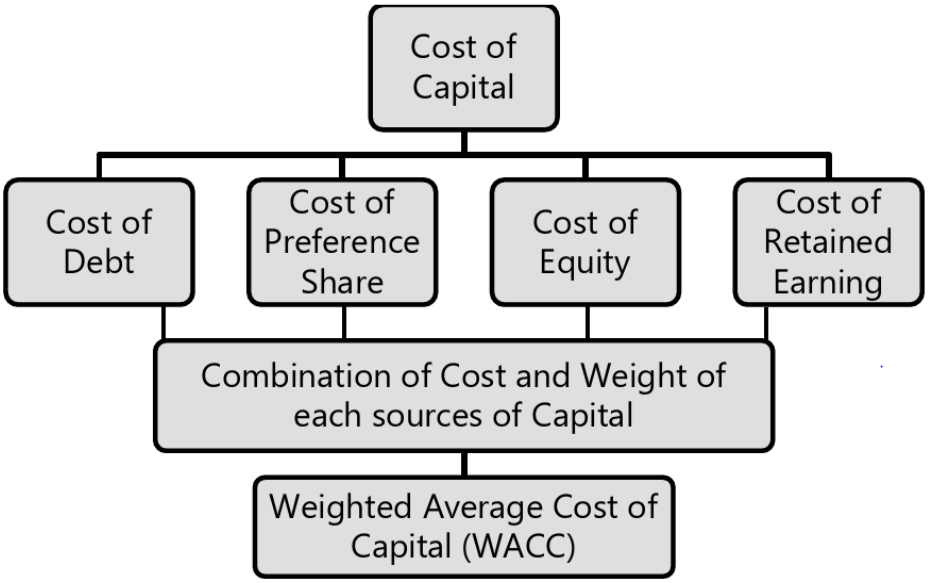
REVISION – 1: COST OF CAPITAL

INTRODUCTION

The basic task of a finance manager is the procurement of funds and its effective utilization. Whereas the objective of financial management is the maximization of wealth. Here wealth or value is equal to performance divided by expectations.

Therefore, the finance manager is required to select such a capital structure in which the expectation of investors is minimum hence shareholders' wealth is maximum. For that purpose, first, he needs to calculate the cost of various sources of finance. In this chapter, we will learn to calculate the cost of debt, cost of preference shares, cost of equity shares, cost of retained earnings and also the overall cost of capital.



MEANING OF COST OF CAPITAL

Cost of capital is the return <u>expected</u> by the providers of capital (i.e. shareholders, lenders and the debt-holders) to the business as compensation for their contribution to the total capital.

When an entity (corporate or others) procured finances from either source as listed above, it has to pay some additional amount of money besides the principal amount. The additional money paid to these financiers may be either a one-off payment or a regular payment at specified intervals. This additional money paid is said to be the cost of using the capital and it is called the cost of capital.

This cost of capital expressed in rate is used to discount/ compound the cash flow or stream of cashflows. Cost of capital is also known as the 'cut-off' rate, 'hurdle rate', 'minimum rate of return' etc. It is used as a benchmark for:

- Framing the debt policy of a firm.
- Taking Capital budgeting decisions.

DETERMINATION OF THE COST OF CAPITAL

The cost of any sources of finance is expressed in terms of **percentage per annum**. To calculate cost first of all we should identify various cash flows like:

1. Inflow of amount received at the beginning.
2. Outflows of payment of interest, dividend, redemption amount etc.
3. Inflow of tax benefit on interest or Outflow of payment of dividend tax.

Thereafter we can use the trial & error method to arrive at a rate where the present value of outflows is equal to the present value of inflows. That rate is basically IRR.

In investment decisions, IRR indicates income because there we have an initial outflow followed by a series of inflows. In the Cost of Capital chapter, this **IRR represents cost**, because here we have an initial inflow followed by a series of net outflows.

Alternatively, we can use shortcut formulas. Though these shortcut formulas are easy to use they give an approximate answer and not the exact answer. We will discuss the cost of capital of each source of finance separately.

KEY POINTS

1. Securities may be issued at Par (say ₹ 100) or at a Discount (say ₹ 90) or at a Premium (say ₹ 110)
2. Similarly, securities may also be redeemed at Par (say ₹ 100) or at a Discount (say ₹ 90) or at a Premium (say ₹ 110)
3. Flotation Cost or Issue Cost – These are costs associated with the issue of **NEW** securities. A few examples are Brokerage, Commission, Underwriting Expenses etc. It should be noted that these costs apply only to new securities and not to existing securities. Flotation Cost is an outflow and should be deducted from the Issue Price to arrive at Net Proceeds.
4. 'Net proceeds' means issue price less issue expenses or floatation cost. If the issue price is not given, then students can assume it to be equal to the current market price. If issue expenses are not given, then simply assume it to be equal to zero.

5. Concept of Tax Saving on Interest Expense – The payment of interest to the debenture holders or lenders is allowed as an expense for the purpose of tax determination. Hence, interest paid to the debenture holders saves the tax liability of the company. Saving in the tax liability is also known as 'Tax Shield'.

COST OF LONG-TERM DEBT (Kd)

Cost of Irredeemable Debentures

$$K_d = \frac{I}{NP}(1-t)$$

Where,

Kd = Cost of debt after tax

I = Annual interest payment

NP = Net proceeds of debentures or Current market price

t = Tax rate

'Net proceeds' means issue price less issue expenses or floatation cost. If the issue price is not given, then students can assume it to be equal to the current market price. If issue expenses are not given, then simply assume it to be equal to zero.

Cost of Redeemable Debentures

Method-1: Yield to Maturity (YTM) Approach/ Present Value Method

The cost of redeemable debt (Kd) is calculated by discounting the relevant cash flows using the Internal Rate of Return (IRR).

Method-2: Formula Method

$$\text{Cost of Redeemable Debenture } (K_d) = \frac{I(1-t)+\frac{(RV-NP)}{n}}{\frac{(RV+NP)}{2}}$$

Where,

I = Interest payment

NP = Net proceeds or Current market price
RV = Redemption value of debentures
t = Tax rate applicable to the company
n = Remaining life of debentures

'Net proceeds' means issue price less issue expenses or floatation cost. If the issue price is not given, then students can assume it to be equal to the current market price. If issue expenses are not given, then simply assume it to be equal to zero.

COST OF PREFERENCE SHARE CAPITAL (Kp)

Cost of Irredeemable Preference Shares

$$\text{Cost of Irredeemable Preference Shares } (K_P) = \frac{PD}{P_0}$$

Where,
PD = Annual preference dividend
P_o = Net proceeds from issue of preference shares

'Net proceeds' means issue price less issue expenses or floatation cost. If the issue price is not given, then students can assume it to be equal to the current market price. If issue expenses are not given, then simply assume it to be equal to zero.

Cost of Redeemable Preference Shares

Method-1: Yield to Maturity (YTM) Approach/ Present Value Method

The cost of redeemable debt (Kp) is calculated by discounting the relevant cash flows using the Internal Rate of Return (IRR).

Method-2: Formula Method

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

Where,
PD = Annual preference dividend
RV = Redemption value of preference shares
NP = Net proceeds from issue of preference shares
n = Remaining life of preference shares

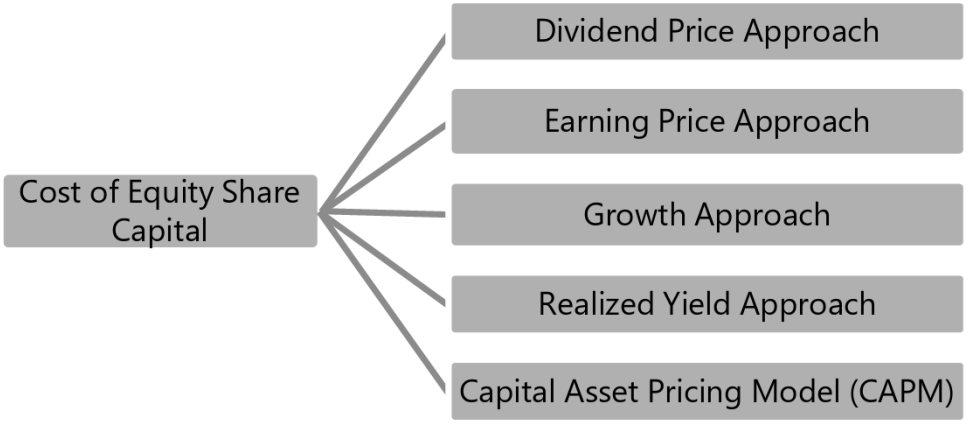
COST OF EQUITY SHARE CAPITAL (Ke)

Just like any other source of finance, the cost of equity is the expectation of equity shareholders. We know that the value is performance divided by expectations. If we know the value and performance, then we can calculate expectation as a balancing figure.

Here, performance means the amount paid by the company to investors, like interest, dividend, redemption price etc. In the case of debentures and preference shares, the amount of interest or dividend is fixed but in the case of equity shares, it is uncertain.

Therefore, there is not a single method to calculate the cost of equity but different methods.

1. Dividend Price Approach
2. Earnings Price Approach
3. Growth Approach (Gordon's Model)
   a. Dividend Growth
   b. Earnings Growth
4. Realised Yield Approach
5. Capital Asset Pricing Model (CAPM)



1. Ke - Dividend Price Approach

$$\text{Cost of Equity } (K_e) = \frac{D}{P_0}$$

Where,
Ke= Cost of equity
D = Expected dividend (also written as D1)
P_0 = Market price of equity

2. Ke - Earnings Price Approach

$$\text{Cost of Equity } (K_e) = \frac{E}{P}$$

Where,
E = Current earnings per share
P = Market price per share

3. Ke - Growth Approach (Gordon's Model)

a. Dividend Growth Approach

$$\text{Cost of Equity } (K_e) = \frac{D_1}{P_0} + g$$

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

In the case of newly issued Equity Shares, P_0 should be reduced by Flotation Cost.

b. Earnings Growth Approach

Same as the Dividend Growth Approach. Replace D_1 with E_1.

4. Ke – Realised Yield Approach

This method is done from the viewpoint of the investor. It is normally followed when the equity shares are sold by the equity shareholder after a few years. The Ke is calculated by discounting the relevant cash flows using the Internal Rate of Return (IRR).

5. Ke – Capital Asset Pricing Model (CAPM)

$$\textbf{Cost of Equity } (K_e) = R_f + ß\ (R_m - R_f)$$

Where,

Ke	=	Cost of equity capital
Rf	=	Risk-free rate of return
ß	=	Beta coefficient
Rm	=	Rate of return on market portfolio
(Rm – Rf)	=	Market risk premium

COST OF EQUITY RETAINED EARNINGS (Kr)

Like other sources of fund, retained earnings also involves cost. It is the opportunity cost of dividends foregone by shareholders. The cost of retained earnings is often used interchangeably with the cost of equity, as the cost of retained earnings is nothing but the expected return of the shareholders from the investment in shares of the company.

Kr = Ke

However, this formula is subject to a few exceptions.

WEIGHTED AVERAGE COST OF CAPITAL – WACC (Ko)

The Cost of Total Capital will be equal to the weighted average of the cost of individual sources of finance.

The steps to calculate WACC is as follows:

Step 1: Calculate the total capital from all the sources of capital.
(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.

$$\left(\frac{\text{Equity Share Capital (for example)}}{\text{Total Capital (as calculated in Step1 above)}}\right)$$

Step 3: Multiply the proportion as calculated in Step 2 above with the respective cost of capital.
(Ke × Proportion (%) of equity share capital (for example) calculated in Step 2 above)

Step 4: Aggregate the cost of capital as calculated in Step 3 above. This is the WACC.

(Ke + Kd + Kp + Ks as calculated in Step 3 above)

QUESTIONS FOR CLASSROOM DISCUSSION

PROBLEM – 1

The following is the capital structure of a Company:

Source of capital	Book value	Market value
Equity shares @ ₹ 100 each	80,00,000	1,60,00,000
9 per cent cumulative preference shares @ ₹ 100 each	20,00,000	24,00,000
11 per cent debentures	60,00,000	66,00,000
Retained earnings	40,00,000	-
	2,00,00,000	**2,50,00,000**

The current market price of the company's equity share is ₹ 200. For the last year, the company had paid an equity dividend at 25 per cent and its dividend is likely to grow by 5 per cent every year. The corporate tax rate is 30 per cent and shareholders' personal income tax rate is 20 per cent.

You are required to calculate:

(i) Cost of capital for each source of capital.

(ii) Weighted average cost of capital on the basis of book value weights.

(iii) Weighted average cost of capital on the basis of market value weights.

SOLUTION

Calculation of Ke (Gordon Model)

$$Ke = \frac{D1}{P0} + g$$

$D_1 = [D_0 (1+ g)]$

$= 25 (1 + 0.05)$

$= 26.25$

$$Ke = \frac{26.25}{200} + 0.05$$

Ke = 18.125%

Calculation of Kp

Kp = 9 %

Calculation of Kd

Kd = Int (1 – Tax)

= 11 (1 – 30 %)

Kd = 7.7 %

Calculation of Kr

Kr = Ke * (1 – Brokerage Rate) * (1 – Personal tax rate)

= 18.125% *(1- 0.00) * (1 – 0.20)

Kr = 14.5%

Calculation of WACC (Book Value Weighs)

Source	Book value	Weighs	Cost	Weight * Cost
Equity	80,00,000	0.4	18.125%	7.25%
Preference	20,00,000	0.1	9%	0.9%
Debenture	60,00,000	0.3	7.7%	2.31%
Retained earnings	40,00,000	0.2	14.5%	2.9%
	2,00,00,000	**1**		**13.36%**

Calculation of WACC (Market Value Weighs)

Source	Book value	Weighs	Cost	Weight * Cost
Equity	1,60,00,000	0.64	18.125%	11.6%
Preference	24,00,000	0.096	9%	0.864%
Debenture	66,00,000	0.264	7.7%	2.0328%
Retained earnings	0	0	0	0%
	2,50,00,000	**1**		**14.497%**

PROBLEM – 2

XYZ Ltd. has the following book value capital structure:

Equity Capital (in shares of ₹ 10 each, fully paid up at par)	₹ 15 crore
11% Preference Capital (in shares of ₹ 100 each, fully paid up at par)	₹ 1 crore

Retained Earnings	₹ 20 crores
13.5% Debentures (of ₹ 100 each)	₹ 10 crores
15% Term Loans	₹ 12.5 crores

The next expected dividend on equity shares per share is ₹ 3.60; the dividend per share is expected to grow at the rate of 7%. The market price per share is ₹ 40. Preference stock, redeemable after ten years, is currently selling at ₹ 75 per share. Debentures, redeemable after six years, are selling at ₹ 80 per debenture. The Income tax rate for the company is 40%.

Required

(i) Calculate the Weighted Average Cost of Capital using:
- **(a)** Book Value proportions;
- **(b)** Market Value proportions.

(ii) Define the weighted marginal cost of capital schedule for the company, if it raises ₹ 10 crores next year, **given the following information:**
- **(a)** the amount will be raised by equity and debt in equal proportions;
- **(b)** the company expects to retain ₹ 1.5 crores earnings next year;
- **(c)** the additional issue of equity shares will result in the net price per share being fixed at ₹ 32;
- **(d)** the debt capital raised by way of term loans will cost 15% for the first ₹ 2.5 crores and 16% for the next ₹ 2.5 crores

SOLUTION

Part 1: WACC

Calculation of Ke and Kr (Dividend Growth Model)

$$Ke = \frac{D1}{P0} + G$$

$$\frac{3.6}{40} + 0.07$$

Ke = Kr = 16%

Calculation of Kp

$$Kp = PD + \left(\frac{RV-NP}{n}\right) \div \left(\frac{RV+NP}{2}\right)$$

$= 11 + \left(\frac{100 - 75}{10}\right) \div \left(\frac{100+75}{2}\right) = 15.43\%$

Calculation of Kd

Kd = Int (1 – Tax Rate) $\left(\frac{RV-NP}{n}\right) \div \left(\frac{RV-NP}{2}\right)$

$= 13.5\ (1 - 0.4) + \left(\frac{100 - 80}{6}\right) \div \left(\frac{100+80}{2}\right) = 12.7\%$

Calculation of Kt

Kt = Int (1 – Tax Rate)

= 15 (1 – 40 %) = 9%

Calculation of WACC (Book Value Weighs) **(** ₹ in Crores)

Source	Book value	Weighs	Cost	Weight * Cost
Equity	15	0.256	16%	4.096%
Preference	1	0.017	15.43%	0.262%
Debenture	10	0.171	12.7%	2.171%
Retained earnings	20	0.342	16%	5.472%
Loan	12.5	0.214	9%	1.926%
	58.5	**1**		**13.928%**

Calculation of WACC (Market Value Weighs) **(** ₹ in Crores)

Source	Mkt value	Weighs	Cost	Weight * Cost
Equity	60	0.738	16%	11.808%
Preference	0.75	0.009	15.43%	0.139%
Debenture	8	0.098	12.7%	1.245%
Loan	12.5	0.155	9%	1.395%
	81.25	**1**		**14.587%**

Part 2

Weighted Marginal Cost of Capital schedule **(** ₹ in Crores)

Additional Investment = 10

i. Equity = 5
   - Equity Share Capital = 3.5
   - Retained earnings = 1.5

ii. Debt = 5

- 15% Term Loan = 2.5
- 16% Term Loan = 2.5

Calculation of New Ke

$$Ke = \frac{D1}{P0} + G$$

$$\frac{3.6}{32} + 0.07 = 18.25\%$$

Calculation of Kt

Kt = Int (1 – Tax Rate)

For First 2.5 Crores = 15 (1 – 0.4) = 9%

For Next 2.5 Crores = 16 (1 – 0.4) = 9.6%

Calculation of WMCC **(** ₹ in Crores)

Source	Amount	Weighs	Cost	Weight * Cost
Equity	3.5	0.35	18.25%	6.3875%
Retained Earnings	1.5	0.15	**16%**	2.4%
Term Loan				
15%	2.5	0.25	9%	2.25%
16%	2.5	0.25	9.6%	2.4%
	10	**1**		**13.4375%**

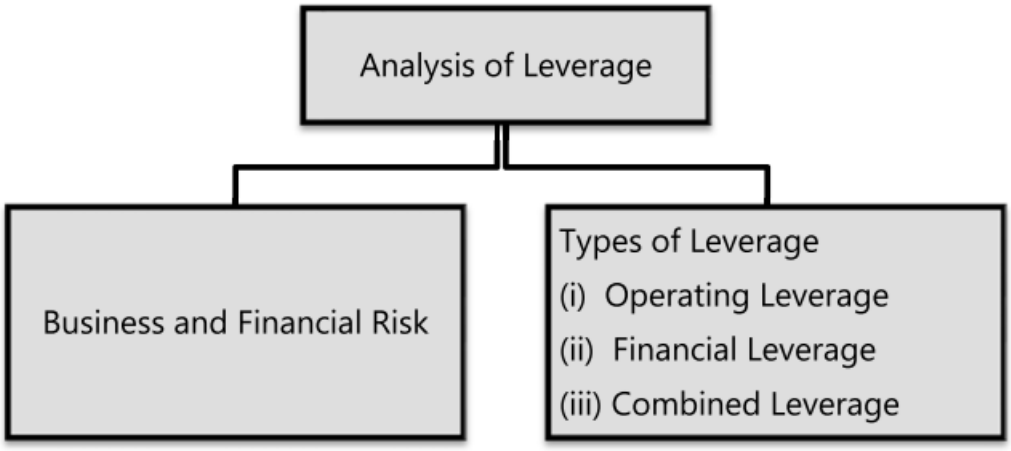
REVISION 2: LEVERAGES

INTRODUCTION

The term leverage represents influence or power. In financial analysis, leverage 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. Generally, if we want to calculate the impact of change in variable X on variable Y,
it is termed as Leverage of Y with X, and it is calculated as follows:

$$\text{Measurement of Leverage} = \frac{\text{Change in Y} \div \text{Y}}{\text{Change in X} \div \text{X}}$$

CHAPTER OVERVIEW



The objective of financial management is to maximize wealth. To maximize value, company should try to manage its risk. This risk may be business risk, financial risk or both as defined below:

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 the operating income be predicted?

Financial Risk: It refers to the additional risk placed on the firm's shareholders because of use of debt 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.

TYPES OF LEVERAGES

There are three commonly used measures of leverage in financial analysis. These are:

(i) **Operating Leverage:** It is the relationship between Sales and EBIT and indicates business risk.

(ii) **Financial Leverage:** It is the relationship between EBIT and EPS and indicates financial risk.

(iii) **Combined Leverage:** It is the relationship between Sales and EPS and indicates total risk i.e., both business risk and financial risk.

CHART SHOWING THE DEGREE OF LEVERAGES

Profitability Statement			
Sales	xxx	Degree of Operating Leverage	Degree of Combined Leverage
Less: Variable Cost	(xxx)		
Contribution	xxx		
Less: Fixed Cost	(xxx)		
Operating Profit/ EBIT	xxx		
Less: Interest	(xxx)	Degree of Financial Leverage	
Earnings Before Tax (EBT)	xxx		
Less: Tax	(xxx)		
Profit After Tax (PAT)	xxx		
Less: Pref. Dividend (if any)	(xxx)		
Net Earnings available to equity shareholders/ PAT	xxx		
No. Equity shares (N)	xxx		
Earnings per Share (EPS) (PAT ÷ N)	xxx		

OPERATING LEVERAGE

$$\text{Degree of Operating Leverage (DOL)} = \frac{\text{Percentage Change in EBIT}}{\text{Percentage Change in Sales}}$$

Alternatively,

$$\text{Operating Leverage} = \frac{\text{Contribution}}{\text{EBIT}}$$

OTHER RELEVANT FORMULAS RELATING TO OPERATING LEVERAGE

$$\text{Break-even point in units} = \frac{\text{Fixed Cost}}{\text{Contribution per unit}}$$

$$\text{MOS} = \frac{\text{Sales - BEP Sales}}{\text{Sales}} \times 100$$

$$\text{Degree of Operating leverage} = \frac{1}{\text{Margin of Safety}}$$

FINANCIAL LEVERAGE

$$\text{Degree of Financial Leverage (DFL)} = \frac{\text{Percentage change in earnings per share (EPS)}}{\text{Percentage change in earnigs before interest and tax (EBIT)}}$$

Alternatively,

$$\text{Financial Leverage (FL)} = \frac{\text{Earnings before interest and tax(EBIT)}}{\text{Earnings before tax(EBT)}}$$

When Preference Dividend is paid,

$$\text{DFL} = \frac{\text{EBIT}}{(\text{EBIT-Int.}) - \frac{D_P}{1-t}}$$

COMBINED LEVERAGE

$$\text{Combined Leverage (CL)} = \text{Operating Leverage (OL)} \times \text{Financial Leverage (FL)}$$

$$= \frac{C}{EBIT} \times \frac{EBIT}{EBT}$$

$$= \frac{C}{EBT}$$

$$DCL = DOL \times DFL$$

$$= \frac{\%\text{Change in EBIT}}{\%\text{Change in Sales}} \times \frac{\%\text{Change in EPS}}{\%\text{Change in EBIT}}$$

$$= \frac{\%\text{Change in EPS}}{\%\text{Change in Sales}}$$

QUESTIONS FOR CLASSROOM DISCUSSION

PROBLEM – 1

The Capital structure of RST Ltd. is as follows:

Equity Share of 10 each	8,00,000
10% Preference Share of 100 each	5,00,000
12% Debentures of 100 each	7,00,000
	20,00,000

Additional Information:
Profit after tax (Tax Rate 30%) is 2,80,000;
Operating Expenses (including Depreciation of 96,800) are 1.5 times of EBIT;
Equity Dividend paid is 15%;
Market price of Equity Share is ₹ 23

Calculate:

(i) Operating and Financial Leverage
(ii) Cover for preference and equity dividend
(iii) The Earning Yield Ratio and Price Earning Ratio
(iv) The Net Fund Flow

Note: All operating expenses (excluding depreciation) are variable

SOLUTION

Working:	
Net Profit after Tax	2,80,000
Tax @ 30%	1,20,000
EBT	4,00,000
Interest on Debentures	84,000
EBIT	4,84,000
Operating Expenses (1.5 times of EBIT)	7,26,000
Sales	12,10,000

(i) Operating Leverage: = Contribution / EBIT = 12,10,000-6,29,200 / 4,84,000 = 1.2 times

Financial Leverage = EBIT / EBT = 4,84,000 / 4,00,000 = 1.21 times

OR Financial Leverage = $\frac{\text{EBIT}}{\text{EBT} - \frac{\text{Preference Dividend}}{1-\text{Tax}}} = \frac{4,84,000}{4,00,000 - \left(\frac{50,000}{1-0.30}\right)}$ = 1.47 times

Note: For FL both equations can be used in exams as per ICAI.

(ii) Cover for Preference Dividend = $\frac{\text{PAT}}{\text{Preference Share Dividend}} = \frac{2,80,000}{50,000}$ = 5.6 times

Cover for Equity Dividend = $\frac{\text{(PAT-Preference Dividend)}}{\text{Equity Share Dividend}} = \frac{(2,80,000-50,000)}{1,20,000}$ = 1.92 times

(iii) Earning Yield Ratio = $\frac{\text{EPS}}{\text{Market Price}} \times 100 = \frac{2.875}{23}$ = 12.5%

Working Notes: EPS = $\frac{2,30,000}{80,000}$;

Price Earnings Ratio (PE Ratio) = $\frac{\text{Market Price}}{\text{EPS}} = \frac{23}{2.875}$ = 8 times

(iv) Net Funds Flow = Net PAT + Depreciation - Total Dividend = 2,80,000+ 96,800 - (50,000+ 1,20,000) = 3,76,800 -1,70,000 = 2,06,800

PROBLEM – 2

A firm has sales of ₹ 75,00,000 variable cost of ₹ 42,00,000 and fixed cost of ₹ 6,00,000. It has a debt of ₹ 45,00,000 at 9% and equity of ₹ 55,00,000.

- **(i)** What is the firm's ROI or ROCE?
- **(ii)** Does it have favourable financial leverage?
- **(iii)** If the firm belongs to an industry whose asset turnover is 3, does it have high or low asset leverage?
- **(iv)** What are the operating, financial and combined leverages of the firm?
- **(v)** If the sales drop to ₹ 50,00,000, what will be the new EBIT?
- **(vi)** At what Sales Level the EBT of the firm will be equal to zero?

SOLUTION

Workings:	**₹**
Sales	75,00,000
Less: Variable cost	42,00,000
Contribution	33,00,000
Less: Fixed costs	6,00,000

EBIT	27,00,000
Less: 9% interest on ₹ 45,00,000	4,05,000
EBT	22,95,000

(i) ROI or ROCE = EBIT / Total Investment = EBIT / Debt + Equity = 27,00,000 / 100,00,000 = 27%

(ii) Since the return on investment (27%) is higher than the interest payable on debt at 9%, the firm has a favourable financial leverage.

(iii) Asset Turnover = Net Sales / Total Assets = Total Investment = 75,00,000 / 100,00,000 = 0.75

The industry average is 3. Hence the firm has low asset leverage.

(iv) Operating Leverage = Contribution / EBIT = 33,00,000 / 27,00,000 = 1.2222

Financial leverage

= EBIT / EBT = 27,00,000 / 22,95,000 = 1.1764; Combined Leverage = Contribution / EBT = 33,00,000 / 22,95,000 = 1.438

(OR) Combined leverage = Operating leverage x Financial leverage = 1.2222 x 1.1764 = 1.438

(v) If the sales drop to ₹ 50,00,000 from ₹ 75,00,000, the fall is by 33.33% Hence EBIT will drop by 40.73% (% Fall in sales x operating leverage or 1.2222 x 33.33%).
Hence the new EBIT will be ₹ 27,00,000 x (1-.4073) = ₹ 16,00,290 or rounded upto ₹ 16,00,000

(OR) Operating Leverage = $\frac{\%\text{ Change in EBIT}}{\%\text{ Change in Sales}}$ → 1.2222 = $\frac{\frac{x}{27,000}}{\frac{25,00,000}{75,00,000}}$ → x = 11,00,000

Therefore **New EBIT** = 27,00,000 - 11,00,000 = 16,00,000

(vi) EBT (Taxable Profit) to become zero, means 100% reduction in EBT.
Combined Leverage

= % Change in EBT / %Change in Sales → 1.438 = 100% / %Change in Sales → % Change in Sales = 100 / 1.438 = 69.54%

Hence the new sales will be ₹ 75,00,000 x (1 - .6954) = ₹ 2284500

REVISION 3: CAPITAL STRUCTURE DECISIONS

SELECTION OF SOURCES OF FINANCING

In this segment, we will find out the best alternative source(s) to fund a business.

The following are the various sources of Finance for an Entity:

1. Equity Share Capital
2. Retained Earnings
3. Preference Share Capital
4. Debenture
5. Long-Term Loans

Money/Funds can be raised from one or more sources and requires careful decision making.

SELECTION OF THE BEST SOURCE OF FINANCE

The decision of selecting the best source of finance can be taken on the basis of

1. Return on Equity (ROE)
2. Market Price per Share (MPS)
3. Earnings per Share (EPS) etc.

CAPITAL STRUCTURE THEORIES

In this segment, we will find out the **Optimum Capital Structure** under multiple methods or theories of Capital Structure.

The Optimum Capital Structure must have the following features:

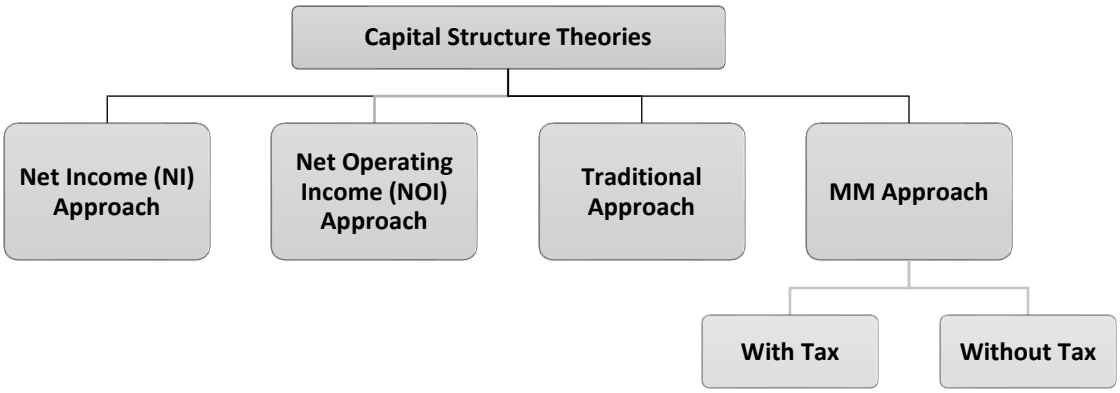
- Value of Firm should be Maximum
- Cost of Capital should be minimum

Assumptions in this segment:

1. There is no Preference Share Capital i.e., there are only two sources of Finance viz Equity and Debt.
2. Tax Rate is assumed to be Zero unless otherwise mentioned.
3. Kd will always be less than Ke.
4. There is no Retained Earnings. That is, there is 100% Dividend Pay-out i.e., DPS = EPS.
5. Life of the company is perpetual.

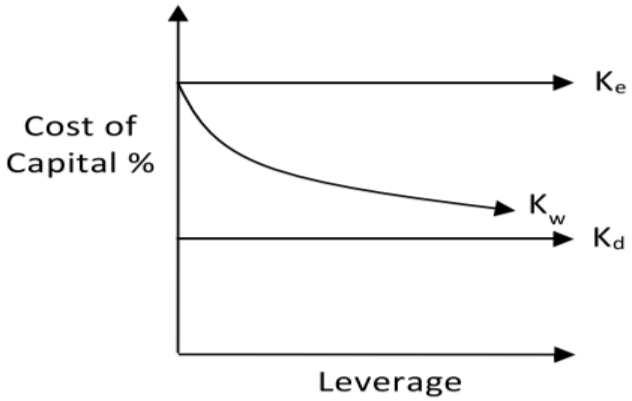
General Formulas Used in this segment:

1. Value of Firm (V_F) = Value of Equity (V_E) + Value of Debt (V_D) i.e., $\mathbf{V_F = V_E + V_D}$
2. Value of Equity (V_E) per share = $\frac{\text{EPS}}{\text{Ke}}$
3. Value of Debt (V_D) = $\frac{\text{Total Interest}}{\text{Kd}}$
4. Value of Firm (V_F) = $\frac{\text{EBIT}}{\text{Ko}}$
5. Ko = KeWe + KdWd



NET INCOME APPROACH (NI APPROACH)

- This approach was given in the year 1952 by David Durand.
- According to this approach, capital structure decision is relevant to the value of the firm.
- This theory suggests that the Value of Firm can be increased by decreasing Ko and Ko can be decreased through a higher proportion of Debt in the Capital Structure.
- Under NI Approach,
    - Ke > Kd
    - Ke and Kd remain constant
- Therefore, Higher the Weight of Debt, Lower will be the Ko and vice versa.

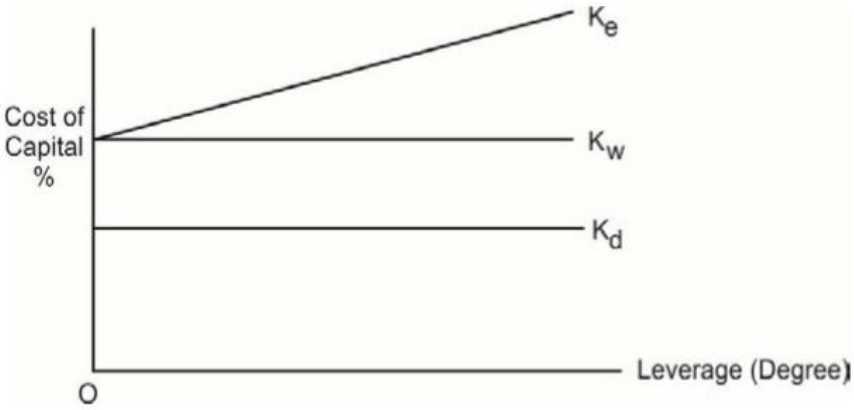


NET OPERATING INCOME APPROACH (NOI APPROACH)

- This approach is exactly the opposite of the NI Approach.
- As per this approach, the Capital Structure Decisions are irrelevant.
- As per this approach, Value of Firm and Ko will always remain constant.
- Value of Firm cannot be increased or decreased by changing the proportion of Debt in the Capital Structure.

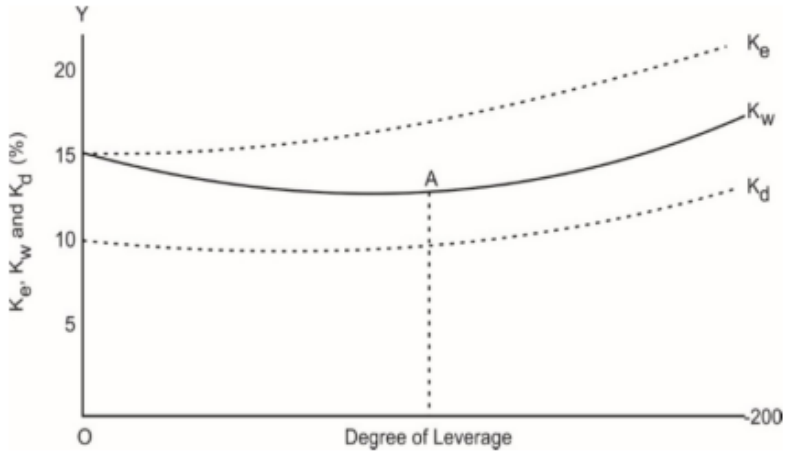
- In short,
    a) Ke > Kd
    b) Kd will remain constant
    c) Ko will remain constant
    d) V_F will remain constant
    e) Ke will increase with the increase in Debt

- As per this approach, an increase in the use of debt which is apparently cheaper is offset by an increase in the Ke. 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.



TRADITIONAL APPROACH

- According to this approach, capital structure decision is relevant to the value of the firm.
- By a proper mix of Debt and Equity, Ko can be reduced and V_F can be increased.
- This approach has 3 Stages:
- **Stage – 1**
    a) Ke and Kd will remain constant
    b) Ko will decrease with an increase in debt
    c) Ke > Kd
- **Stage – 2**
    a) Ke will increase with an increase in debt
    b) Kd will remain constant
    c) Ko will remain constant
    d) Ke > Kd
- **Stage – 3**
    a) Ke will increase with an increase in debt
    b) Kd will increase with an increase in debt
    c) Ko will increase with an increase in debt
    d) Ke > Kd
- As per Traditional Approach, the Optimum Capital Structure will lie between Stage 1 and Stage 3.



IV. MODIGLIANI-MILLER (MM) APPROACH

A. MM APPROACH WITHOUT TAX

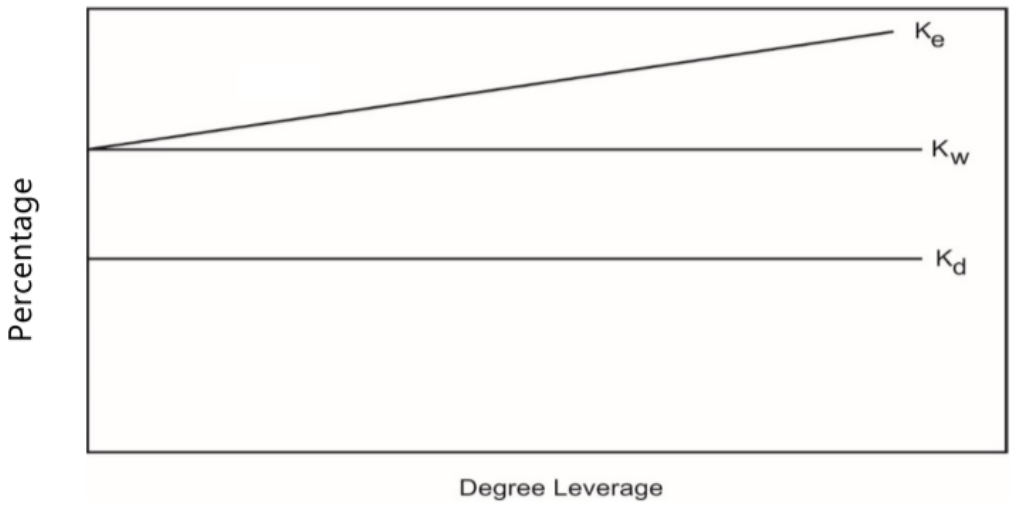
- This approach was given by MM in the year 1958 and is very similar to NOI Approach.
- As per this approach, the Capital Structure Decisions are irrelevant.
- As per this approach, Value of Firm and Ko will always remain constant.
- Value of Firm cannot be increased or decreased by changing the proportion of Debt in the Capital Structure.
- MM Approach has derived three propositions
  - **Proposition - 1:**
    The Total Value of Firm and Ko remains constant

    Value of Firm (V_F) = $\frac{\text{EBIT}}{\text{Ko}}$

    Value of Levered Firm = Value of Unlevered Firm

  - **Proposition - 2:**
    Ke = Ko + (Ko-Kd) x $\frac{\text{Debt}}{\text{Equity}}$

  - **Proposition - 3:**
    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.



B. <u>MM APPROACH WITH TAX</u>

- As per MM, if Tax Rate is given, then the Value of Levered Firm will be Higher than the Value of Unlevered Firm due to Tax Advantage on Interest Payment.
- **Value of Levered Firm = Value of Unlevered Firm + (Debt x Tax Rate)**

QUESTIONS FOR CLASSROOM DISCUSSION

PROBLEM – 1

A Company needs ₹ 31,25,000 for the construction of a new plant. The following three plans are feasible:

(a) The Company may issue 3,12,500 equity shares at ₹ 10 per share.
(b) The Company may issue 1,56,250 ordinary equity shares at ₹ 10 per share and 15,625 debentures of ₹ 100 denominations bearing an 8% rate of interest.
(c) The Company may issue 1,56,250 equity shares at ₹ 10 per share and 15,625 preference shares at ₹ 100 per share bearing an 8% rate of dividend.

Required

(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?

SOLUTION

(i) Computation of EPS under three-financial plans:

Plan I: Equity Financing

EBIT	₹ 62,500	₹ 1,25,000	₹ 2,50,000	₹ 3,75,000	₹ 6,25,000
Interest	0	0	0	0	0
EBT	**₹ 62,500**	**₹ 1,25,000**	**₹ 2,50,000**	**₹ 3,75,000**	**₹ 6,25,000**
Less: Taxes 40%	₹ 25,000	₹ 50,000	₹ 1,00,000	₹ 1,50,000	₹ 2,50,000
EAT	**₹ 37,500**	**₹ 75,000**	**₹ 1,50,000**	**₹ 2,25,000**	**₹ 3,75,000**
No. of equity	3,12,500	3,12,500	3,12,500	3,12,500	3,12,500
EPS (₹)	0.12	0.24	0.48	0.72	1.2

Plan II: Debt - Equity Mix

EBIT	₹ 62,500	₹ 1,25,000	₹ 2,50,000	₹ 3,75,000	₹ 6,25,000
Less: Interest	1,25,000	1,25,000	1,25,000	1,25,000	1,25,000
EBT	**(62,500)**	**0**	**1,25,000**	**2,50,000**	**5,00,000**
Less: Taxes 40%	25,000*	0	50,000	1,00,000	2,00,000
EAT	**(37,500)**	**0**	**75,000**	**1,50,000**	**3,00,000**
No. of equity	1,56,250	1,56,250	1,56,250	1,56,250	1,56,250
EPS (₹)	**(0.24)**	**0**	**0.48**	**0.96**	**1.92**

* The Company will be able to set off losses against other profits.

Plan III: Preference Shares – Equity Mix

EBIT	₹ 62,500	₹ 1,25,000	₹ 2,50,000	₹ 3,75,000	₹ 6,25,000
Less: Interest	0	0	0	0	0
EBT	**62,500**	**1,25,000**	**2,50,000**	**3,75,000**	**6,25,000**
Less: Taxes 40%	25,000	50,000	1,00,000	1,50,000	2,50,000
EAT	**37,500**	**75,000**	**1,50,000**	**2,25,000**	**3,75,000**
Less: Pref. dividend	1,25,000	1,25,000	1,25,000	1,25,000	1,25,000
PAT for ordinary shareholders	**(87,500)**	**(50,000)**	**25,000**	**1,00,000**	**2,50,000**
No. of Equity shares	1,56,250	1,56,250	1,56,250	1,56,250	1,56,250
EPS	**(0.56)**	**(0.32)**	**0.16**	**0.64**	**1.6**

(ii) The choice of the financing plan will depend on the state of economic conditions. If the company's sales are increasing, the EPS will be maximum under Plan II: Debt - Equity Mix. Under favourable economic conditions, debt financing gives more benefit due to tax shield/savings availability than equity or preference financing. Also its EPS is increasing at a higher rate as compared to other plans.

PROBLEM – 2

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 & Q using

(i) Net Income Approach

(ii) Net Operating Income Approach.

SOLUTION

(i) Valuation under Net Income Approach

Particulars	**Amount (₹) P**	**Amount (₹) Q**
Earnings before Interest & Tax (EBIT)		
(20% of ₹ 30,00,000)	6,00,000	6,00,000
Less: Interest (10% of ₹ 18,00,000)	1,80,000	-
Earnings before Tax (EBT)	**4,20,000**	**6,00,000**
Less: Tax @ 50%	2,10,000	3,00,000
Earnings after Tax (EAT) (available to equity holders)	**2,10,000**	**3,00,000**
Value of equity (capitalized @ 15%)	14,00,000	20,00,000
	(2,10,000/15%)	(3,00,000/15%)
Add: Total Value of debt	18,00,000	Nil
Total Value of Company	**32,00,000**	**20,00,000**

(ii) Valuation of Companies under Net Operating Income Approach

Value of Unlevered Firm = EBIT(1 - tax)/Ko = 6,00,000 (1.50)/15% = 20,00,000

Value of levered Firm = Value of Unlevered Firm + Debenture x Tax Rate =20,00,000+ 18,00,000 x 50%=29,00,000

PROBLEM – 3

A Ltd. is expecting an EBIT of ₹ 3,00,000. The company presently raised its entire fund requirement of ₹ 20 lakhs by the issue of equity with equity capitalization rate of 16%. The firm is now contemplating to redeem a part of capital by introducing debt financing. The firm has two options- to raise debt to the extent of 30% or 50% of total funds. It is expected that for debt financing up to 30% the rate of interest will be 10% and equity rate is expected to increase to 17%. However, if firm opts for 50% debt, then interest rate will be 12% and equity rate will be 20%.

You are required to compute

- value of firm and its overall cost of capital under Present situation and under two different options if the traditional approach is held valid.

- Also suggest which is the best Option.

SOLUTION

Particular	**0% Debt**	**30% Debt**	**50% Debt**
Debt	NIL	6,00,000	10,00,000
Equity Capital (Balancing Figure)	20,00,000	14,00,000	10,00,000
Total Assets or Capital Employed	**20,00,000**	**20,00,000**	**20,00,000**
EBIT	3,00,000	3,00,000	3,00,000
Less: Interest	-	60,000	1,20,000
EBT	**3,00,000**	**2,40,000**	**1,80,000**
Less : Tax	NIL	NIL	NIL
EAT or EFE	**3,00,000**	**2,40,000**	**1,80,000**
Value of Equity (E) $\left[\frac{\text{EFE}}{\text{Ke}}\right]$	18,75,000	14,12,000	9,00,000
Value of Debt (D) $\frac{\text{Int}}{\text{Kd}}$	-	6,00,000	10,00,000
Value of Firm (E + D)	**18,75,000**	**20,12,000**	**19,00,000**
WACC(KO) = $\frac{\text{EBIT}}{\text{VF}}$	16%	14.90%	15.78%

REVISION 4: INVESTMENT DECISIONS

INTRODUCTION

In this chapter, we will discuss the second important decision area of financial management which is Investment Decision. The investment decision is concerned with the optimum utilization of funds to maximize the wealth of the organization and in turn the wealth of its shareholder The investment decision is very crucial for an organization to fulfil its objectives; in fact, it generates revenue and ensures the long-term existence of the organization.

As we have seen in the financing decision chapters, each rupee of capital raised by an entity bears some cost, commonly known as the cost of capital. It is necessary that each rupee raised is to be invested in a very prudent manner. It requires proper planning for capital, and it is done through proper budgeting. Proper budgeting requires all the characteristics of a budget. Due to this feature, **investment decisions are very popularly known as Capital Budgeting**, which means applying the principles of budgeting for capital investment.

In simple terms, Capital Budgeting involves:

- Identification of investment projects that are strategic to the business's overall objectives;
- Estimating and evaluating post-tax incremental cash flows for each of the investment proposals; and
- Selection of an investment proposal that maximizes the return to the investor.

IMPORTANT POINTS IN CAPITAL BUDGETING

While calculating Cash Flows in Capital Budgeting decisions, the following items need consideration:

(a) **Depreciation:** Depreciation is a non-cash item and by itself does not affect the cash flow. However, we must consider tax shield or benefit from depreciation in our analysis. Since this benefit reduces cash outflow for taxes, it is considered as a cash inflow.

(b) **Determining Discount Rate:** An organization may establish a minimum rate of return that all capital projects must meet; this minimum could be based on an industry average or the cost of other investment opportunities. Many organizations choose to use the overall cost of capital or Weighted Average Cost of Capital (WACC) that an organization has incurred in raising funds or expects to incur in raising the funds needed for investment.

(c) Exclusion of Financing Costs: When cash flows relating to long-term funds are being defined, financing costs of long-term funds (interest on long-term debt and equity dividend) should be

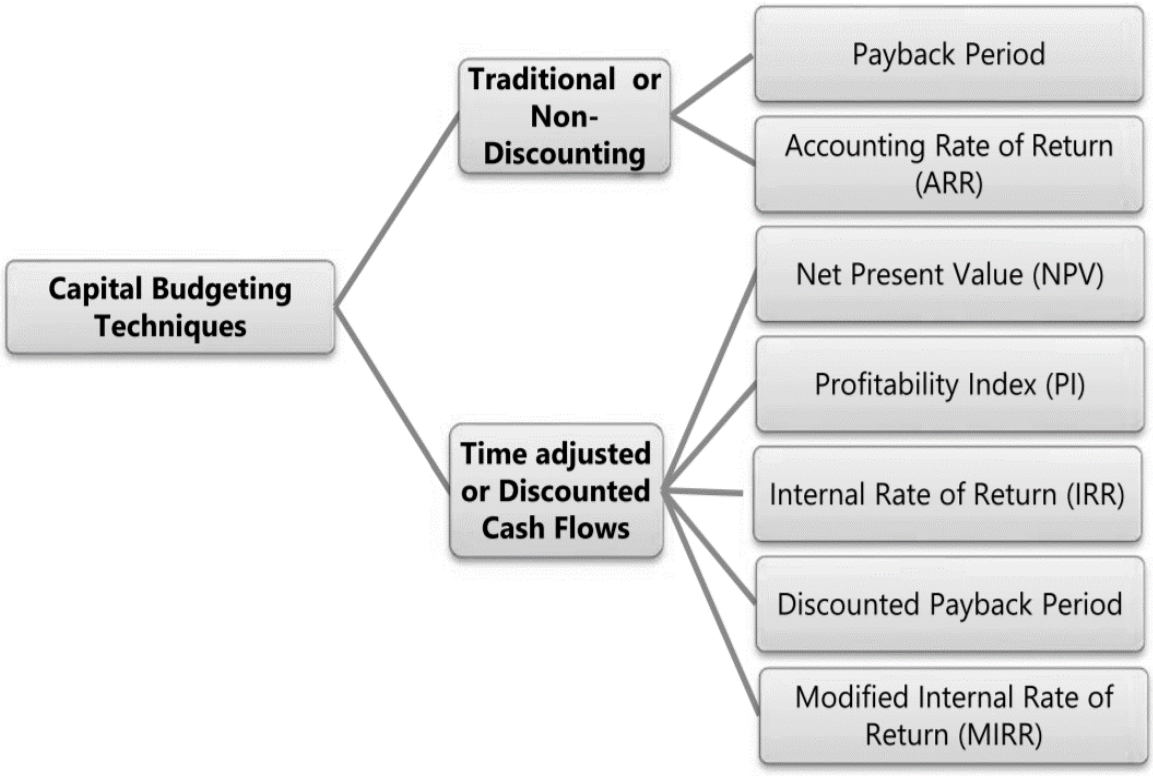
excluded from the analysis. The interest and dividend payments are reflected in the weighted average cost of capital. Hence, if the interest on long-term debt and dividend on equity capital are deducted in defining the cash flows, the cost of long-term funds will be counted twice.

(d) **Post-tax Principle:** Tax payments like other payments must be properly deducted in deriving the cash flows. That is, cash flows must be defined in post-tax terms. It is always better to avoid using pre-tax cash flows and using pre-tax discounting rate. The discounting rate and the cash flows, both must be post-tax only.

CAPITAL BUDGETING TECHNIQUES

In order to maximize the return to the shareholders of a company, it is important that the best or most profitable investment projects are selected. The results of making a bad long-term investment decision can be devastating in both financial and strategic terms. Proper care is required for investment project selection and evaluation.

There are a number of techniques available for the appraisal of investment proposals and can be classified as presented below:



Organizations may use any one or more capital investment evaluation techniques. Some organizations use different methods for different types of projects while others may use multiple methods for evaluating each project.

The techniques discussed below are:

1. Payback Period
2. Accounting Rate of Return (ARR)
3. Net Present Value (NPV)
4. Profitability Index (PI)
5. Internal Rate of Return (IRR)
6. Discounted Payback Period
7. Modified Internal Rate of Return (MIRR)

1. PAYBACK PERIOD

Time required to recover the initial cash-outflow is called pay-back period. The payback period of an investment is the length of time required for the cumulative total net cash flows from the investment to equal the total initial cash outlays. At that point in time (payback period), the investor has recovered all the money invested in the project.

Decision Rule: A project with a lower Payback Period is generally preferred

2. ACCOUNTING RATE OF RETURN (ARR)

The accounting rate of return of an investment measures the average annual net income of the project (incremental income) as a percentage of the investment.

$$\text{Accounting rate of return (ARR)} = \frac{\text{Average annual net income}}{\text{Investment}}$$

It should be noted that 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.

Decision Rule: A project with a High ARR is generally preferred

3. NET PRESENT VALUE (NPV)

The net present value technique is a discounted cash flow method that considers the time value of money in evaluating capital investments.

The net present value method uses a specified discount rate to bring all subsequent cash inflows after the initial investment to their present values (the time of the initial investment is year 0).

Net present value = Present value of net cash inflow - Total net initial investment

It can be expressed as below:

$$NPV = \left(\frac{C_1}{(1+k)} + \frac{C_2}{(1+k)^2} + \frac{C_3}{(1+k)^3} + ... + \frac{C_n}{(1+k)^n} \right) - I$$

$$NPV = \sum_{t=1}^{n} \frac{C_t}{(1+k)^t} - I$$

Where,

C = Cash flow of various years

k = Discount rate

N = Life of the project

I = Investment

Decision Rule:

If NPV ≥ 0	Accept the Proposal
If NPV ≤ 0	Reject the Proposal

4. PROFITABILITY INDEX (PI)

Profitability Index is also known as Desirability Factor or Present Value Index.

With the help of discounted cash flow technique, the two alternative proposals for capital expenditure can be compared using NPV Technique. However, in certain cases, we have to compare a number of proposals, each involving different amounts 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', or 'Present Value Index Method'.

The Profitability Index (PI) is calculated as below:

$$\text{Profitability Index (PI)} = \frac{\text{Sum of discounted cash in flows}}{\text{Initial cash outlay or Total discounted cash outflow (as the case may)}}$$

Decision Rule:

If PI ≥ 1	Accept the Proposal
If PI ≤ 1	Reject the Proposal

In case of mutually exclusive projects, project with higher PI should be selected.

5. INTERNAL RATE OF RETURN METHOD (IRR)

The internal rate of return method considers the time value of money, the initial cash investment, and all cash flows from the investment. But unlike the net present value method, the internal rate of return method does not use the desired rate of return but estimates **the discount rate that makes the present value of subsequent cash inflows equal to the initial investment.** This discount rate is called IRR.

IRR Definition: 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.

IRR is calculated as follows:

$$LR + \frac{\text{NPV at LR}}{\text{NPV at LR - NPV at HR}} \times (HR - LR)$$

Decision Rule:

If IRR ≥ Cut-off Rate or WACC	Accept the Proposal
If IRR ≤ Cut-off Rate or WACC	Reject the Proposal

6. DISCOUNTED PAYBACK METHOD

This is similar to the Payback period as discussed under the non-discounting method except that the cash flows here are discounted at a predetermined rate and the payback period so calculated is called Discounted payback period.

One of the most popular economic criteria for evaluating capital projects is the payback period. The payback period is the time required for cumulative cash inflows to recover the cash outflows of the project. This technique is considered superior to the simple payback period method because it takes into the account time value of money.

SUMMARY OF DECISION CRITERIA OF CAPITAL BUDGETING TECHNIQUES

Techniques		For Independent Project	For Mutually Exclusive Projects
Non-Discounted	**Pay Back**	(i) When Payback period ≤ Maximum Acceptable Payback period: **Accepted** (ii) When Payback period ≥ Maximum Acceptable Payback period: **Rejected**	Project with least Payback period should be selected
	Accounting Rate of Return (ARR)	(i) When ARR≥ Minimum Acceptable Rate of Return: **Accepted**	Project with the maximum ARR should be selected.
		(ii) When ARR ≤ Minimum Acceptable Rate of Return: **Rejected**	
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

QUESTIONS FOR CLASSROOM DISCUSSION

PROBLEM – 1 (Computation of CFAT)

ABC Ltd is evaluating the purchase of a new machinery 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.

SOLUTION

Depreciation = ₹1,00,000 ÷ 4 = ₹25,000

Amount in (₹)

	Years			
	1	**2**	**3**	**4**
Earnings before tax and depreciation	45,000	30,000	25,000	35,000
Less: Depreciation	(25,000)	(25,000)	(25,000)	(25,000)
Earnings before tax	20,000	5,000	0	10,000
Less: Tax @20%	(4,000)	(1,000)	0	(2,000)
Earnings after tax	16,000	4,000	0	8,000
Add: Depreciation	25,000	25,000	25,000	25,000
Net Cash flow	**41,000**	**29,000**	**25,000**	**33,000**

PROBLEM – 2 (Average Rate of Return)

A project requiring an investment of ₹10,00,000 and it yields profit after tax and depreciation which is as follows:

Years	**Profit after tax and depreciation (₹)**
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 the 5th year, the plant and machinery of the project can be sold for ₹80,000. DETERMINE Average Rate of Return.

SOLUTION

In this case the rate of return can be calculated as follows:

$$\frac{\text{TotalProfit} \div \text{No. of years}}{\text{Averageinvestment / InitialInvestment}} \times 100$$

(a) If Initial Investment is considered then,

$$= \frac{\text{Rs.4,60,000} \div 5\text{years}}{\text{Rs.10,00,000}} \times 100 = \frac{\text{Rs.92,000}}{\text{Rs.10,00,000}} \times 100 = 9.2\%$$

This rate is compared with the rate expected on other projects, had the same funds been invested alternatively in those projects. Sometimes, the managementcompares this rate with the minimum rate (called-cut off rate). For example, management may decide that they will not undertake any project which has an average annual yield after tax less than 20%. Any capital expenditure proposal which has an average annual yield of less than 20%, will be automatically rejected.

(b) If Average investment is considered, then,

$$= \frac{\text{Rs.92,000}}{\text{Averageinvestment}} \times 100 = \frac{\text{Rs.92,000}}{\text{Rs.5,40,000}} \times 100 = 17.04\%$$

Where,

Average Investment = ½ (Initial investment – Salvage value) + Salvage value

= ½ (₹10,00,000 – ₹80,000) + ₹80,000

= ₹4,60,000 + ₹80,000 = ₹5,40,000

PROBLEM – 3 (Payback Period & Discounted Payback Period)

Calculate Pay back and Discounted Pay Back for a Project with a ₹ 30,000 cash outlay and annual cash inflows of ₹ 6,000 for a period of 10 years. Discount Rate is15%

SOLUTION

Payback Period = 30,000/6000 = 5 Years

Discounted Payback Period

Year	Cash Flow (₹)	PVF@15%	PV (₹)	Cumulative PV (₹)
1	6,000	0.870	5,220	5,220
2	6,000	0.756	4,536	9,756

3	6,000	0.658	3,948	13,704
4	6,000	0.572	3,432	17,136
5	6,000	0.497	2,982	20,118
6	6,000	0.432	2,592	22,710
7	6,000	0.376	2,256	24,966
8	6,000	0.327	1,962	26,928
9	6,000	0.284	1,704	28,632
10	6,000	0.247	1,482	30,114

The cumulative total of discounted cash flows after ten years is ₹30,114. Therefore, our discounted payback is approximately 10 years as opposed to 5 years under simple payback. It should be noted that as the required rate of return increases, the distortion between simple payback and discounted payback grows.

PROBLEM – 4 (Missing Figures using IRR, NPV, COC, PI)

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

SOLUTION

Cost of the Project

At 12% internal rate of return (IRR), the sum of total cash inflows = cost ofthe project i.e initial cash outlay

Annual cash inflows = ₹1,00,000

Useful life = 4 years

Considering the discount factor table @ 12%, cumulative present value ofcash inflows for 4 years is 3.038 (0.893 + 0.797 + 0.712 + 0.636).

Hence, Total Cash inflows for 4 years for the Project is:

₹1,00,000 × 3.038 = ₹3,03,800

Hence, Cost of the Project = ₹3,03,800

Cost of Capital

$$\text{Profitability index} = \frac{\text{Sum of Discounted Cash inflows}}{\text{Cost of the project}}$$

$$1.064 = \frac{\text{Sum of Discounted Cash inflows}}{\text{Rs.3,03,800}}$$

$\therefore$ Sum of Discounted Cash inflows = ₹3,23,243.20

Since, Annual Cash Inflows = ₹1,00,000

Hence, cumulative discount factor for 4 years = $\frac{\text{Rs.3,23,242.20}}{\text{Rs.1,00,000}} = 3.232$

From the discount factor table, at discount rate of 9%, the cumulativediscount factor for 4 years is 3.239 (0.917 + 0.842 + 0.772 + 0.708).
Hence, Cost of Capital = 9% (approx.)

Net Present Value (NPV)

NPV = Sum of Present Values of Cash inflows – Cost of the Project
= ₹3,23,243.20 – ₹3,03,800 = ₹19,443.20

Payback Period

$$\text{Payback period} = \frac{\text{Cost of the Project}}{\text{Annual Cash Inflows}} = \frac{\text{Rs.3,03,800}}{\text{Rs.1,00,000}} = 3.038 \text{ years}$$

PROBLEM – 5 (Case Study - Capital Budgeting with Working Capital)

A large profit-making company is considering the installation of a machine to process the waste produced by one of its existing manufacturing processes 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 lakh 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 lakh 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 lakh. At the end of the 4th year, the machine can be sold for ` 60 lakh and the cost of dismantling and removal will be ` 45 lakh.

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

Year	**1**	**2**	**3**	**4**
Sales	966	966	1,254	1,254
Material consumption	90	120	255	255
Wages	225	225	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 lakh 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 lakh and the stocks at the end of year 4 will be nil. The storage of materials will utilize space which would otherwise have been rented out for ` 30 lakh per annum. Labour costs include wages of 40 workers, whose transfer to this process will reduce idle time payments of ` 45 lakh in the year- 1 and ` 30 lakh in the year- 2. Factory overheads include apportionment of general factory overheads except to the extent of insurance charges of ` 90 lakh per annum payable on this venture. The company's tax rate is 30%.

Consider cost of capital @ 14%, the present value factors of which is given below for four years:

Year	1	2	3	4
PV 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.

SOLUTION

Statement of Operating Profit from processing of waste (₹ in Lakhs)

Year	1	2	3	4
Sales (A)	966	966	1,254	1,254
Material consumption	90	120	255	255
Wages	180	195	255	300
Other expenses	120	135	162	210
Factory overheads (insurance only)	90	90	90	90
Loss of rent on storage space (opportunity cost)	30	30	30	30
Depreciation (as per income tax rules)	150	114	84	63
Total cost (B)	660	684	876	948
Profit {(C)=(A) - (B)}	306	282	378	306
Less: Tax (30%)	91.8	84.6	113.4	91.8
Profit after Tax (PAT)	214.2	197.4	264.6	214.2

Statement of Incremental Cash Flows (₹ in Lakhs)

Year	0	1	2	3	4
Cost of Machine	(600)				
Material stock	(60)	(105)	-	-	165
Compensation for contract	(90)	-	-	-	-
Contract payment saved	-	150	150	150	150
Tax on contract payment	-	(45)	(45)	(45)	(45)
Incremental profit	-	306	282	378	306
Depreciation added back	-	150	114	84	63
Tax on profits	-	(91.8)	(84.6)	(113.4)	(91.8)
Profit on sale of machinery (net)	-	-	-	-	15

Total Incremental CFs	(750.0)	364.2	416.4	453.6	562.2
PVIF	1.000	0.877	0.769	0.674	0.592
PVCFs	(750.00)	319.40	320.21	305.73	332.82
NPV	**528.16**				

Advice:
Since the net present value of cash flows is ` 528.16 lakh which is positive the management should install the machine for processing the waste.

Notes:

1. Material stock increases are taken in cash flows.
2. Idle time wages have also been considered.
3. Apportioned factory overheads are not relevant only insurance charges of this project are relevant.
4. Sale of machinery - Net income after deducting removal expenses taken. Tax on Capital gains is ignored.
5. Saving in contract payment and income tax thereon is considered in the cash flows.

PROBLEM – 6 (Case Study - Capital Budgeting in Replacement Decision)

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

SOLUTION

Workings:

Calculation of Base for depreciation or Cost of New Machine

Particulars	**(₹)**
Purchase price of new machine	4,50,000
Less: Sale price of old machine	1,00,000
	3,50,000

Calculation of Profit before tax as per books

Particulars	**Old machine (₹)**	**New machine (₹)**	**Difference (₹)**
PBT as per books	3,24,750	3,87,250	62,500
Add: Depreciation as per books	24,000	41,500	17,500
Profit before tax and depreciation (PBTD)	3,48,750	4,28,750	80,000

Calculation of Incremental NPV

Year	PVF @ 10%	PBTD (₹)	Dep. @ 7.5% (₹)	PBT (₹)	Tax @ 30% (₹)	Cash Inflows (₹)	PV of Cash Inflows (₹)
	(1)	(2)	(3)	(4)	(5) = (4)x 0.30	(6) = (4) – (5) + (3)	(7) = (6)x(1)
1	0.909	80,000.00	26,250.00	53,750.00	16,125.00	63,875.00	58,062.38
2	0.826	80,000.00	24,281.25	55,718.75	16,715.63	63,284.38	52,272.89
3	0.751	80,000.00	22,460.16	57,539.84	17,261.95	62,738.05	47,116.27
4	0.683	80,000.00	20,775.64	59,224.36	17,767.31	62,232.69	42,504.93
5	0.621	80,000.00	19,217.47	60,782.53	18,234.76	61,765.24	38,356.21
6	0.564	80,000.00	17,776.16	62,223.84	18,667.15	61,332.85	34,591.73
7	0.513	80,000.00	16,442.95	63,557.05	19,067.12	60,932.88	31,258.57
8	0.467	80,000.00	15,209.73	64,790.27	19,437.08	60,562.92	28,282.88
9	0.424	80,000.00	14,069.00	65,931.00	19,779.30	60,220.70	25,533.58
10	0.386	80,000.00	13,013.82	66,986.18	20,095.85	59,904.15	23,123.00
							3,81,102.44
Add: PV of Salvage Value of New Machine (35,000 x 0.368)							13,510
Total PV of Incremental CFs							3,94,612.44
Less: Cost of New Machine							3,50,000
Incremental Net Present Value							44,612.44

Analysis:

Since the Incremental NPV is positive, the old machine should be replaced.

REVISION 5: MANAGEMENT OF WORKING CAPITAL

This chapter is divided into Six Units:

UNIT I: Introduction to Working Capital Management

UNIT II: Treasury and Cash Management

UNIT III: Management of Inventory

UNIT IV: Management of Receivables

UNIT V: Management of Payables

UNIT VI: Financing of Working Capital

UNIT I: INTRODUCTION TO WORKING CAPITAL MANAGEMENT

In accounting terms, working capital is defined as the difference between current assets and current liabilities. If we break down the components of working capital we will find working capital as follows:

Working Capital = Current Assets – Current Liabilities

For the purpose of working capital management, Current Assets of an entity can be grouped into the following categories:

(a) Inventory (raw material, work in process and finished goods)
(b) Receivables (trade receivables and bills receivables)
(c) Cash or cash equivalents (including short-term marketable securities)
(d) Prepaid expenses

Other current assets may also include short-term loans or advances, any other accrued revenue etc.

For the purpose of working capital management, Current Liabilities of an entity can be grouped into the following categories:

(a) Payable (trade payables and bills payables)

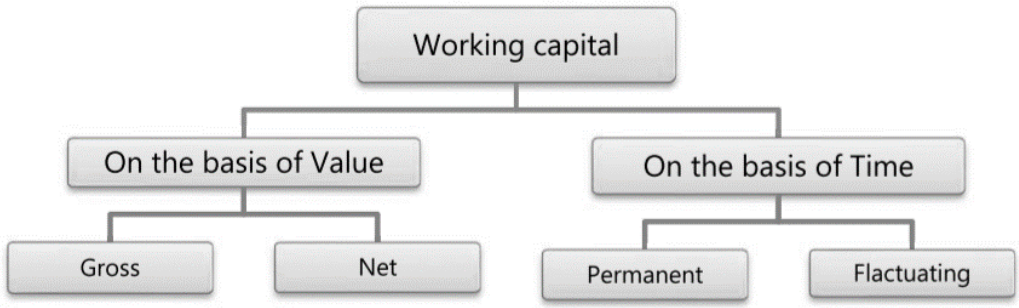
(b) Outstanding payments (wages & salary, overheads & other expenses etc.)

Other current liabilities may also include short-term borrowings, current portion of long-term debts, short-term provisions that are payable within twelve months such as provision for taxes etc.

WORKING CAPITAL MANAGEMENT

Working Capital Management is the process which is designed to ensure that an organization operates efficiently by monitoring & utilizing its current assets and current liabilities to the best effect. The primary objective is to enable a company to maintain sufficient cash flows in order to meet its day-to-day operating expenses and its short-term obligations.

The concept of working capital can also be explained through two angles.



(a) Value: From the value point of view, Working Capital can be defined as Gross Working Capital or Net Working Capital.

Gross working capital refers to the firm's investment in current assets.
Net working capital refers to the difference between current assets and current liabilities.

A positive working capital indicates the company's ability to pay its short-term liabilities. On the other hand, a negative working capital shows the inability of an entity to meet its short-term obligations.

(b) Time: From the point of view of time, working capital can be divided into two categories viz., Permanent and Fluctuating (temporary).

Permanent working capital refers to the base working capital, which is the minimum level of investment in the current assets that are carried by the entity at all times to carry out

its day-to-day activities. It generally stays invested in the business, unless the operations are scaled up or down permanently which would also result in an increase or decrease in permanent working capital. It is generally financed by long-term sources of finance.

Temporary working capital refers to that part of total working capital, which is required by an entity in addition to the permanent working capital. It is also called variable or fluctuating working capital which is used to finance the short-term working capital requirements which arise due to fluctuation in sales volume. For instance, an organization would maintain increased levels of inventory to meet increased seasonal demand.

IMPORTANCE OF ADEQUATE WORKING CAPITAL

Management of working capital is an essential task of the finance manager. He has to ensure that the amount of working capital available is neither too large nor too small for its requirements.

A **large amount of working capital** would mean that the company has idle funds. Since funds have a cost, the company has to pay huge amounts as interest on such funds that are used to invest in surplus working capital.

On the other hand, if the firm has **inadequate working capital**, such a firm runs the risk of insolvency. The paucity of working capital may lead to a situation where the firm may not be able to meet its liabilities. It may also mean that a company may not be holding enough inventory in order to meet the customers' demand and hence would lose sales and eventually some reputation as well.

An organization, therefore, has to be very careful in estimating its working capital requirements. Maintaining **adequate working capital** is not just important in the short term, sufficient liquidity must be maintained in order to ensure the survival of the business in the long term as well.

When businesses make investment decisions, they must not only consider the financial outlay involved with acquiring the new machine or the new building, etc. but must also take into account the additional current assets that are usually required with any expansion of activity.

DETERMINANTS OF WORKING CAPITAL

Working capital management is concerned with:

(a) **Maintaining adequate working capital** (managing the level of individual current assets and the current liabilities) and

(b) **Financing of the working capital**.

For point (a) above, a Finance Manager needs to plan and compute the working capital requirement for the business. And once the requirement has been computed he needs to ensure that it is financed properly.

This whole exercise is known as Working Capital Management.

SCOPE OF WORKING CAPITAL

Liquidity and Profitability

For uninterrupted and smooth functioning of the day-to-day business of an entity, it is important to maintain the liquidity of funds evenly. As we have already learnt in previous chapters each rupee of capital bears some cost. So, while maintaining liquidity the cost aspect needs to be borne in mind.

Also, a higher working capital may be intended to increase the revenue & hence profitability, but at the same time unnecessary tying up of funds in idle assets not only reduces the liquidity but also reduces the opportunity to earn a better return from a productive asset.

Hence, a **trade-off is required between liquidity and profitability** which increases the profitability without disturbing the day-to-day functioning. This requires **3Es** i.e. **Economy** in financing, **Efficiency** in utilisation and **Effectiveness** in achieving the intended objectives.

Investment and Financing

Working capital policy is a function of two decisions, the first is investment in working capital and the second is financing the investment.

Investment in working capital is concerned with the level of investment in the current assets. It gives the answer of **'How much'** fund to be tied in to achieve the organisation's objectives (i.e. Effectiveness of fund).

The financing decision is concerned with the arrangement of funds to finance the working capital. It gives the answer **'Where from'** fund to be sourced at the lowest cost possible (i.e. Economy).

ESTIMATING WORKING CAPITAL NEEDS

The operating cycle is one of the most reliable methods of Computation of Working Capital.

However, other methods like the Ratio of sales and the Ratio of fixed investment may also be used to determine the Working Capital requirements. These methods are briefly explained as follows:

(i) Current Assets Holding Period: To estimate working capital needs based on the average holding period of current assets and relate them to costs based on the company's experience in the previous year. This method is essentially based on the Operating Cycle Concept.

(ii) Ratio of Sales: To estimate working capital needs as a ratio of sales on the assumption that current assets change with changes in sales.

(iii) Ratio of Fixed Investments: To estimate Working Capital requirements as a percentage of fixed investments.

QUESTIONS FOR CLASSROOM DISCUSSION

PROBLEM – 1

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.

SOLUTION

Working Notes:

1. Raw material inventory:

The cost of materials for the whole year is 60% of the Sales value.

Hence it is 60,000 units × ₹5 × $\frac{60}{100}$ = ₹1,80,000 .

The monthly consumption of raw material would be ₹15,000. Raw material

requirements would be for two months; hence raw materials in stock would be ₹30,000.

2. Work-in-process: (Students may give special attention to this point). It is stated that each unit of production is expected to be in process for one month).

		(₹)
(a)	Raw materials in work-in-process (being one month's raw material requirements)	15,000
(b)	Labour costs in work-in-process (It is stated that it accrues evenly during the month. Thus, on the first day of each month it would be zero and on the last day of month the work-in-process would include one month's labour costs. On an average therefore, it would be equivalent to ½ of the month's labour costs) $\left(\frac{10\%\,of\,(60{,}000\times Rs.5)}{12 months}\times 0.5 month\right)$	1,250
(c)	Overheads (For ½ month as explained above) $\left(\frac{20\%\,of\,(60{,}000\times Rs.5)}{12 months}\times 0.5 month\right)$	2,500
	Total work-in-process	**18,750**

3. Finished goods inventory: (3 month's cost of production)

Raw Materials $\left(\frac{60\%\,of\,(60{,}000\times Rs.5)}{12 months}\times 3 months\right)$	45,000
Labour $\left(\frac{10\%\,of\,(60{,}000\times Rs.5)}{12 months}\times 3 months\right)$	7,500
Overheads $\left(\frac{20\%\,of\,(60{,}000\times Rs.5)}{12 months}\times 3 months\right)$	15,000
Total finished goods inventory	**67,500**

Alternatively, (60,000 units x ₹5 x 90%) x 3/12	**67,500**

4. **Debtors:** The total cost of sales = 2,70,000.

   Therefore, debtors = ₹2,70,000 × $\frac{3}{12}$ = ₹67,500

   Where, Total Cost of Sales = RM + Wages + Overheads + Opening Finished goods inventory – Closing finished goods inventory.
   = ₹1,80,000 + ₹30,000 + ₹60,000 + ₹67,500 – ₹67,500 = ₹2,70,000.

5. **Creditors:** Suppliers allow a two months' credit period. Hence, the average amount of creditors would be two months consumption of raw materials i.e.

   $\left(\frac{60\%\,of\,(60{,}000\times Rs.5)}{12\,months}\times 2\,months\right)$ = ₹30,000

6. **Direct Wages payable:** $\left(\frac{10\%\,of\,(60{,}000\times Rs.5)}{12\,months}\times 1\,month\right)$ = ₹2,500

7. **Overheads Payable:** $\left(\frac{20\%\,of\,(60{,}000\times Rs.5)}{12\,months}\times 1\,month\right)$ =₹5,000

Here it has been assumed that inventory level is uniform throughout the year, therefore opening inventory equals closing inventory.

Statement of Working Capital Required

	(₹)	(₹)
Current Assets or Gross Working Capital:		
Raw materials inventory (Refer to working note 1)	30,000	
Working–in-process (Refer to working note 2)	18,750	
Finished goods inventory (Refer to working note 3)	67,500	
Debtors (Refer to working note 4)	67,500	
Cash	20,000	2,03,750
Current Liabilities:		
Creditors (Refer to working note 5)	30,000	
Direct wages payable (Refer to working note 6)	2,500	
Overheads payable (Refer to working note 7)	5,000	(37,500)
Estimated working capital requirements		1,66,250

UNIT II: TREASURY AND CASH MANAGEMENT

Treasury management encompasses planning, organizing & controlling the funds & working capital of an enterprise in order to ensure the best use of funds, maintain liquidity, reduce the overall cost of funds and mitigate operational & financial risk. It involves the corporate handling of all financial matters, the generation of external and internal funds for business, the management of currencies and cash flows and the complex, strategies, policies and procedures of corporate finance.

Treasury management mainly deals with:

- Working capital management; and
- Financial risk management (It includes forex and interest rate management).

The key goals of treasury management are:

- Maximize the return on the available cash;
- Minimize interest cost on borrowings;
- Mobilise as much cash as possible for corporate ventures for maximum returns; and
- Effective dealing in forex, money and commodity markets to reduce risks arising because of fluctuating exchange rates, interest rates and prices which can in turn affect the profitability of the organization.

QUESTIONS FOR CLASSROOM DISCUSSION

PROBLEM – 2

Prachi Ltd is a manufacturing company producing and selling a range of cleaning products to wholesale customer. 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 9 August to Wednesday 13 August 20X2 inclusive. You have been provided with the following information:

Receipts from customers

	Credit terms	Payment method	9 Aug 20X2 sales	9 Jul 20X2 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).

Payments to suppliers

Supplier name	Credit terms	Payment method	9 Aug 20X2 purchases	9 Jul 20X2 purchases	9 Jun 20X2 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

(c) 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 9 August. Every few months, an adjustment is made to reflect the actual cost of supplies purchased (you do NOT need to make this adjustment).

(d) Prachi Ltd will send out, by post, cheques to B Ltd and C Ltd on 9 August. The amounts will leave its bank account on the second day following this (excluding the day of posting).

Wages and salaries

	July 20X2	August 20X2
Weekly wages	₹ 12,000	₹ 13,000
Monthly salaries	₹ 56,000	₹ 59,000

(e) Factory workers are paid cash wages (weekly). They will be paid one week's wages, on 13 August, for the last week's work done in July (i.e. they work a week in hand).

(f) All the office workers are paid salaries (monthly) by BACS. Salaries for July will be paid on 9 August.

Other miscellaneous payments

(g) 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.

(h) The room cleaner is paid ₹ 30 from petty cash every Monday morning.

(i) Office stationery will be ordered by telephone on Sunday 10 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.

(j) Five new software's will be ordered over the Internet on 12 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).

Other information

The balance on Prachi's bank account will be ₹ 200,000 on 9 August 20X2. This represents both the book balance and the cleared funds.

PREPARE a cleared funds forecast for the period Saturday 7th August to Wednesday 13th August 20X2 inclusive using the information provided. Show clearly the uncleared funds float each day.

SOLUTION

Cleared Funds Forecast

	9 Aug (Saturday)	**10 Aug (Sunday)**	**11 Aug (Monday)**	**12 Aug (Tuesday)**	**13Aug (Wednesday)**
Receipts	**₹**	**₹**	**₹**	**₹**	**₹**
W Ltd	1,30,000	0	0	0	0
X Ltd	0	0	0	1,80,000	0
(a)	**130000**	**0**	**0**	**1,80,000**	**0**
Payments					
A Ltd	45,000	0	0	0	0
B Ltd	0	0	75,000	0	0
C Ltd	0	0	95,000	0	0

	9 Aug (Saturday)	10 Aug (Sunday)	11 Aug (Monday)	12 Aug (Tuesday)	13Aug (Wednesday)
Wages	0	0	0	0	12,000
Salaries	56,000	0	0	0	0
Petty Cash	200	0	0	0	0
Stationery	0	0	300	0	0
(b)	**1,01,200**	**0**	**1,70,300**	**0**	**12,000**
Cleared excess Receipts					
over payments (a) – (b)	28,800	0	(1,70,300)	1,80,000	(12,000)
Cleared balance b/f	2,00,000	2,28,800	2,28,800	58,500	2,38,500
Cleared balance c/f (c)	**2,28,800**	**2,28,800**	**58,500**	**2,38,500**	**2,26,500**
Uncleared funds float					
Receipt	1,80,000	1,80,000	1,80,000	0	0
Payments	(1,70,000)	(1,70,300)	0	(6,500)	(6,500)
(d)	**10,000**	**9,700**	**180,000**	**(6,500)**	**(6,500)**
Total book balance c/f **(c)+(d)**	**2,38,800**	**2,38,500**	**2,38,500**	**2,32,000**	**2,20,000**

UNIT III: MANAGEMENT OF INVENTORY

Inventories constitute a major element of working capital. It is, therefore, important that investment in inventory is properly controlled. The objectives of inventory management are, to a great extent, similar to the objectives of cash management. Inventory management covers a large number of problems including fixation of minimum and maximum levels, determining the size of inventory to be carried, deciding about the issues, receipts and inspection procedures, determining the economic order quantity, proper storage facilities, keeping a check over obsolescence and ensuring control over the movement of inventories.

Note:
Inventory Management has been discussed in detail in chapter 2 (Material) Paper 3: Cost and Management Accounting.

QUESTIONS FOR CLASSROOM DISCUSSION

PROBLEM – 3

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 ` 0.10 per tonne per annum. The current practice is to order twice a year when the stock falls to 10,000 tonnes. IDENTIFY an appropriate ordering policy for Marvel Limited, and contrast it with the cost of the current policy.

SOLUTION

The recommended policy should be based on the

EOQ model. F = ` 100 per order

S = 60,000 tonnes per year

H = ` 0.10 per tonne per year

Substituting : EOQ = $\sqrt{\frac{2\times100\times60,000}{0.10}}$ = 10,954 tonnes per order

Number of orders per year = 60,000/10,954 = 5.5

orders Re-order level = 2*60,000/50 = 2,400 tonnes

Total cost of optimum policy = holding costs + ordering costs

= (0.1*10954)/2 + (100*60,000)/10,954

= 547.70 + 547.74 = 1,095

To compare the optimum policy with the current policy, the average level of stock under the current policy must be found. An order is placed when stock falls to 10,000 tonnes, but the lead time is two weeks. The stock used in that time is (60,000*2)/50 = 2,400 tonnes. Before delivery, inventory has fallen to (10,000 – 2,400) = 7,600 tonnes. Orders are made twice per year, and so the order size = 60,000/2 = 30,000 tonnes. The order will increase stock level to 30,000 + 7,600 = 37,600 tonnes. Hence the average stock level = 7,600 + (30,000/2) = 22,600 tonnes.

Total costs of current policy = (0.1*22,600) + (100*2) = 2,460 per year.

Advise: The recommended policy should be adopted as the costs are less than the current policy (by 1,365 per year).

UNIT IV: MANAGEMENT OF RECEIVABLES

Management of receivables refers to planning and controlling of 'debt' owed to the firm from customers on account of credit sales. It is also known as trade credit management. The basic objective of the management of receivables (debtors) is to optimise the return on investment on these assets.

When large amounts are tied up in receivables, there are chances of bad debts and there will be a cost of collection of debts. On the contrary, if the investment in receivables is low, the sales may be restricted, since the competitors may offer more liberal terms.

Therefore, management of receivables is an important issue and requires proper policies and their implementation.

ASPECTS OF MANAGEMENT OF DEBTORS

There are basically three aspects of management of receivables:

1. Credit Policy: A balanced credit policy should be determined for effective management of receivables. The decision of Credit standards, Credit terms and collection efforts are included in the Credit policy. It involves a trade-off between the profits on additional sales that arise due to credit being extended on the one hand and the cost of carrying those debtors and bad debt losses on the other.

2. Credit Analysis: This requires the finance manager to determine as to how risky it is to advance credit to a particular party. This involves due diligence or reputation check of the customers with respect to their creditworthiness.

3. Control of Receivable: This requires the finance manager to follow up with debtors and decide about a suitable credit collection policy. It involves both the laying down of credit policies and the execution of such policies.

QUESTIONS FOR CLASSROOM DISCUSSION

PROBLEM – 4

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 spend ₹1,40,000 annually on debtor's administration. This cost comprises of telephonic and fax bills along with salaries of staff member. 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. ANALYSE what should the firm do?

Assume 360 days in a year.

SOLUTION

Working notes:

Average level of receivables = ₹ 360 lakhs $\times \frac{30}{360}$ = 30 lakhs

Factoring Commission = 1% of ₹ 30,00,000	= ₹ 30,000
Reserve = 10% of ₹ 30,00,000	= ₹ 3,00,000
Total (i)	= ₹ 3,30,000

Thus, the amount available for advance is

Average level of receivables	₹ 30,00,000
Less: Total (i) from above	₹ 3,30,000
(ii)	₹ 26,70,000
Less: Interest @ 15% p.a. for 30 days	₹ 33,375
Net Amount of Advance available.	₹ 26,36,625

Evaluation of Factoring Proposal

	Particulars	₹	₹
A.	**Savings (Benefit) to the firm**		
	Cost of Credit administration	₹ 1,40,000	₹ 1,40,000
	Cost of bad-debt losses	(0.02 × 360 lakhs)	₹ 7,20,000
	Total		₹ 8,60,000
B.	**Cost to the Firm:**		
	Factoring Commission [Annual credit Sales × % of Commission (or calculated annually)]	₹ 30,000 $\times \frac{360}{30}$	₹ 3,60,000
	Interest Charges	₹ 33,375 $\times \frac{360}{30}$	₹ 4,00,500

	Total		₹ 7,60,500
C.	**Net Benefits to the Firm: (A-B)**		₹ 99,500

Advice: Since the savings to the firm exceeds the cost to the firm on account of factoring, therefore, the proposal is acceptable.

UNIT V: MANAGEMENT OF PAYABLES (CREDITORS)

Trade creditor is a spontaneous source of finance in the sense that it arises from ordinary business transactions. Creditors are a vital part of effective cash management and should be managed carefully to enhance the cash position.

COST OF AVAILING TRADE CREDIT

Normally it is considered that the trade credit does not carry any cost. However, it carries the following costs:

(i) Price: There is often a discount on the price that the firm forgoes when it uses trade credit since it can take advantage of the discount only if it pays immediately. This discount can translate into a high implicit cost.

(ii) Loss of goodwill: If the credit is overstepped, suppliers may discriminate against delinquent customers if supplies become short. As with the effect of any loss of goodwill, it depends very much on the relative market strengths of the parties involved.

(iii) Cost of managing: Management of creditors involves administrative and accounting costs that would otherwise be incurred.

(iv) Conditions: Sometimes most of the suppliers insist that for availing the credit facility the order should be of some minimum size or even on regular basis.

COST OF NOT TAKING TRADE CREDIT

(i) Impact of Inflation: If inflation persists then the borrowers are favoured over the lenders as they were better off paying the fixed outstanding amount later than sooner. Also, the subsequent transactions shall be at higher prices.

(ii) Interest: Trade credit is a type of interest-free loan, therefore failure to avail this facility has an interest cost. This cost is further increased if interest rates are higher.

(iii) Inconvenience: Sometimes it may also cause inconvenience to the supplier if the supplier is geared to the deferred payment.

QUESTIONS FOR CLASSROOM DISCUSSION

PROBLEM – 5

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.

1. ANALYSE what mistake is Rohit making?
2. 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.

SOLUTION

1. Rohit's argument of comparing 2% discount with 12% bank loan rate is not rational as 2% discount can be earned by making payment 5 days in advance i.e. within 10 days rather 15 days as payments are made presently. Whereas 12% bank loan rate is for a year.

   Assume that the purchase value is `100, the discount can be earned by making payment within 10 days is `2, therefore, net payment would be `98 only.

   $$\text{Annualized benefit} = \frac{2}{98} \times \frac{365\text{days}}{5\text{days}} \times 100 = 149\%$$

   This means cost of not taking cash discount is 149%.

2. If the bank loan facility could not be available, then in this case the company should resort to utilise maximum credit period as possible.

   Therefore, payment should be made in 30 days to reduce the interest cost.

UNIT VI: FINANCING OF WORKING CAPITAL

After determining the amount of working capital required, the next step to be taken by the finance manager is to arrange the funds.

As discussed earlier, it is advisable that the finance manager bifurcate the working capital requirements between the permanent working capital and temporary working capital.

Permanent working capital is always needed irrespective of sales fluctuation; hence it should be financed by long-term sources such as debt and equity. On the contrary, temporary working capital may be financed by short-term sources of finance.

Broadly speaking, working capital finance may be classified into two categories:

(i) Spontaneous sources; and (ii) Negotiable sources.

Spontaneous Sources: Spontaneous sources of finance are those which naturally arise in the course of business operations. Trade credit, credit from employees, credit from suppliers of services, etc. are some of the examples which may be quoted in this respect.

Negotiated Sources: On the other hand, the negotiated sources, as the name implies, are those which have to be specifically negotiated with lenders say, commercial banks, financial institutions, the general public etc.

The finance manager has to be very careful while selecting a particular source, or a combination thereof for the financing of working capital.

MULTIPLE CHOICE QUESTIONS (MCQs)

1. SCOPE AND OBJECTIVES OF FINANCIAL MANAGEMENT

1. **Focus of financial management is mainly concerned with the decision relatedto:**
   - **a.** Financing
   - **b.** Investing
   - **c.** Dividend
   - **d.** All of above.

2. **The main objective of financial management is to:**
   - **a.** Secure profitability
   - **b.** Maximise shareholder wealth
   - **c.** Enhancing the cost of debt
   - **d.** None of above.

3. **The shareholder value maximisation model holds that the primary goal of thefirm is to maximise its:**
   - **a.** Accounting profit
   - **b.** Liquidity
   - **c.** Market value
   - **d.** Working capital.

4. **Wealth maximisation approach is based on the concept of:**
   - **a.** Cost benefit analysis
   - **b.** Cash flow approach
   - **c.** Time value of money
   - **d.** All of the above.

5. **Management of all matters related to an organisation's finances is called:**
   - **a.** Cash inflows and outflows
   - **b.** Allocation of resources
   - **c.** Financial management
   - **d.** Finance.

6. **Which of the following is the disadvantage of having shareholders wealthmaximisation goals?**
   - **a.** Emphasizes the short-term gains.
   - **b.** Ignores the timing of returns.
   - **c.** Requires immediate resources.
   - **d.** Offers no clear relationship between financial decisions and share price.

7. **The most important goal of financial management is:**
   - **a.** Profit maximisation
   - **b.** Matching income and expenditure
   - **c.** Using business assets effectively
   - **d.** Wealth maximisation.

8. **To achieve wealth maximization, the finance manager has to take carefuldecision in respect of:**
   - **a.** Investment
   - **b.** Financing
   - **c.** Dividend
   - **d.** All the above.

9. **Early in the history of finance, an important issue was:**
   - **a.** Liquidity
   - **b.** Technology
   - **c.** Capital structure
   - **d.** Financing options.

10. **Which of the following are microeconomic variables that help define andexplain the discipline of finance?**
    - **a.** Risk and return
    - **b.** Capital structure
    - **c.** Inflation
    - **d.** All of the above.

11. Financial Management is mainly concerned with the-

a. Acquiring and developing assets to forfeit its overall benefit.

b. Acquiring, financing and managing assets to accomplish the overallgoal of a business enterprise.

c. Efficient management of the business.

d. Sole objective of profit maximisation.

12. Which of the following need not be followed by the finance manager formeasuring and maximising shareholders' wealth?

a. Accounting profit analysis.

b. Cash Flow approach.

c. Cost benefit analysis.

d. Application of time value of money.

Answers to the MCQs

1.	**(d)**	**2.**	**(b)**	**3.**	**(c)**	**4.**	**(d)**	**5.**	**(c)**	**6.**	**(d)**
7.	**(d)**	**8.**	**(d)**	**9.**	**(a)**	**10.**	**(d)**	**11.**	**(b)**	**12.**	**(a)**

2. TYPES OF FINANCING

1. **Equity shares:**
   - **a.** Have an unlimited life, and voting rights and receive dividends
   - **b.** Have a limited life, with no voting rights but receive dividends
   - **c.** Have a limited life, and voting rights and receive dividends
   - **d.** Have an unlimited life, and voting rights but receive no dividends

2. **External sources of finance do not include:**
   - **a.** Debentures
   - **b.** Retained earnings
   - **c.** Overdrafts
   - **d.** Leasing

3. **Internal sources of finance do not include:**
   - **a.** Better management of working capital
   - **b.** Ordinary shares
   - **c.** Retained earnings
   - **d.** Reserve and Surplus

4. **In preference shares:**
   - **a.** Dividends are not available
   - **b.** Limited voting rights are available
   - **c.** Are not part of a company's share capital
   - **d.** Interest can be received

5. **A debenture:**
   - **a.** Is a long-term loan
   - **b.** Does not require security
   - **c.** Is a short-term loan
   - **d.** Receives dividend payments

6. Debt capital refers to:

a. Money raised through the sale of shares.

b. Funds raised by borrowing that must be repaid.

c. Factoring accounts receivable.

d. Inventory loans.

7. The most popular source of short-term funding is:

a. Factoring.

b. Trade credit.

c. Family and friends.

d. Commercial banks.

8. Marketable securities are primarily:

a. short-term debt instruments.

b. short-term equity securities.

c. long-term debt instruments.

d. long-term equity securities.

9. Which of the following marketable securities is the obligation of a commercialbank?

a. Commercial paper

b. Negotiable certificate of deposit

c. Repurchase agreement

d. T-bills

10. Reserves & Surplus are which form of financing?

a. Security Financing

b. Internal Financing

c. Loans Financing

d. International Financing

11. With reference to Rs.IFC Masala Bonds', which of the statements given below is/are correct?

1. The International Finance Corporation, which offered these bonds, is anarm of the World Bank.

2. **They are rupee-denominated bonds and are a source of debt financingfor the public and private sector.**

a. 1 only

b. 2 only

c. Both 1 and 2

d. Neither 1 nor 2

12. External Commercial Borrowings can be accessed through .....

a. only automatic route

b. only approval route

c. both automatic and approval route

d. neither automatic nor approval route

Answers to the MCQs

1.	**(a)**	**2.**	**(b)**	**3.**	**(b)**	**4.**	**(b)**	**5.**	**(a)**	**6.**	**(b)**
7.	**(b)**	**8.**	**(a)**	**9.**	**(b)**	**10.**	**(b)**	**11.**	**(c)**	**12.**	**(c)**

3. FINANCIAL ANALYSIS AND PLANNING –RATIO ANALYSIS

1. **Ratio of Net sales to Net working capital is a:**
   - **a.** Profitability ratio
   - **b.** Liquidity ratio
   - **c.** Current ratio
   - **d.** Working capital turnover ratio

2. **Long-term solvency is indicated by:**
   - **a.** Debt/equity ratio
   - **b.** Current Ratio
   - **c.** Operating ratio
   - **d.** Net profit ratio

3. **Ratio of net profit before interest and tax to sales is:**
   - **a.** Gross profit ratio
   - **b.** Net profit ratio
   - **c.** Operating profit ratio
   - **d.** Interest coverage ratio.

4. **Observing changes in the financial variables across the years is:**
   - **a.** Vertical analysis
   - **b.** Horizontal Analysis
   - **c.** Peer-firm Analysis
   - **d.** Industry Analysis.

5. **The Receivable-Turnover ratio helps management to:**
   - **a.** Managing resources
   - **b.** Managing inventory
   - **c.** Managing customer relationship
   - **d.** Managing working capital

6. **Which of the following is a liquidity ratio?**
   - **a.** Equity ratio
   - **b.** Proprietary ratio
   - **c.** Net Working Capital
   - **d.** Capital Gearing ratio

7. **Which of the following is not a part of Quick Assets?**
   - **a.** Disposable investments
   - **b.** Receivables
   - **c.** Cash and Cash equivalents
   - **d.** Prepaid expenses

8. **Capital Gearing ratio is the fraction of:**
   - **a.** Preference Share Capital and Debentures to Equity Share Capital and Reserve & Surplus.
   - **b.** Equity Share Capital and Reserve & Surplus to Preference Share Capital and Debentures.
   - **c.** Equity Share Capital to Total Assets.
   - **d.** Total Assets to Equity Share Capital.

9. **From the following information, calculate P/E ratio: Equity share capital of Rs.10 each Rs.8,00,000 9% Preference share capital of Rs.10 each Rs.3,00,000 Profit (after 35% tax) Rs.2,67,000, Depreciation Rs.67,000**
   Market price of equity share Rs.48
   - **a.** 15 times
   - **b.** 16 times
   - **c.** 17 times
   - **d.** 18 times

10. **Equity multiplier allows the investor to see:**
    - **a.** What portion of interest on debt can be covered from earnings available to equity shareholders?
    - **b.** How many times preference share interest be paid from earnings available to equity shareholders?
    - **c.** What portion of return on equity is the result of debt?
    - **d.** How many times equity is multiplied to get the value of debt?

11. A company has average accounts receivable of Rs.10,00,000 and annual credit sales of Rs.60,00,000. Its average collection period would be:

a. 60.83 days

b. 6.00 days

c. 1.67 days

d. 0.67 days

12. A company has net profit margin of 5%, total assets of Rs.90,00,000 and return on assets of 9%. Its total asset turnover ratio would be:

a. 1.6

b. 1.7

c. 1.8

d. 1.9

13. What does Q ratio measures?

a. Relationship between market value and book value per equity share.

b. Proportion of profit available per equity share.

c. Overall earnings on average total assets.

d. Market value of equity as well as debt in comparison to all assets at their replacement cost.

14. Calculate operating expenses from the information given below:

Sales	**Rs.75,00,000**
Rate of income tax	**50%**
Net profit to sales	**5%**
Cost of goods sold	**Rs.32,90,000**
Interest on debentures	**Rs.60,000**

a. Rs.41,00,000

b. Rs.8,10,000

c. Rs.34,00,000

d. Rs.33,90,000

15. Which of the following is not a profitability ratio?

a. P/E ratio

b. Return on capital employed (ROCE)

c. Q Ratio

d. Preference Dividend Coverage Ratio

Answers to the MCQs

1.	**(d)**	**2.**	**(a)**	**3.**	**(c)**	**4.**	**(b)**	**5.**	**(d)**	**6.**	**(c)**
7.	**(d)**	**8.**	**(a)**	**9.**	**(b)**	**10.**	**(c)**	**11.**	**(a)**	**12.**	**(c)**
13.	**(d)**	**14.**	**(c)**	**15.**	**(d)**						

4. COST OF CAPITAL

1. **Which of the following is not an assumption of the capital asset pricing model (CAPM)?**
   - **a.** The capital market is efficient.
   - **b.** Investors lend or borrow at a risk-free rate of return.
   - **c.** Investors do not have the same expectations about the risk and return.
   - **d.** Investor's decisions are based on a single-time period.

2. **Given: risk-free rate of return = 5%; market return 10%; cost of equity =15%; value of beta (β) is:**
   - **a.** 1.9
   - **b.** 1.8
   - **c.** 2.0
   - **d.** 2.2

3. **May be defined as the cost of raising an additional rupee of capital:**
   - **a.** Marginal cost of capital
   - **b.** Weighted Average cost of capital
   - **c.** Simple Average cost of capital
   - **d.** Liquid cost of capital

4. **Which of the following cost of capital requires to adjust taxes***?*
   - **a.** Cost of Equity Share
   - **b.** Cost of Preference Shares,
   - **c.** Cost of Debentures
   - **d.** Cost of Retained Earnings

5. **Marginal Cost of capital is the cost of:**
   - **a.** Additional Revenue
   - **b.** Additional Funds
   - **c.** Additional Interests
   - **d.** None of the above

6. **In order to calculate Weighted Average Cost of Capital, weights may be basedon:**
   - **a.** Market Values
   - **b.** Target Values
   - **c.** Book Values
   - **d.** Anyone of the above

7. **Firm's Cost of Capital is the average cost of:**
   - **a.** All sources of finance
   - **b.** All Borrowings
   - **c.** All share capital
   - **d.** All Bonds & Debentures

8. **A company has a financial structure where equity is 70% of its total debt plus equity. Its cost of equity is 10% and gross loan interest is 5%. Corporation tax is paid at 30%. What is the company's weighted average cost of capital (WACC)?**
   - **a.** 7.55%
   - **b.** 7.80%
   - **c.** 8.70%
   - **d.** 8.05%

9. **The cost of equity capital is all of the following except:**
   - **a.** The minimum rate that a firm should earn on the equity-financed part ofan investment.
   - **b.** A return on the equity-financed portion of an investment that, at worst,leaves the market price of the stock unchanged.
   - **c.** By far, the most difficult component cost to estimate.
   - **d.** Generally, lower than the before-tax cost of debt.

10. **What is the overall (weighted average) cost of capital when the firm has Rs.20 crores in long-term debt, Rs.4 crores in preferred stock, and Rs.16 crores inequity shares? The before-tax cost for debt, preferred stock, and equity capital are 8%, 9%, and 15%, respectively. Assume a 50% tax rate.**
    - **a.** 7.60%
    - **b.** 6.90%
    - **c.** 7.30%
    - **d.** 8.90%

Answers to the MCQs

1.	**(c)**	**2.**	**(c)**	**3.**	**(a)**	**4.**	**(c)**	**5.**	**(b)**	**6.**	**(d)**
7.	**(a)**	**8.**	**(d)**	**9.**	**(d)**	**10.**	**(d)**				

5. FINANCING DECISIONS-CAPITAL STRUCTURE

1. The assumptions of MM hypothesis of capital structure do not include the following:

a. Capital markets are imperfect

b. Investors have homogeneous expectations

c. All firms can be classified into homogeneous risk classes

d. The dividend-payout ratio is cent percent, and there is no corporate tax

2. Which of the following is irrelevant for optimal capital structure?

a. Flexibility

b. Solvency

c. Liquidity

d. Control

3. Financial Structure refers to:

a. All financial resources

b. Short-term funds

c. Long-term funds

d. None of these

4. An EBIT-EPS indifference analysis chart is used for:

a. Evaluating the effects of business risk on EPS

b. Examining EPS results for alternative financial plans at varying EBIT levels

c. Determining the impact of a change in sales on EBIT

d. Showing the changes in EPS quality over time

5. The term "capital structure" means:

a. Long-term debt, preferred stock, and equity shares

b. Current assets and current liabilities

c. Net working capital

d. Shareholder's equity

6. The cost of monitoring management is considered to be a (an):

a. Bankruptcy cost

b. Transaction cost

c. Agency cost

d. Institutional cost

7. The traditional approach towards the valuation of a firm assumes:

a. That the overall capitalization rate changes in financial leverage.

b. That there is an optimum capital structure.

c. That the total risk is not changed with the changes in the capital structure.

d. That the markets are perfect.

8. Market values are often used in computing the weighted average cost of capital because:

a. This is the simplest way to do the calculation.

b. This is consistent with the goal of maximizing shareholder value.

c. This is required by SEBI.

d. This is a very common mistake.

9. A firm's optimal capital structure:

a. Is the debt-equity ratio that results in the minimum possible weighted average cost of capital

b. 40 percent debt and 60 percent equity

c. When the debt-equity ratio is 0.50

d. When Cost of equity is minimum

10. Capital structure of a firm influences the:

a. Risk

b. Return

c. Both Risk and Return

d. Return but not Risk

11. Consider the below mentioned statements:

1. A company is considered to be over-capitalised when its actual capitalisation is lower than the proper capitalisation as warranted by the earning capacity.

2. **Both over-capitalisation and under-capitalisation are detrimental to the interests of the society.**

   State True or False:

   a. 1-True, 2-True

   b. 1-False, 2-True

   c. 1-False, 2-False

   d. 1-True, 2-False

12. A critical assumption of the Net Operating Income (NOI) approach to valuation is:

a. That debt and equity levels remain unchanged.

b. That dividends increase at a constant rate.

c. That ko remains constant regardless of changes in leverage.

d. That interest expense and taxes are included in the calculation.

13. Which of the following steps may be adopted to avoid the negative consequences of over-capitalisation?

a. The shares of the company should be split up. This will reduce dividend per share, though EPS shall remain unchanged.

b. Issue of Bonus Shares.

c. Revising upward the par value of shares in exchange of the existing shares held by them.

d. Reduction in claims of debenture-holders and creditors.

Answers to the MCQs

1.	**(a)**	**2.**	**(b)**	**3.**	**(a)**	**4.**	**(b)**	**5.**	**(a)**	**6.**	**(c)**
7.	**(b)**	**8.**	**(b)**	**9.**	**(a)**	**10.**	**(c)**	**11.**	**(b)**	**12.**	**(c)**
13.	**(d)**										

6. FINANCING DECISIONS – LEVERAGES

1. Given

Operating fixed costs	**Rs. 20,000**
Sales	**Rs. 1,00,000**
P/ V ratio	**40%**

The operating leverage is:

a. 2.00

b. 2.50

c. 2.67

d. 2.47

2. If EBIT is Rs. 15,00,000, interest is Rs. 2,50,000, corporate tax is 40%, degree of financial leverage is;

a. 1.11

b. 1.20

c. 1.31

d. 1.41

3. If DOL is 1.24 and DFL is 1.99, DCL would be:

a. 2.14

b. 2.18

c. 2.31

d. 2.47

4. Operating Leverage is calculated as:

a. Contribution ÷ EBIT

b. EBIT ÷ PBT

c. EBIT ÷ Interest

d. EBIT ÷ Tax

5. Financial Leverage is calculated as:

a. EBIT ÷ Contribution

b. EBIT ÷ PBT

c. EBIT ÷ Sales

d. EBIT ÷ Variables Cost

6. Which of the following is correct?

a. CL = OL + FL

b. CL = OL – FL

c. CL = OL × FL

d. OL = OL ÷ FL

7. Which of the following indicates business risk?

a. Operating leverage

b. Financial leverage

c. Combined leverage

d. Total leverage

8. Degree of combined leverage is the fraction of:

a. Percentage change in EBIT on Percentage change in Sales.

b. Percentage change in EPS on Percentage change in Sales.

c. Percentage change in Sales on Percentage change in EPS.

d. Percentage change in EPS on Percentage change in EBIT.

9. From the following information, calculate combined leverage: Sales Rs. 20,00,000

Variable Cost 40%

Fixed Cost Rs. 10,00,000

Borrowings Rs. 10,00,000 @ 8% p.a.

a. 10 times

b. 6 times

c. 1.667 times

d. 0.10 times

10. Operating leverage is a function of which of the following factors?

a. Amount of variable cost.

b. Variable contribution margin.

c. Volume of purchases.

d. Amount of semi-variable cost.

11. Financial leverage may be defined as:

a. Use of funds with a product cost in order to increase earnings per share.

b. Use of funds with a contribution cost in order to increase earnings before interest and taxes.

c. Use of funds with a fixed cost in order to increase earnings per share.

d. Use of funds with a fixed cost in order to increase earnings before interest and taxes.

12. If Margin of Safety is 0.25 and there is 8% increase in output, then EBIT will be:

a. Decrease by 2%

b. Increase by 32%

c. Increase by 2%

d. Decrease by 32%

13. If degree of financial leverage is 3 and there is 15% increase in Earning per share (EPS), then EBIT will be:

a. Decrease by 15%

b. Increase by 45%

c. Decrease by 45%

d. Increase by 5%

14. When EBIT is much higher than Financial break-even point, then degree of financial leverage will be slightly:

a. Less than 1

b. Equals to 1

c. More than 1

d. Equals to 0

15. Firm with high operating leverage will have:

a. Higher breakeven point

b. Lower business risk

c. Higher margin of safety

d. All of above

16. When sales are at breakeven point, the degree of operating leverage will be:

a. Zero

b. Infinite

c. One

d. None of above

17. If degree of combined leverage is 3 and margin of safety is 0.50, then degree of financial leverage is:

a. 6.00

b. 3.00

c. 0.50

d. 1.50

Answers to the MCQs

1.	**(a)**	**2.**	**(b)**	**3.**	**(d)**	**4.**	**(a)**	**5.**	**(b)**	**6.**	**(c)**
7.	**(a)**	**8.**	**(b)**	**9.**	**(a)**	**10.**	**(b)**	**11.**	**(c)**	**12.**	**(b)**
13.	**(d)**	**14.**	**(c)**	**15.**	**(a)**	**16.**	**(b)**	**17.**	**(d)**		

7. INVESTMENT DECISIONS

1. **A capital budgeting technique which does not require the computation of costof capital for decision making purposes is:**
   - **a.** Net Present Value method
   - **b.** Internal Rate of Return method
   - **c.** Modified Internal Rate of Return method
   - **d.** Payback Period method

2. **If two alternative proposals are such that the acceptance of one shall exclude the possibility of the acceptance of another then such decision making will lead to:**
   - **a.** Mutually exclusive decisions
   - **b.** Accept reject decisions
   - **c.** Contingent decisions
   - **d.** None of the above

3. **In case a company considers a discounting factor higher than the cost of capitalfor arriving at present values, the present values of cash inflows will be:**
   - **a.** Less than those computed on the basis of cost of capital
   - **b.** More than those computed on the basis of cost of capital
   - **c.** Equal to those computed on the basis of the cost of capital
   - **d.** None of the above

4. **If the cut off rate of a project is greater than IRR, we may:**
   - **a.** Accept the proposal
   - **b.** Reject the proposal
   - **c.** Be neutral about it
   - **d.** Wait for the IRR to increase and match the cut off rate

5. **While evaluating capital investment proposals, time value of money is used inwhich of the following techniques:**
   - **a.** Payback Period method
   - **b.** Accounting rate of return
   - **c.** Net present value
   - **d.** None of the above

6. IRR would favour project proposals which have:

a. Heavy cash inflows in the early stages of the project.

b. Evenly distributed cash inflows throughout the project.

c. Heavy cash inflows at the later stages of the project.

d. None of the above.

7. The re-investment assumption in the case of the IRR technique assumes that:

a. Cash flows can be re-invested at the projects IRR.

b. Cash flows can be re-invested at the weighted cost of capital.

c. Cash flows can be re-invested at the marginal cost of capital.

d. None of the above

8. Multiple IRRs are obtained when:

a. Cash flows in the early stages of the project exceed cash flows during thelater stages.

b. Cash flows reverse their signs during the project.

c. Cash flows are uneven.

d. None of the above.

9. Depreciation is included as a cost in which of the following techniques:

a. Accounting rate of return

b. Net present value

c. Internal rate of return

d. None of the above

10. Management is considering a Rs.1,00,000 investment in a project with a 5 yearlife and no residual value. If the total income from the project is expected to be Rs.60,000 and recognition is given to the effect of straight line depreciation onthe investment, the average rate of return is:

a. 12% **b.** 24% **c.** 60% **d.** 75%

11. Assume cash outflow equals Rs.1,20,000 followed by cash inflows of Rs.25,000 peryear for 8 years and a cost of capital of 11%. What is the Net present value?

a. (Rs.38,214) **b.** Rs.9,653 **c.** Rs.8,653

d. Rs.38,214

12. What is the Internal rate of return for a project having cash flows of Rs.40,000per year for 10 years and a cost of Rs.2,26,009?

a. 8%

b. 9%

c. 10%

d. 12%

13. While evaluating investments, the release of working capital at the end of theproject's life should be considered as:

a. Cash inflow

b. Cash outflow

c. Having no effect upon the capital budgeting decision

d. None of the above

14. Capital rationing refers to a situation where:

a. Funds are restricted and the management has to choose from amongstavailable alternative investments.

b. Funds are unlimited and the management has to decide how to allocatethem to suitable projects.

c. Very few feasible investment proposals are available with themanagement.

d. None of the above.

15. Capital budgeting is done for:

a. Evaluating short term investment decisions.

b. Evaluating medium term investment decisions.

c. Evaluating long term investment decisions.

d. None of the above.

Answers to the MCQs based Questions

1.	**(d)**	**2.**	**(a)**	**3.**	**(a)**	**4.**	**(b)**	**5.**	**(c)**	**6.**	**(a)**
7.	**(a)**	**8.**	**(b)**	**9.**	**(a)**	**10.**	**(b)**	**11.**	**(c)**	**12.**	**(d)**
13.	**(a)**	**14.**	**(a)**	**15.**	**(c)**						

8. DIVIDEND DECISIONS

1. **Which one of the following is the assumption of Gordon's Model:**
   - **a.** $K_e > g$
   - **b.** Retention ratio, (b), once decide upon, is constant
   - **c.** Firm is an all equity firm
   - **d.** All of the above

2. **What should be the optimum Dividend pay-out ratio, when r = 15% & Ke = 12%:**
   - **a.** 100%
   - **b.** 50%
   - **c.** Zero
   - **d.** None of the above

3. **Which of the following is the irrelevance theory?**
   - **a.** Walter model
   - **b.** Gordon model
   - **c.** M.M. hypothesis
   - **d.** Linter's model

4. **If the company's D/P ratio is 60% & ROI is 16%, what should be the growthrate?**
   - **a.** 5%
   - **b.** 7%
   - **c.** 6.4%
   - **d.** 9.6%

5. **If the shareholders prefer regular income, how does this affect the dividenddecision:**
   - **a.** It will lead to payment of dividend
   - **b.** It is the indicator to retain more earnings
   - **c.** It has no impact on dividend decision
   - **d.** Can't say

6. **Mature companies having few investment opportunities will show high payoutratios, this statement is:**
   - **a.** False
   - **b.** True
   - **c.** Partial true
   - **d.** None of these

7. **Which of the following is the limitation of Linter's model?**
   - **a.** This model does not offer a market price for the shares.
   - **b.** The adjustment factor is an arbitrary number and not based on anyscientific criterion or methods.
   - **c.** Both (a) & (b)
   - **d.** None of the above.

8. **What are the different options other than cash used for distributing profits toshareholders?**
   - **a.** Bonus shares
   - **b.** Stock split
   - **c.** Both (a) and (b)
   - **d.** None of the above

9. **Which of the following statement is correct with respect to Gordon's model?**
   - **a.** When IRR is greater than cost of capital, the price per share increases anddividend pay-out decreases.
   - **b.** When IRR is greater than cost of capital, the price per share decreases anddividend pay-out increases.
   - **c.** When IRR is equal to cost of capital, the price per share increases anddividend pay-out decreases.
   - **d.** When IRR is lower than cost of capital, the price per share increases anddividend pay-out decreases.

10. Compute EPS according to Graham & Dodd approach from the giveninformation:

Market price	**Rs. 56**
Dividend pay-out ratio	**60%**
Multiplier	**2**

a. Rs. 30

b. Rs. 56

c. Rs. 28

d. Rs. 84

11. Which among the following is not an assumption of Walter's Model?

a. Rate of return and cost of capital are constant

b. Information is freely available to all

c. There is discrimination in taxes

d. The firm has perpetual life

Answers to the MCQs

1.	**(d)**	**2.**	**(c)**	**3.**	**(c)**	**4.**	**(c)**	**5.**	**(a)**	**6.**	**(b)**
7.	**(c)**	**8.**	**(a)**	**9.**	**(a)**	**10.**	**(a)**	**11.**	**(c)**		

9. MANAGEMENT OF WORKING CAPITAL

1. **The credit terms may be expressed as "3/15 net 60". This means that a 3% discount will be granted if the customer pays within 15 days, if he does not avail the offer, he must make payment within 60 days.**
   - **a.** I agree with the statement
   - **b.** I do not agree with the statement
   - **c.** I cannot say.

2. **The term 'net 50' implies that the customer will make payment:**
   - **a.** Exactly on 50th day
   - **b.** Before 50th day
   - **c.** Not later than 50th day
   - **d.** None of the above.

3. **Trade credit is a source of :**
   - **a.** Long-term finance
   - **b.** Medium term finance
   - **c.** Spontaneous source of finance
   - **d.** None of the above.

4. **The term float is used in:**
   - **a.** Inventory Management
   - **b.** Receivable Management
   - **c.** Cash Management
   - **d.** Marketable securities.

5. **William J Baumol's model of Cash Management determines optimum cash levelwhere the carrying cost and transaction cost are:**
   - **a.** Maximum
   - **b.** Minimum
   - **c.** Medium
   - **d.** None of the above.

6. **In Miller – ORR Model of Cash Management:**
   - **a.** The lower, upper limit, and return point of Cash Balances are set out
   - **b.** Only upper limit and return point are decided
   - **c.** Only lower limit and return point are decided
   - **d.** None of the above are decided.

7. **Working Capital is defined as:**
   - **a.** Excess of current assets over current liabilities
   - **b.** Excess of current liabilities over current assets
   - **c.** Excess of Fixed Assets over long-term liabilities
   - **d.** None of the above.

8. **Working Capital is also known as "Circulating Capital, fluctuating Capital andrevolving capital". The aforesaid statement is;**
   - **a.** Correct
   - **b.** Incorrect
   - **c.** Cannot say.

9. **The basic objectives of Working Capital Management are:**
   - **a.** Optimum utilization of resources for profitability
   - **b.** To meet day-to-day current obligations
   - **c.** Ensuring marginal return on current assets is always more than cost ofcapital
   - **d.** Select any one of the above statements.

10. **The term Gross Working Capital is known as:**
    - **a.** The investment in current liabilities
    - **b.** The investment in long-term liability
    - **c.** The investment in current assets
    - **d.** None of the above.

11. **The term net working capital refers to the difference between the current assetsminus current liabilities.**
    - **a.** The statement is correct
    - **b.** The statement is incorrect
    - **c.** I cannot say.

12. The term "Core current assets' was coined by:

a. Chore Committee

b. Tandon Committee

c. Jilani Committee

d. None of the above.

13. The concept operating cycle refers to the average time which elapses betweenthe acquisition of raw materials and the final cash realization. This statement is:

a. Correct

b. Incorrect

c. Partially True

d. I cannot say.

14. As a matter of self-imposed financial discipline can there be a situation of zero working capital now-a-days in some of the professionally managed organizations.

a. Yes

b. No

c. Impossible

d. Cannot say.

15. Over trading arises when a business expands beyond the level of funds available.The statement is:

a. Incorrect

b. Correct

c. Partially correct

d. I cannot say.

16. A Conservative Working Capital strategy calls for high levels of current assetsin relation to sales.

a. I agree

b. Do not agree

c. I cannot say.

17. The term Working Capital leverage refer to the impact of level of working capital on company's profitability. This measures the responsiveness of ROCE for changes in current assets.

a. I agree

b. Do not agree

c. The statement is partially true.

18. The term spontaneous source of finance refers to the finance which naturallyarise in the course of business operations. The statement is:

a. Correct

b. Incorrect

c. Partially Correct

d. I cannot say.

19. Under hedging approach to financing of working capital requirements of a firm, each asset in the balance sheet assets side would be offset with a financing instrument of the same approximate maturity. This statement is:

a. Incorrect

b. Correct

c. Partially correct

d. I cannot say.

20. Trade credit is a:

a. Negotiated source of finance

b. Hybrid source of finance

c. Spontaneous source of finance

d. None of the above.

21. Factoring is a method of financing whereby a firm sells its trade debts at adiscount to a financial institution. The statement is:

a. Correct

b. Incorrect

c. Partially correct

d. I cannot say.

22. A factoring arrangement can be both with recourse as well as without recourse:

a. True

b. False

c. Partially correct

d. Cannot say.

23. The Bank financing of working capital will generally be in the following form. Cash Credit, Overdraft, bills discounting, bills acceptance, line of credit; Letter of credit and bank guarantee.

a. I agree

b. I do not agree

c. I cannot say.

24. When the items of inventory are classified according to value of usage, thetechnique is known as:

a. XYZ Analysis

b. ABC Analysis

c. DEF Analysis

d. None of the above.

25. When a firm advises its customers to mail their payments to special Post Officecollection centers, the system is known as.

a. Concentration banking

b. Lock Box system

c. Playing the float

d. None of the above.

Answers to the MCQs

1.	**(a)**	**2.**	**(c)**	**3.**	**(c)**	**4.**	**(c)**	**5.**	**(b)**	**6.**	**(a)**
7.	**(a)**	**8.**	**(a)**	**9.**	**(b)**	**10.**	**(c)**	**11.**	**(a)**	**12.**	**(b)**
13.	**(a)**	**14.**	**(a)**	**15.**	**(b)**	**16.**	**(a)**	**17.**	**(a)**	**18.**	**(a)**
19.	**(b)**	**20.**	**(c)**	**21.**	**(a)**	**22.**	**(a)**	**23.**	**(a)**	**24.**	**(b)**
25.	**(b)**										