV in real terms.

PVIF (12%, 5 years)		PVIF (12%, 5 years)	
Year 1	0.893	Year 1	0.943
Year 2	0.797		0.890
Year 3	0.712		0.840
Year 4	0.636		0.792
Year 5	0.567	Year 5	0.747

(10 Marks)

Question 5

Day Ltd., a newly formed company has applied to the Private Bank for the first time for financing its Working Capital Requirements. The following informations are available about the projections for the current year:

Estimated Level of Activity	Completed Units of Production 31200 plus unit of work in progress 12000
Raw Material Cost	₹ 40 per unit
Direct Wages Cost	₹ 15 per unit
Overhead	₹ 40 per unit (inclusive of Depreciation ₹10 per unit)
Selling Price	₹ 130 per unit
Raw Material in Stock	Average 30 days consumption
Work in Progress Stock	Material 100% and Conversion Cost 50%
Finished Goods Stock	24000 Units



Credit Allowed by the supplier	30 days
Credit Allowed to Purchasers	60 days
Direct Wages (Lag in payment)	15 days
Expected Cash Balance	₹ 2,00,000

Assume that production is carried on evenly throughout the year (360 days) and wages and overheads accrue similarly. All sales are on the credit basis. You are required to calculate the Net Working Capital Requirement on Cash Cost Basis.

(10 Marks)

Question 6

Answer all.

(a) What are the sources of short term financial requirement of the company?

(4 Marks)

(b) What is certainty Equivalent?

(4 Marks)

(c) What are the roles of Finance Executive in Modern World?

(2 Marks)

OR

What are the two main aspects of the Finance Function?



PAPER 8A : NOVEMBER 2018

Question No. 1 is compulsory.

Attempt any four questions out of the remaining five questions.

In case, any candidate answers extra question(s)/ sub-question(s) over and above the required number, then only the requisite number of questions first answered in the answer book shall be valued and subsequent extra question(s) answered shall be ignored.

Working notes should form part of the answer

Question 1

- (a) Y Limited requires ₹ 50,00,000 for a new project. This project is expected to yield earnings before interest and taxes of ₹ 10,00,000. While deciding about the financial plan, the company considers the objective of maximizing earnings per share. It has two alternatives to finance the project - by raising debt ₹ 5,00,000 or ₹ 20,00,000 and the balance, in each case, by issuing Equity Shares. The company's share is currently selling at ₹ 300, but is expected to decline to ₹ 250 in case the funds are borrowed in excess of ₹ 20,00,000. The funds can be borrowed at the rate of 12 percent upto ₹ 5,00,000 and at 10 percent over ₹ 5,00,000. The tax rate applicable to the company is 25 percent.

Which form of financing should the company choose?

(5 Marks)

- (b) Following information relating to Jee Ltd. are given:

Particulars	
Profit after tax	₹ 10,00,000
Dividend payout ratio	50%
Number of Equity Shares	50,000
Cost of Equity	10%
Rate of Return on Investment	12%

- (i) What would be the market value per share as per Walter's Model?
 (ii) What is the optimum dividend payout ratio according to Walter's Model and Market value of equity share at that payout ratio?

(5 Marks)

- (c) The following is the information of XML Ltd. relate to the year ended 31-03-2018 :

Gross Profit	20% of Sales
Net Profit	10% of Sales
Inventory Holding period	3 months
Receivable collection period	3 months
Non-Current Assets to Sales	1 : 4
Non-Current Assets to Current Assets	1 : 2
Current Ratio	2 : 1
Non-Current Liabilities to Current Liabilities	1 : 1
Share Capital to Reserve and Surplus	4 : 1
Non-current Assets as on 31st March, 2017	₹ 50,00,000

Assume that :

- (i) No change in Non-Current Assets during the year 2017-18
 (ii) No depreciation charged on Non-Current Assets during the year 2017-18.



(iii) Ignoring Tax

You are required to Calculate cost of goods sold, Net profit, Inventory, Receivables and Cash for the year ended on 31st March, 2018

(5 Marks)

(d) From the following details relating to a project, analyse the sensitivity of the project to changes in the Initial Project Cost, Annual Cash Inflow and Cost of Capital :

Particulars	
Initial Project Cost	₹2,00,00,000
Annual Cash Inflow	₹60,00,000
Project Life	5 years
Cost of Capital	10%

To which of the 3 factors, the project is most sensitive if the variable is adversely affected by 10 ?
Cumulative Present Value Factor for 5 years for 10% is 3.791 and for 11% is 3.696.

(5 Marks)

Question 2

Following is the Balance Sheet of Soni Ltd. as on 31st March, 2018 :

Liabilities	Amount in ₹
Shareholder's Fund	
Equity Share Capital (₹ 10 each)	25,00,000
Reserve and Surplus	5,00,000
Non-Current Liabilities (12 Debentures)	50,00,000
Current Liabilities	20,00,000
Total	1,00,00,000
Assets	Amount in ₹
Non-Current Assets	60,00,000
Current Assets	40,00,000
Total	1,00,00,000

Additional Information:

- (i) Variable Cost is 60% of Sales.
- (ii) Fixed Cost p.a. excluding interest ₹ 20,00,000.
- (iii) Total Asset Turnover Ratio is 5 times.
- (iv) Income Tax Rate 25% You are required to:
 - (1) Prepare Income Statement
 - (2) Calculate the following and comment:
 - (a) Operating Leverage
 - (b) Financial Leverage
 - (c) Combined Leverage

(10 Marks)

Question 3

PD Ltd. an existing company, is planning to introduce a new product with projected life of 8 years. Project cost will be ₹ 2,40,00,000. At the end of 8 years no residual value will be realized. Working capital of ₹ 30,00,000 will be needed. The 100% capacity of the project is 2,00,000 units p.a. but the Production and Sales Volume is expected are as under :

Year	Number of Units
1	60,000 units
2	80,000 units
3-5	1,40,000 units
6-8	1,20,000 units

Other Information:

- (i) Selling price per unit ₹ 200
- (ii) Variable cost is 40 of sales.
- (iii) Fixed cost p.a. ₹ 30,00,000.
- (iv) In addition to these advertisement expenditure will have to be incurred as under:

Year	1	2	3-5	6-8
Expenditure (₹)	50,00,000	25,00,000	10,00,000	5,00,000

- (v) Income Tax is 25%.
- (vi) Straight line method of depreciation is permissible for tax purpose.
- (vii) Cost of capital is 10%.
- (viii) Assume that loss cannot be carried forward.

Present Value Table

Year	1	2	3	4	5	6	7	8
PVF@ 10	0.909	0.826	0.751	0.683	0.621	0.564	0.513	0.467

Advise about the project acceptability.

(10 Marks)

Question 4

MN Ltd. has a current turnover of ₹ 30,00,000 p.a. Cost of Sale is 80% of turnover and Bad Debts are 2% of turnover, Cost of Sales includes 70% variable cost and 30% Fixed Cost, while company's required rate of return is 15%. MN Ltd. currently allows 15 days credit to its customer, but it is considering increase this to 45 days credit in order to increase turnover.

It has been estimated that this change in policy will increase turnover by 20%, while Bad Debts will increase by 1%. It is not expected that the policy change will result in an increase in fixed cost and creditors and stock will be unchanged.

Should MN Ltd. introduce the proposed policy? (Assume 360 days year)

(10 Marks)

Question 5

The following data relate to two companies belonging to the same risk class :

Particulars	A Ltd.	B Ltd.
Expected Net Operating Income	₹ 18,00,000	₹ 18,00,000
12% Debt	₹ 54,00,000	-
Equity Capitalization Rate	-	18

**Required:**

- (a) Determine the total market value, Equity capitalization rate and weighted average cost of capital for each company assuming no taxes as per M.M. Approach.
- (b) Determine the total market value, Equity capitalization rate and weighted average cost of capital for each company assuming 40% taxes as per M.M. Approach.

(10 Marks)

Question 6

Answer the following:

- (a) Explain in brief following Financial Instruments:
- (i) Euro Bonds
 - (ii) Floating Rate Notes
 - (iii) Euro Commercial paper
 - (iii) Fully Hedged Bond

(1 x 4 = 4 Marks)

- (b) Discuss the Advantages of Leasing.

(4 Marks)

- (c) Write two main objectives of Financial Management.

OR

Write two main reasons for considering risk in Capital Budgeting decisions.

(2 Marks)



PAPER 8A : MAY 2019

Question No. 1 is compulsory.

Attempt any four questions out of the remaining five questions.

In case, any candidate answers extra question(s)/ sub-question(s) over and above the required number, then only the requisite number of questions first answered in the answer book shall be valued and subsequent extra question(s) answered shall be ignored.

Working notes should form part of the answer

Question 1

(a) Following figures and ratios are related to a company Q Ltd. :

(i) Sales for the year (all credit)	₹ 30,00,000
(ii) Gross Profit ratio	25 per cent
(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) Receivables (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 calculate :

Closing stock, Fixed Assets, Current Assets, Debtors and Net worth.

(5 Marks)

(b) Alpha Ltd. has furnished the following information :

- Earning Per Share (EPS)	₹ 4
- Dividend payout ratio	25%
- Market price per share	₹ 50
- Rate of tax	30%
- Growth rate of dividend	10%

The company wants to raise additional capital of ₹ 10 lakhs including debt of ₹ 4 lakhs. The cost of debt (before tax) is 10% up to ₹ 2 lakhs and 15% beyond that. Compute the after tax cost of equity and debt and also weighted average cost of capital.

(5 Marks)

(c) Kanoria Enterprises wishes to evaluate two mutually exclusive projects X and Y. The particulars are as under :

	Project X (₹)	Project Y (₹)
Initial Investment	1,20,000	1,20,000
Estimated cash inflows (per annum for 8 years)		
Pessimistic	26,000	12,000
Most Likely	28,000	28,000
Optimistic	36,000	52,000

The cut off rate is 14%. The discount factor at 14% are :



Year	1	2	3	4	5	6	7	8	9
Discount factor	0.877	0.769	0.675	0.592	0.519	0.456	0.400	0.351	0.308

Advise management about the acceptability of projects X and Y.

(5 Marks)

(d) The following information is supplied to you :

Total Earning	₹ 40 Lakhs
No. of Equity Shares (of ₹ 100 each)	4,00,000
Dividend Per Share	₹ 4
Cost of Capital	16%
Internal rate of return on investment	20%
Retention ratio	60%

Calculate the market price of a share of a company by using :

- Walter's Formula
- Gordon's Formula

(5 Marks)

Question 2

RM Steels Limited requires ₹ 10,00,000 for construction of a new plant. It is considering three financial plans :

- The company may issue 1,00,000 ordinary shares at ₹ 10 per share;
- The company may issue 50,000 ordinary shares at ₹ 10 per share and 5000 debentures of ₹ 100 denominations bearing a 8 per cent rate of interest; and
- The company may issue 50,000 ordinary shares at ₹ 10 per share and 5,000 preference shares at ₹ 100 per share bearing a 8 per cent rate of dividend.

If RM Steels Limited's earnings before interest and taxes are ₹ 20,000; ₹ 40,000; ₹ 80,000;

₹ 1,20,000 and ₹ 2,00,000, you are required to compute the earnings per share under each of the three financial plans ?

Which alternative would you recommend for RM Steels and why? Tax rate is 50%.

(10 Marks)

Question 3

AT Limited is considering three projects A, B and C. The cash flows associated with the projects are given below:

Cash flows associated with the Three Projects (₹)

You are required to :

- Calculate the payback period of each of the three projects.
- If the cut-off period is two years, then which projects should be accepted?
- Projects with positive NPVs if the opportunity cost of capital is 10 percent.
- "Payback gives too much weight to cash flows that occur after the cut-off date". True or false?
- "If a firm used a single cut-off period for all projects, it is likely to accept too many short lived projects." True or false?



P.V. Factor @ 10 %

Year	0	1	2	3	4	5
P.V.	1.000	0.909	0.826	0.751	0.683	0.621

(10 Marks)

Question 4

The capital structure of the Shiva Ltd. consists of equity share capital of ₹ 20,00,000 (Share of ₹ 100 per value) and ₹ 20,00,000 of 10% Debentures, sales increased by 20% from 2,00,000 units to 2,40,000 units, the selling price is ₹ 10 per unit; variable costs amount to ₹ 6 per unit and fixed expenses amount to ₹ 4,00,000. The income tax rate is assumed to be 50%.

- (a) You are required to calculate the following:
- The percentage increase in earnings per share;
 - Financial leverage at 2,00,000 units and 2,40,000 units.
 - Operating leverage at 2,00,000 units and 2,40,000 units.
- (b) Comment on the behaviour of operating and Financial leverages in relation to increase in production from 2,00,000 units to 2,40,000 units.

(10 Marks)

Question 5

Bitra Limited manufactures used in the steel industry. The following information regarding the company is given for your consideration:

- Expected level of production 9000 units per annum.
- Raw materials are expected to remain in store for an average of two months before issue to production.
- Work-in-progress (50 percent complete as to conversion cost) will approximate to 1/2 month's production.
- Finished goods remain in warehouse on an average for one month.
- Credit allowed by suppliers is one month.
- Two month's credit is normally allowed to debtors.
- A minimum cash balance of ₹ 67,500 is expected to be maintained.
- Cash sales are 75 percent less than the credit sales.
- Safety margin of 20 percent to cover unforeseen contingencies.
- The production pattern is assumed to be even during the year.
- The cost structure for Bitra Limited's product is as follows:

	₹
Raw Materials	80 per unit
Direct Labour	20 per unit
Overheads (including depreciation ₹ 20)	80 per unit
Total Cost	180 per unit
Profit	20 per unit
Selling Price	200 per unit

You are required to estimate the working capital requirement of Bitra limited.

(10 Marks)

**Question 6**

- (a) Explain the steps of Sensitivity Analysis. (4 Marks)
- (b) What is the process of Debt Securitisation ? (4 Marks)
- (c) Explain any two steps involved in Decision tree Analysis. (2 Marks)

OR

Give any two limitations of leasing.



PAPER 8A : NOVEMBER 2019

Question No. 1 is compulsory.

Attempt any four questions out of the remaining five questions.

In case, any candidate answers extra question(s)/ sub-question(s) over and above the required number, then only the requisite number of questions first answered in the answer

book shall be valued and subsequent extra question(s) answered shall be ignored.

Working notes should form part of the answer

Question 1

- (a) Following information has been gathered from the books of Tram Ltd. the equity shares of which is trading in the stock market at ₹ 14.

Particulars	Amount (₹)
Equity Share Capital (face value ₹ 10)	10,00,000
10% Preference Shares	2,00,000
Reserves	8,00,000
10% Debentures	6,00,000
Profit before Interest and Tax for the year	4,00,000
Interest	60,000
Profit after Tax for the year	2,40,000

Calculate the following:

- (i) Return on Capital Employed
 (ii) Earnings per share
 (iii) PE ratio
- (b) Door Ltd. is considering an investment of ₹ 4,00,000. This investment is expected to generate substantial cash inflows over the next five years. Unfortunately, the annual cash flows from this investment is uncertain, and the following profitability distribution has been established.

Annual Cash Flow (₹)	Probability
50,000	0.3
1,00,000	0.3
1,50,000	0.4

At the end of its 5 years life, the investment is expected to have a residual value of ₹ 40,000.

The cost of capital is 5%

- (i) Calculate NPV under the three different scenarios.
 (ii) Calculate Expected Net Present Value.
 (iii) Advise Door Ltd. on whether the investment is to be undertaken.

Year	1	2	3	4	5
DF @ 5%	0.952	0.907	0.864	0.823	0.784

- (c) Following figures and information were extracted from the company A Ltd.

Earnings of the company	₹ 10,00,000
Dividend paid	₹ 6,00,000
No. of shares outstanding	2,00,000



Price Earnings Ratio	10
Rate of return on investment	20%

You are required to calculate:

- (i) Current Market price of the share
 - (ii) Capitalisation rate of its risk class
 - (iii) What should be the optimum pay-out ratio?
 - (iv) What should be the market price per share at optimal pay-out ratio? (use Walter's Model)
- (d) A company has ₹ 1,00,000 available for investment and has identified the following four investments in which to invest.

Project	Investment (₹)	NPV (₹)
C	40,000	20,000
D	1,00,000	35,000
E	50,000	24,000
F	60,000	18,000

You are required to optimize the returns from a package of projects within the capital spending limit if-

- (i) The projects are independent of each other and are divisible.
- (ii) The projects are not divisible.

(4 x 5 = 20 Marks)

Question 2

The Balance Sheet of Gitashree Ltd. is given below:

Liabilities		(₹)
Shareholders' fund		
Equity share capital of ₹ 10 each	₹ 1,80,000	
Retained earnings	₹ 60,000	2,40,000
Non-current liabilities 10% debt		2,40,000
Current liabilities		1,20,000
		6,00,000
Assets		
Fixed Assets		4,50,000
Current Assets		1,50,000
		6,00,000

The company's total asset turnover ratio is 4. Its fixed operating cost is ₹ 2,00,000 and its variable operating cost ratio is 60%. The income tax rate is 30%.

Calculate:

- (i)
 - (a) Degree of Operating leverage.
 - (b) Degree of Financial leverage.
 - (c) Degree of Combined leverage.
- (ii) Find out EBIT if EPS is (a) ₹ 1 (b) ₹ 2 and (c) ₹ 0.

(10 Marks)

Question 3

Slide Ltd. is preparing a cash flow forecast for the three months period from January to the end of March. The following sales volumes have been forecasted:

Months	December	January	February	March	April
Sales (units)	1,800	1,875	1,950	2,100	2,250

Selling price per unit is ₹ 600. Sales are all on one month credit. Production of goods for sale takes place one month before sales. Each unit produced requires two units of raw materials costing ₹ 150 per unit. No raw material inventory is held. Raw materials purchases are on one month credit. Variable overheads and wages equal to ₹ 100 per unit are incurred during production and paid in the month of production. The opening cash balance on 1st January is expected to be ₹ 35,000. A long term loan of ₹ 2,00,000 is expected to be received in the month of March. A machine costing ₹ 3,00,000 will be purchased in March.

- Prepare a cash budget for the months of January, February and March and calculate the cash balance at the end of each month in the three months period.
- Calculate the forecast current ratio at the end of the three months period.

(10 Marks)

Question 4

Loft Ltd. is considering an investment in new technology that will reduce operating costs through increasing efficiency. The new technology will cost ₹ 5,00,000 and have a four year life at the end of which it will have a residual value of ₹ 50,000.

An annual license fee of ₹ 52,000 is payable to operate the machine. The purchase can be financed by 10% loan payable in equal installments at the end of each of four years. The depreciation is to be charged as per reducing balance method. The rate of depreciation is 25% per annum.

Alternatively, Loft Ltd. could lease the new technology. The Company would pay four annual lease rentals of ₹ 1,90,000 per year. The annual lease rentals include the cost of license fee. Tax rate is 30%. Compute the incremental cash flows under each option. What would be the appropriate rate at which these cash flows have to be discounted? Discount the incremental cash flows under each option and decide which option is better - buy or lease?

Year	1	2	3	4
DF @ 7%	0.935	0.873	0.816	0.763
DF @ 10%	0.909	0.826	0.751	0.683

(10 Marks)

Question 5

A Company wants to raise additional finance of ₹ 5 crore in the next year. The company expects to retain ₹ 1 crore earning next year. Further details are as follows:

- The amount will be raised by equity and debt in the ratio of 3: 1.
- The additional issue of equity shares will result in price per share being fixed at ₹ 25.
- The debt capital raised by way of term loan will cost 10% for the first ₹ 75 lakh and 12% for the next ₹ 50 lakh.
- The net expected dividend on equity shares is ₹ 2.00 per share. The dividend is expected to grow at the rate of 5%.
- Income tax rate is 25%.

You are required:

- To determine the amount of equity and debt for raising additional finance.



- (b) To determine the post-tax average cost of additional debt.
- (c) To determine the cost of retained earnings and cost of equity.
- (d) To compute the overall weighted average cost of additional finance after tax.

(10 Marks)

Question 6

- (a) Briefly explain the three finance function decisions.
- (b) Explain the steps while using the equivalent annualized criterion.
- (c) Explain the significance of Cost of Capital.

(3 Marks)

(3 Marks)

(4 Marks)

OR

Briefly describe any four sources of short-term finance.

(4 Marks)



PAPER 8A : MAY 2020

Question No. 1 is compulsory.

Attempt any four questions out of the remaining five questions.

In case, any candidate answers extra question(s)/ sub-question(s) over and above the required number, then only the requisite number of questions first answered in the answer

book shall be valued and subsequent extra question(s) answered shall be ignored.

Working notes should form part of the answer

Question 1

(a) Following information relates to RM Co. Ltd.

	(₹)
Total Assets employed	10,00,000
Direct Cost	5,50,000
Other Operating Cost	90,000

Goods are sold to the customers at 150% of direct costs.

50% of the assets being financed by borrowed capital at an interest cost of 8% per annum. Tax rate is 30%.

You are required to calculate :

- (i) Net profit margin
- (ii) Return on Assets
- (iii) Asset turnover
- (iv) Return on owners' equity

(5 Marks)

(b) CK Ltd. is planning to buy a new machine. Details of which are as follows:

Cost of the Machine at the commencement	₹ 2,50,000
Economic Life of the Machine	8 year
Residual Value	Nil
Annual Production Capacity of the Machine	1,00,000 units
Estimated Selling Price per unit	₹ 6
Estimated Variable Cost per unit	₹ 3
Estimated Annual Fixed Cost (Excluding depreciation)	₹ 1,00,000
Advertisement Expenses in 1 st year in addition of annual fixed cost	₹ 20,000
Maintenance Expenses in 5 th year in addition of annual fixed cost	₹ 30,000
Cost of Capital	12%
Ignore Tax	

Analyse the above mentioned proposal using the Net Present Value Method and advice.

P.V. factor @ 12% are as under:

Year	1	2	3	4	5	6	7	8
PV Factor	0.893	0.797	0.712	0.636	0.567	0.507	0.452	0.404

(5 Marks)



- (c) The following figures are extracted from the annual report of RJ Ltd.:

Net Profit	₹ 50 Lakhs
Outstanding 13% preference shares	₹ 200 Lakhs
No. of Equity Shares	6 Lakhs
Return on Investment	25%
Cost of Capital (Ke)	15%

You are required to compute the approximate dividend pay-out ratio by keeping the share price at ₹ 40 by using Walter's Model.

(5 Marks)

- (d) TT Ltd. issued 20,000, 10% convertible debenture of ₹ 100 each with a maturity period of 5 years. At maturity the debenture holders will have the option to convert debentures into equity shares of the company in ratio of 1:5 (5 shares for each debenture). The current market price of the equity share is ₹ 20 each and historically the growth rate of the share is 4% per annum. Assuming tax rate is 25%. Compute the cost of 10% convertible debenture using Approximation Method and Internal Rate of Return Method.

PV Factor are as under:

Year	1	2	3	4	5
PV Factor @ 10%	0.909	0.826	0.751	0.683	0.621
PV Factor @ 15%	0.870	0.756	0.658	0.572	0.497

(5 Marks)

Question 2

PK Ltd., a manufacturing company, provides the following information:

	(₹)
Sales	1,08,00,000
Raw Material Consumed	27,00,000
Labour Paid	21,60,000
Manufacturing Overhead (Including Depreciation for the year ₹ 3,60,000)	32,40,000
Administrative & Selling Overhead	10,80,000

Additional Information:

- Receivables are allowed 3 months' credit.
- Raw Material Supplier extends 3 months' credit.
- Lag in payment of Labour is 1 month.
- Manufacturing Overhead are paid one month in arrear.
- Administrative & Selling Overhead is paid 1 month advance.
- Inventory holding period of Raw Material & Finished Goods are of 3 months.
- Work-in-Progress is Nil.
- PK Ltd. sells goods at Cost plus 33⅓%.
- Cash Balance ₹ 3,00,000.
- Safety Margin 10%.

You are required to compute the Working Capital Requirements of PK Ltd. on Cash Cost basis.

(10 Marks)





(-) Interest	25,000
Profit before tax	75,000

Using the concept of leverage, find out

- The percentage change in taxable income if EBIT increases by 10%.
- The percentage change in EBIT if sales increases by 10%.
- The percentage change in taxable income if sales increases by 10%.

Also verify the results in each of the above case.

Question 6

- (a) List out the role of Chief Financial Officer in today's World.

(4 Marks)

- (b) Explain in brief the methods of Venture Capital Financing.

(4 Marks)

- (c) Distinguish between Unsystematic Risk & Systematic Risk.

(2 Marks)

OR

What is Risk Adjusted Discount Rate ?

(2 Marks)



PAPER 8A : JANUARY 2021

Question No. 1 is compulsory.

Attempt any four questions out of the remaining five questions.

In case, any candidate answers extra question(s)/ sub-question(s) over and above the required number, then only the requisite number of questions first answered in the answer book shall be valued and subsequent extra question(s) answered shall be ignored.

Working notes should form part of the answer

Question 1

(a) From the following information, complete the Balance Sheet given below:

(i) Equity Share Capital :	₹ 2,00,000
(ii) Total debt to owner's equity :	0.75
(iii) Total Assets turnover :	2 times
(iv) Inventory turnover :	8 times
(v) Fixed Assets to owner's equity :	0.60
(vi) Current debt to total debt :	0.40

Balance Sheet of XYZ Co. as on March 31, 2020

Liabilities	Amount (₹)	Assets	Amount (₹)
Equity Shares Capital	2,00,000	Fixed Assets	?
Long term Debt	?	Current Assets:	
Current Debt	?	Inventory	?
		Cash	?

(5 Marks)

(b) The following information is taken from ABC Ltd.

Net Profit for the year	₹ 30,00,000
12% Preference share capital	₹ 1,00,00,000
Equity share capital (Share of ₹ 10 each)	₹ 60,00,000
Internal rate of return on investment	22%
Cost of Equity Capital	18%
Retention Ratio	75%

Calculate the market price of the share using:

- (1) Gordon's Model
- (2) Walter's Model

(5 Marks)

(c) A project requires an initial outlay of ₹ 3,00,000.

The company uses certainty equivalent method approach to evaluate the project. The risk free rate is 7%.

Following information is available:

Year	CFAT (Cash Flow After Tax) ₹	CE (Certainty Equivalent Coefficient)
1.	1,00,000	0.90
2.	1,50,000	0.80



3.	1,15,000	0.60
4.	1,00,000	0.55
5.	50,000	0.50

PV Factor at 7%

Year	1	2	3	4	5
PV Factor	0.935	0.873	0.816	0.763	0.713

Evaluate the above. Is investment in the project beneficial?

(5 Marks)

(d) The following information is provided by MNP Ltd. for the year ending 31st March, 2020:

Raw Material Storage period	45 days
Work-in-Progress conversion period	20 days
Finished Goods storage period	25 days
Debt Collection period	30 days
Creditors payment period	60 days
Annual Operating Cost (Including Depreciation of ₹ 2,50,000)	₹ 25,00,000
Assume 360 days in a year.	
You are required to calculate:	

- Operating Cycle period
- Number of Operating Cycle in a year.
- Amount of working capital required for the company on a cost basis.
- The company is a market leader in its product and it has no competitor in the market. Based on a market survey it is planning to discontinue sales on credit and deliver products based on pre-payments in order to reduce its working capital requirement substantially. You are required to compute the reduction in working capital requirement in such a scenario.

(5 Marks)

Question 2

The information related to XYZ Company Ltd. for the year ended 31st March, 2020 are as follows:

Equity Share Capital of ₹ 100 each	₹ 50 Lakhs
12% Bonds of ₹ 1000 each	₹ 30 Lakhs
Sales	₹ 84 Lakhs
Fixed Cost (Excluding Interest)	₹ 7.5 Lakhs
Financial Leverage	1.39
Profit-Volume Ratio	25%
Market Price per Equity Share	₹ 200
Income Tax Rate Applicable	30%
You are required to compute the following:	

- Operating Leverage
- Combined Leverage
- Earning per share
- Earning Yield

(10 Marks)



Question 3

A Limited and B Limited are identical except for capital structures. A Ltd. has 60 per cent debt and 40 per cent equity, whereas B Ltd. has 20 per cent debt and 80 per cent equity. (All percentages are in market-value terms.) The borrowing rate for both companies is 8 per cent in a no-tax world, and capital markets are assumed to be perfect.

- (a) (i) If X, owns 3 per cent of the equity shares of A Ltd., determine his return if the Company has net operating income of ₹ 4,50,000 and the overall capitalization rate of the company, (K_0) is 18 per cent.
- (ii) Calculate the implied required rate of return on equity of A Ltd.
- (b) B Ltd. has the same net operating income as A Ltd.
- (i) Calculate the implied required equity return of B Ltd.
- (ii) Analyse why does it differ from that of A Ltd.

(10 Marks)

Question 4

The Capital structure of PQR Ltd. is as follows:

	₹
10% Debenture	3,00,000
12% Preference Shares	2,50,000
Equity Share (face value ₹ 10 per share)	5,00,000
	10,50,000

Additional Information:

- (i) ₹ 100 per debenture redeemable at par has 2% flotation cost & 10 years of maturity. The market price per debenture is ₹ 110.
- (ii) ₹ 100 per preference share redeemable at par has 3% flotation cost & 10 years of maturity. The market price per preference share is ₹ 108.
- (iii) Equity share has ₹ 4 flotation cost and market price per share of ₹ 25. 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 30%.

Required:

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

(10 Marks)

Question 5

A company wants to buy a machine, and two different models namely A and B are available.

Following further particulars are available:

Particulars	Machine-A	Machine-B
Original Cost (₹)	8,00,000	6,00,000
Estimated Life in years	4	4
Salvage Value (₹)	0	0

The company provides depreciation under Straight Line Method. Income tax rate applicable is 30%.

The present value of ₹ 1 at 12% discounting factor and net profit before depreciation and tax are as under:



Year	Net Profit Before Depreciation and tax		PV Factor
	Machine-A (₹)	Machine-B (₹)	
1	2,30,000	1,75,000	0.893
2	2,40,000	2,60,000	0.797
3	2,20,000	3,20,000	0.712
4	5,60,000	1,50,000	0.636

Calculate:

1. NPV (Net Present Value)
2. Discounted pay-back period
3. PI (Profitability Index)

Suggest: Purchase of which machine is more beneficial under Discounted pay-back period method, NPV method and PI method.

(10 Marks)

Question 6

- (a) State four tasks involved to demonstrate the importance of good Financial Management.
- (b) Explain Electronic Cash Management System.
- (c) Define Internal Rate of Return (IRR)

(4 Marks)

(4 Marks)

(2 Marks)

OR

Explain in brief the following bonds:

- (i) Callable Bonds
- (ii) Puttable Bonds

ARIHANT CA



PAPER 8A : JULY 2021

Question No. 1 is compulsory.

Attempt any four questions out of the remaining five questions.

In case, any candidate answers extra question(s)/ sub-question(s) over and above the required number, then only the requisite number of questions first answered in the answer book shall be valued and subsequent extra question(s) answered shall be ignored.

Working notes should form part of the answer

Question 1

- (a) Current annual sale of SKD Ltd. is ₹ 360 lakhs. Its directors are of the opinion that company's current expenditure on receivables management is too high and with a view to reduce the expenditure they are considering following two new alternate credit policies:

	Policy X	Policy Y
Average collection period	1.5 months	1 month
% of default	2%	1%
Annual collection expenditure	₹ 12 lakh	₹ 20 lakh

Selling price per unit of product is ₹ 150. Total cost per unit is ₹ 120.

Current credit terms are 2 months and percentage of default is 3%.

Current annual collection expenditure is ₹ 8 lakh. Required rate of return on investment of SKD Ltd. is 20%. Determine which credit policy SKD Ltd. should follow.

(5 Marks)

- (b) The details about two companies R Ltd. and S Ltd. having same operating risk are given below:

Particulars	R Ltd.	S Ltd.
Profit before interest and tax	₹ 10 lakhs	₹ 10 lakhs
Equity share capital ₹ 10 each	₹ 17 lakhs	₹ 50 lakhs
Long term borrowings @ 10%	₹ 33 lakhs	-
Cost of Equity (Ke)	18%	15%

You are required to:

- (1) Calculate the value of equity of both the companies on the basis of M.M. Approach without tax.
- (2) Calculate the Total Value of both the companies on the basis of M.M. Approach without tax.

(5 Marks)

- (c) K.P. Ltd. is investing ₹ 50 lakhs in a project. The life of the project is 4 years. Risk free rate of return is 6% and risk premium is 6%, other information is as under:

Sales of 1st year	₹ 50 lakhs
Sales of 2nd year	₹ 60 lakhs
Sales of 3rd year	₹ 70 lakhs
Sales of 4th year	₹ 80 lakhs
P/V Ratio (same in all the years)	50%
Fixed Cost (Excluding Depreciation) of 1st year	₹ 10 lakhs
Fixed Cost (Excluding Depreciation) of 2nd year	₹ 12 lakhs
Fixed Cost (Excluding Depreciation) of 3rd year	₹ 14 lakhs
Fixed Cost (Excluding Depreciation) of 4th year	₹ 16 lakhs



Ignoring interest and taxes,

You are required to calculate NPV of given project on the basis of Risk Adjusted Discount Rate.

Discount factor @ 6% and 12% are as under:

Year	1	2	3	4
Discount Factor @ 6%	0.943	0.890	0.840	0.792
Discount Factor @ 12%	0.893	0.797	0.712	0.636

(5 Marks)

(d) The following information relates to LMN Ltd.

Earning of the company	₹ 30,00,000
Dividend pay-out ratio	60%
No. of shares outstanding	5,00,000
Rate of return on investment	15%
Equity capitalized rate	13%

Required:

- Determine what would be the market value per share as per Walter's model.
- Compute optimum dividend pay-out ratio according to Walter's model and the market value of company's share at that pay-out ratio.

(5 Marks)

Question 2

Following are the information of TT Ltd.:

Particulars	
Earnings per share	₹ 10
Dividend per share	₹ 6
Expected growth rate in Dividend	6%
Current market price per share	₹ 120
Tax Rate	30%
Requirement of Additional Finance	₹ 30 lakhs
Debt Equity Ratio (For additional finance)	2:1
Cost of Debt	
0-5,00,000	10%
5,00,001 - 10,00,000	9%
Above 10,00,000	8%

Assuming that there is no Reserve and Surplus available in TT Ltd.

You are required to:

- Find the pattern of finance for additional requirement
- Calculate post tax average cost of additional debt
- Calculate cost of equity
- Calculate the overall weighted average after tax cost of additional finance.

(10 Marks)



Question 3

Masco Limited has furnished the following ratios and information relating to the year ended 31st March 2021:

Sales	₹ 75,00,000
Return on net worth	25%
Rate of income tax	50%
Share capital to reserves	6:4
Current ratio	2.5
Net profit to sales (After Income Tax)	6.50%
Inventory turnover (based on cost of goods sold)	12
Cost of goods sold	₹ 22,50,000
Interest on debentures	₹ 75,000
Receivables (includes debtors ₹ 1,25,000)	₹ 2,00,000
Payables	₹ 2,50,000
Bank Overdraft	₹ 1,50,000

You are required to:

- Calculate the operating expenses for the year ended 31st March, 2021.
- Prepare a balance sheet as on 31st March in the following format:

Liabilities	₹	Assets	₹
Share Capital		Fixed Assets	
Reserves and Surplus		Current Assets	
15% Debentures		Stock	
Payables		Receivables	
Bank Term Loan		Cash	

(10 Marks)

Question 4

An existing company has a machine which has been in operation for two years, its estimated remaining useful life is 4 years with no residual value in the end. Its current market value is ₹ 3 lakhs. The management is considering a proposal to purchase an improved model of a machine gives increase output. The details are as under:

Particulars	Existing Machine	New Machine
Purchase Price	₹ 6,00,000	₹ 10,00,000
Estimated Life	6 years	4 years
Residual Value	0	0
Annual Operating days	300	300
Operating hours per day	6	6
Selling price per unit	₹ 10	₹ 10
Material cost per unit	₹ 2	₹ 2
Output per hour in units	20	40
Labour cost per hour	₹ 20	₹ 30
Fixed overhead per annum excluding depreciation	₹ 1,00,000	₹ 60,000
Working Capital	₹ 1,00,000	₹ 2,00,000
Income-tax rate	30%	30%



Assuming that - cost of capital is 10% and the company uses written down value of depreciation @ 20% and it has several machines in 20% block.

Advise the management on the Replacement of Machine as per the NPV method. The discounting factors table given below:

Discounting Factors	Year 1	Year 2	Year 3	Year 4
10%	0.909	0.826	0.751	0.683

(10 Marks)

Question 5

A company had the following balance sheet as on 31st March, 2021:

Liabilities	₹ in Crores	Assets	₹ in Crores
Equity Share Capital (75 lakhs Shares of ₹ 10 each)	7.50	Building	12.50
Reserves and Surplus	1.50	Machinery	6.25
15% Debentures	15.00	Current Assets	
Current Liabilities	6.00	Stock	3.00
		Debtors	3.25
		Bank Balance	5.00
	30.00		30.00

The additional information given is as under:

Fixed cost per annum (excluding interest)	₹ 6 crores
Variable operating cost ratio	60%
Total assets turnover ratio	2.5
Income-tax rate	40%

Calculate the following and comment:

- Earnings per share
- Operating Leverage
- Financial Leverage
- Combined Leverage

(10 Marks)

Question 6

- (a) Explain in brief the forms of Post Shipment Finance.

(4 Marks)

- (b) Describe the salient features of FORFAITING. (4 Marks)

- (c) List out the steps to be followed by the manager to measure and maximize the Shareholder's Wealth

(2 Marks)

OR

Explain the limitations of Average Rate of Return.

(2 Marks)



PAPER 8A : DECEMBER 2021

Question No. 1 is compulsory.

Attempt any four questions out of the remaining five questions.

In case, any candidate answers extra question(s)/ sub-question(s) over and above the required number, then only the requisite number of questions first answered in the answer

book shall be valued and subsequent extra question(s) answered shall be ignored.

Working notes should form part of the answer

Question 1

(a) A factoring firm has offered a company to buy its accounts receivables. The relevant information is given below:

- The current average collection period for the company's debt is 80 days and $\frac{1}{2}\%$ of debtors default. The factor has agreed to pay over money due to the company after 60 days and it will suffer all the losses of bad debts also.
- Factor will charge commission @2%.
- The company spends ₹ 1,00,000 p.a. on administration of debtor. These are avoidable cost.
- Annual credit sales are ₹ 90 lakhs. Total variable costs is 80% of sales. The company's cost of borrowing is 15% per annum. Assume 365 days in a year.

Should the company enter into agreement with factoring firm?

(5 Marks)

(b) Book value of capital structure of B Ltd. is as follows:

Sources	Amount
12%, 6,000 Debentures @ ₹ 100 each	₹ 6,00,000
Retained earnings	₹ 4,50,000
4,500 Equity shares @ ₹ 100 each	₹ 4,50,000
	₹ 15,00,000

Currently, the market value of debenture is ₹ 110 per debenture and equity share is ₹ 180 per share. The expected rate of return to equity shareholder is 24% p.a. Company is paying tax @ 30%.

Calculate WACC on the basis of market value weights.

(5 Marks)

(c) X Ltd. is a multinational company. Current market price per share is ₹ 2,185. During the F.Y. 2020-21, the company paid ₹ 140 as dividend per share. The company is expected to grow @ 12% p.a. for next four years, then 5% p.a. for an indefinite period. Expected rate of return of shareholders is 18% p.a.

- Find out intrinsic value per share.
- State whether shares are overpriced or underpriced.

Year	1	2	3	4	5
Discounting Factor @ 18%	0.847	0.718	0.608	0.515	0.436

(5 Marks)

(d) A garment trader is preparing cash forecast for first three months of calendar year 2021. His estimated sales for the forecasted periods are as below:



	January (₹ '000)	February (₹ '000)	March (₹ '000)
Total sales	600	600	800

- The trader sells directly to public against cash payments and to other entities on credit. Credit sales are expected to be four times the value of direct sales to public. He expects 15% customers to pay in the month in which credit sales are made, 25% to pay in the next month and 58% to pay in the next to next month. The outstanding balance is expected to be written off.
- Purchases of goods are made in the month prior to sales and it amounts to 90% of sales and are made on credit. Payments of these occur in the month after the purchase. No inventories of goods are held.
- Cash balance as on 1st January, 2021 is ₹ 50,000.
- Actual sales for the last two months of calendar year 2020 are as below:

	November (₹ '000)	December (₹ '000)
Total sales	640	880

You are required to prepare a monthly cash, budget for the three months from January to March, 2021.

(5 Marks)

Question 2

Following are the data in respect of ABC Industries for the year ended 31 st March, 2021:

Debt to Total assets ratio	:	0.40
Long-term debts to equity ratio	:	30%
Gross profit margin on sales	:	20%
Accounts receivables period	:	36 days
Quick ratio	:	0.9
Inventory holding period	:	55 days
Cost of goods sold	:	₹ 64,00,000

Liabilities	₹	Assets	₹
Equity Share Capital	20,00,000	Fixed assets	
Reserves & surplus		Inventories	
Long-term debts		Accounts receivable	
Accounts payable		Cash	
Total	50,00,000	Total	

Required:

Complete the Balance Sheet of ABC Industries as on 31st March, 2021. All calculations should be in nearest Rupee. Assume 360 days in a year.

(10 Marks)

Question 3

Earnings before interest and tax of a company are ₹ 4,50,000. Currently the company has 80,000 Equity shares of ₹ 10 each, retained earnings of ₹ 12,00,000. It pays annual interest of ₹ 1,20,000 on 12% Debentures. The company proposes to take up an expansion scheme for which it needs additional fund of ₹ 6,00,000. It is anticipated that after expansion, the company will be able to achieve the same return on investment as at present.

It can raise fund either through debts at rate of 12% p.a. or by issuing Equity shares at par. Tax rate is 40%.



Required:

Compute the earning per share if:

- (i) The additional funds were raised through debts.
- (ii) The additional funds were raised by issue of Equity shares.

Advise whether the company should go for expansion plan and which sources of finance should be preferred.

(10 Marks)

Question 4

Stand Ltd. is contemplating replacement of one of its machines which has become outdated and inefficient. Its financial manager has prepared a report outlining two possible replacement machines. The details of each machine are as follows:

	Machine 1	Machine 2
Initial investment	₹ 12,00,000	₹ 16,00,000
Estimated useful life	3 years	5 years
Residual value	₹ 1,20,000	₹ 1,00,000
Contribution per annum	₹ 11,60,000	₹ 12,00,000
Fixed maintenance costs per annum	₹ 40,000	₹ 80,000
Other fixed operating costs per annum	₹ 7,20,000	₹ 6,10,000

The maintenance costs are payable annually in advance. All other cash flows apart from the initial investment assumed to occur at the end of each year. Depreciation has been calculated by straight line method and has been included in other fixed operating costs. The expected cost of capital for this project is assumed as 12% p.a.

Required:

- (i) Which machine is more beneficial, using Annualized Equivalent Approach? Ignore tax.
- (ii) Calculate the sensitivity of your recommendation in part (i) to changes in the contribution generated by machine 1.

Year	1	2	3	4	5	6
PVIF _{0.12,t}	0.893	0.797	0.712	0.636	0.567	0.507
PVIFA _{0.12,t}	0.893	1.690	2.402	3.038	3.605	4.112

(10 Marks)

Question 5

Information of A Ltd. is given below:

- Earnings after tax: 5% on sales
- Income tax rate: 50%
- Degree of Operating Leverage: 4 times
- 10% Debenture in capital structure: ₹ 3 lakhs
- Variable costs: ₹ 6 lakhs

Required:

- (i) From the given data complete following statement:

Sales	XXXX
Less: Variable costs	₹ 6,00,000



Contribution	XXXX
Less: Fixed costs	XXXX
EBIT	XXXX
Less: Interest expenses	XXXX
EBT	XXXX
Less: Income tax	XXXX
EAT	XXXX

- (ii) Calculate Financial Leverage and Combined Leverage.
 (iii) Calculate the percentage change in earning per share, if sales increased by 5%.

(10 Marks)

Question 6

- (a) Write short notes on Bridge Finance and Clean Packing Credit.

(4 Marks)

- (b) Distinguish between Scenario Analysis & Sensitivity Analysis.

(4 Marks)

- (c) Explain in brief the phases of the evolution of financial management.

(2 Marks)

OR

Adjustment of risk is required in capital budgeting decision, give reasons for it.

(2 Marks)

