

LEVERAGE**Question 1**

The following summarises the percentage changes in operating income, percentage changes in revenues, and betas for four pharmaceutical firms.

Firm	Change in revenue	Change in operating income	Beta
PQR Ltd.	27%	28%	1.00
RST Ltd.	25%	32%	1.15
TUV Ltd.	23%	36%	1.30
WXY Ltd.	21%	40%	1.40

Required:

- Calculate the degree of operating leverage for each of these firms. Comment also.
- Use the operating leverage to explain why these firms have different beta. (this part can be solved only after studying cost of capital)

(PE-II-Nov. 2004) (6 marks)

Question 2

A Company had the following Balance Sheet as on March 31, 2006:

Liabilities and Equity	Rs. (in crores)	Assets	Rs. (in crores)
Equity Share Capital (one crore shares of Rs. 10 each)	10	Fixed Assets (Net)	25
Reserves and Surplus	2	Current Assets	15
15% Debentures	20		
Current Liabilities	<u>8</u>		
	<u>40</u>		<u>40</u>

The additional information given is as under:

Fixed Costs per annum (excluding interest)	Rs. 8 crores
Variable operating costs ratio	65%
Total Assets turnover ratio (Turnover/Total Assets)	2.5
Income-tax rate	40%

Required:

Calculate the following and comment:

- Earnings per share
- Operating Leverage
- Financial Leverage
- Combined Leverage.

(PE-II-Nov. 2006)(8 marks)

Question 3

The following details of RST Limited for the year ended 31March, 2006 are given below:

Operating leverage	1.4
Combined leverage	2.8
Fixed Cost (Excluding interest)	Rs. 2.04 lakhs
Sales	Rs. 30.00 lakhs
12% Debentures of Rs. 100 each	Rs. 21.25 lakhs
Equity Share Capital of Rs. 10 each	Rs. 17.00 lakhs
Income tax rate	30 per cent

Required:

(i) Calculate Financial leverage

(ii) Calculate P/V ratio and Earning per Share (EPS)

(iii) If the company belongs to an industry, whose assets turnover (Turnover/asset) is 1.5, does it have a high or low assets leverage?

(iv) At what level of sales the Earning before Tax (EBT) of the company will be equal to zero?

(PCC-May 2007) (8 marks)

Question 4

Differentiate between Business risk and Financial risk.

(PCC-May 2007) (3 marks)

Question 5

A firm has Sales of Rs. 40 lakhs; Variable cost of Rs. 25 lakhs; Fixed cost of Rs. 6 lakhs; 10% debt of Rs. 30 lakhs; and Equity Capital of Rs. 45 lakhs. Required: Calculate operating and financial leverage.

(PCC-Nov 2007) (2 marks)

Question 6

The following data relate to RT Ltd:

	Rs.
Earning before interest and tax (EBIT)	10,00,000
Fixed cost	20,00,000
Earning Before Tax (EBT)	8,00,000

Required: Calculate combined leverage

(PCC-May 2008) (2 marks)

Question 7

A company operates at a production level of 1,000 units. The contribution is Rs. 60 per unit, operating leverage is 6, and combined leverage is 24. If tax rate is 30%, what would be its earnings after tax?

(PCC-Nov 2008) (3 marks)

Question 8

Annual sales of a company is Rs. 60,00,000. Sales to variable cost ratio is 150 per cent and Fixed cost other than interest is Rs. 5,00,000 per annum. Company has 11 per cent debentures of Rs. 30,00,000. You are required to calculate the operating, Financial and combined leverage of the company.

(PE II-Nov 2008) (3 marks)

Question 9 (Ratio & Leverage mix)

Discuss the impact of financial leverage on shareholders wealth by using return-on-assets (ROA) and return-on-equity (ROE) analytic framework.

(PE-II-May 2003, May 2004) (3 marks)

Question 10 (Ratio Analysis & leverage mix)

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

(PCC-May 2007) (2 marks)

Question 11 What do you understand by Business Risk and Financial Risk?(IPCC-Nov 2009) (2 marks)

Question 12 From the following Financial data of company A and company B :
Prepare their Income statement.

	Company A	Company B
Variable cost	56,000	60% of Sales
Fixed cost	20,000	-
Interest expenses	12,000	9,000
Financial Leverage	5 : 1	-
Operating Leverage	-	4 : 1
Income tax rate	30%	30%
Sales	-	1,05,000

(IPCC – Nov 2009)(8 marks)

Question 13 Calculate the degree of operating leverage, degree of financial leverage and the degree of combined leverage for following firms and interpret the results:

	P	Q	R
Output (Units)	2,50,000	1,25,000	7,50,000
Fixed Cost (Rs.)	5,00,000	2,50,000	10,00,000
Unit Variable cost (Rs.)	5	2	7.50
Unit selling price (Rs.)	7.50	7	10.0
Interest expenses (Rs.)	75,000	25,000	-

(IPCC-Nov 10) (4 Marks)

Question 14 (cost accounting question)

MNP Ltd sold 2,75,000 units of its product at Rs.37.50 per unit. Variable costs are Rs.17.50 per unit (manufacturing costs of Rs. 14 and selling cost of Rs.3.50 per unit). Fixed costs are incurred uniformly throughout the year and amount to 35,00,000 (including depreciation of Rs.15,00,000). There are no beginning or ending inventories. (IPCC-Nov 10) **(8 Marks)** Required:

- (i) Estimate breakeven sales level quantity and cash breakeven sales level quantity.
- (ii) Estimate the P/V ratio.
- (iii) Estimate the number of units that must be sold to earn an income (EBIT) of Rs.2,50,000.
- (iv) Estimate the sales level to achieve an after-tax income (PAT) of Rs. 2,50,000. Assume 40% corporate Income Tax rate.

Question 15

You are given two financial plans of a company which has two financial situations. The detailed information are as under:

Installed Capacity	10,000 units
Actual production and sales	60% of installed capacity
Selling price per unit	` 30
Variable cost per unit	` 20

Fixed Cost:

Situation 'A' = Rs.20,000

Situation 'B' = Rs. 25,000

Capital Structure of the company is as follows:

	Financial Plans	
	XY(`)	XM(`)
Equity	12,000	35,000
Debt (Cost of debt 12%)	40,000	10,000
	<u>52,000</u>	<u>45,000</u>

You are required to calculate operating leverage and financial leverage of both the plans.

(IPCC-May 11) (5 Marks)

Question 16 (leverages & Ratio) Alpha Ltd. has furnished the following Balance Sheet as on March 31, 2011:

Liabilities	`	Assets	`
Equity Share Capital (1,00,000 Equity share of ` 10 each)	10,00,000	Fixed Assets	30,00,000
General Reserve	2,00,000	Current Assets	18,00,000
15% Debentures	28,00,000		
Current Liabilities	8,00,000		
	<u>48,00,000</u>		<u>48,00,000</u>

Additional information:

- | | |
|--|-----------|
| i. Annual Fixed cost other than Interest | 28,00,000 |
| ii. Variable Cost Ratio | 60% |
| iii. Total Assets Turnover Ratio | 2.5 |
| iv. Tax Rate | 30% |

You are required to calculate:

- Earnings Per Share (EPS), and
- Combined Leverage. (IPCC-Nov 11) (8 marks)

Question 17 The capital structure of JCPL Ltd. is as follows:

Equity share capital of Rs. 10 each	8,00,000
8% Preference share capital of Rs. 10 each	6,25,000
10% Debentures of Rs. 100 each	4,00,000
	<u>18,25,000</u>

Additional Information:

Profit after tax (tax rate 30%) Rs.1,82,000.

Operating expenses (including depreciation Rs.90,000) being 1.50 times of EBIT.

Equity share dividend paid 15%.

Market price per equity share Rs.20.

Required to calculate:

- Operating and financial leverage.
- Cover the preference and equity share dividends.
- The earning yield and price earning ratio. **(Solve this after studying ratios)**
- The net fund flow. **(Solve this after fund flow)** (IPCC-May 12)(8 marks)

Question 18

X Limited has estimated that for a new product its break-even point is 20,000 units if the item is sold for Rs. 14 per unit and variable cost Rs. 9 per unit. Calculate the degree of operating leverage for sales volume 25,000 units and 30,000 units. (IPCC-Nov. 12) (5 Marks)

Question 19

The following information related to XL Company Ltd. for the year ended 31st March, 2013 are available to you:

Equity share capital of ` 10 each	` 25 lakh
11% Bonds of ` 1000 each	` 18.5 lakh
Sales	` 42 lakh
Fixed cost (Excluding Interest)	` 3.48 lakh
Financial Leverage	1.39
Profit Volume Ratio	25.55%
Income Tax Rate Applicable	35%

you are required to calculate:

- (i) Operating Leverage;
- (ii) Combined Leverage; and
- (iii) Earning per share.

(IPCC-May 13) (6 Marks)

Question 20

Calculate the degree of operating leverage, degree of financial leverage and the degree of combined leverage for the following firms:

	N	S	D
Production (in units)	17,500	6,700	31,800
Fixed cost	4,00,000	3,50,000	2,50,000
Interest on loan	1,25,000	75,000	Nil
Selling price per unit	85.00	130.00	37.00
Variable cost per unit	38.00	42.50	12.00

(IPCC-Nov. 13) (5 Marks)

Question 21

What is the meaning of Margin of Safety (MOS)? State the relationship between Operating Leverage and Margin of Safety Ratio. (IPCC-Nov. 13) (4 Marks)

Question 22

A company had the following Balance Sheet as on 31st March, 2014:

Liabilities	Rs. (In crores)	Assets	Rs. (In crores)
Equity Share Capital (50 lakhs shares of Rs. 10 each)	5	Fixed Assets (Net)	12.5
Reserves and Surplus	1	Current Assets	7.5
15% Debentures	10		
Current Liabilities	4		
	20		20

The additional information is given as under:

Fixed cost per annum (excluding interest)	Rs. 4 crores
Variable operating cost ratio	65%
Total assets turnover ratio	2.5
Income Tax rate	30%

Required:

Calculate the following and comment:

- (i) Earnings per Share
- (ii) Operating Leverage
- (iii) Financial Leverage
- (iv) Combined Leverage

(IPCC May 2014)(8 marks)

Question 23

Distinguish between Business Risk and Financial Risk.

(IPCC Nov 2014)(4 marks)

Question 24

Following information are related to four firms of the same industry:-

Firm	Change in Revenue	Change in Operating Income	Change in earnings per share
P	27%	25%	30%
Q	25%	32%	24%
R	23%	36%	21%
S	21%	40%	23%

Find out:

- (i) Degree of Operating Leverage, and
- (ii) Degree of Combined Leverage for all the firms.

(IPCC May 2015)(5 marks)

Question 25

From the following details of X Ltd., prepare the Income Statement for the year ended 31st December 2014:

Financial Leverage	2
Interest	Rs. 2,000
Operating Leverage	3
Variable Cost as a percentage of sale	75%
Income tax rate	30%

(IPCC Nov 2015) (5 marks)

LEVERAGE

Answer 1

(i) Degree of operating leverage = $\frac{\% \text{ Change in Operating income}}{\% \text{ Change in Revenues}}$

PQR Ltd .	=	28% / 27%	=	1.04
RST Ltd.	=	0.32 / 0.25	=	1.28
TUV Ltd.	=	0.36 / 0.23	=	1.57
WXY Ltd.	=	0.40 / 0.21	=	1.90

(ii) High operating leverage means higher business risk. Now beta captures all type of risk including business risk. Therefore we can observe that higher the DOL higher the Beta.

Answer 2

Total Assets = Rs. 40 crores

Total Asset Turnover Ratio = 2.5

Hence, Total Sales = $40 \times 2.5 = \text{Rs. } 100$ crores

Computation of Profits after Tax (PAT)

	(Rs. in crores)
Sales	100
Less: Variable operating cost @ 65%	65
Contribution	35
Less: Fixed cost (other than Interest)	8
EBIT	27
Less: Interest on debentures (15% × 20)	3
PBT	24
Less: Tax 40%	9.6
PAT	14.4

(i) Earnings per share

$$\therefore \text{EPS} = \frac{\text{Rs. } 14.4 \text{ crores}}{1 \text{ crore equity shares}} = \text{Rs. } 14.40$$

(ii) Operating Leverage

$$\text{Operating leverage} = \frac{\text{Contribution}}{\text{EBIT}} = \frac{35}{27} = 1.296$$

Operating leverage indicates level of business risk. Higher the DOL higher the business risk & vice versa.

(iii) Financial Leverage

$$\text{Financial Leverage} = \frac{\text{EBIT}}{\text{PBT}} = \frac{27}{24} = 1.125$$

Financial leverage indicates financial risk. Higher the DFL higher the financial risk & vice versa.

(iv) Combined Leverage

$$\begin{aligned} \text{Combined Leverage} &= \frac{\text{Contribution}}{\text{EBIT}} \times \frac{\text{EBIT}}{\text{PBT}} \\ &= 1.296 \times 1.125 \\ &= 1.458 \end{aligned}$$

It indicates total risk. If operating and/or financial risk increases DTL also increases.

Answer 3**(i) Financial leverage**

Combined Leverage = Operating Leverage (OL) x Financial Leverage (FL)

$$2.8 = 1.4 \times FL$$

$$FL = 2$$

$$\text{Financial Leverage} = 2$$

(ii) P/V Ratio and EPS

$$\text{Operating leverage} = \frac{C}{C - F}$$

$$1.4 = \frac{C}{C - 204000}$$

$$1.4 (C - 2,04,000) = C$$

$$1.4 C - 2,85,600 = C$$

$$0.4C = 2,85,600$$

$$C = 7,14,000$$

$$\text{P/V ratio} = \frac{C}{S} \times 100 = \frac{714000}{3000000} \times 100 = 23.8\%$$

EPS = Profit after tax / No. of equity shares

EBT = Sales – V – FC – Interest

$$= 30,00,000 - 22,86,000 - 2,04,000 - 2,55,000$$

$$= 2,55,000$$

PAT = EBT – Tax

$$= 2,55,000 - 76,500 = 1,78,500$$

$$\text{EPS} = 1,78,500 / 170000 = 1.05$$

(iii) Assets turnover

$$\text{Assets turnover} = \text{Sales} / \text{Total Assets} = 30,00,000 / 38,25,000 = 0.784$$

0.784 < 1.5 means lower than industry turnover.

(iv) EBT zero means 100% reduction in EBT. Since combined leverage is 2.8, sales have to be dropped by $100/2.8 = 35.71\%$. Hence new sales will be $30,00,000 \times (100 - 35.71) = 19,28,700$. Therefore, at 19,28,700 level of sales, the Earnings before Tax of the company will be equal to zero.

Answer 4

Business risk refers to the risk associated with the firm's operations. It is uncertainty about the future operating income, i.e. how well can the operating income be predicted? It can be measured by standard deviation of basic earning power ratio.

Whereas, Financial risk refers to the additional risk placed on firm's shareholders as a result of debt use in financing. Companies that issue more debt instruments would have higher financial risk than companies financed mostly by equity. Financial risk can be measured by ratios such as firm's financial leverage multiplier, total debt to assets ratio etc.

Answer 5**Calculation of Operating and Financial Leverage**

	Rs.
Sales	40,00,000
Less: Variable cost	<u>25,00,000</u>
Contribution (C)	15,00,000
Less: Fixed cost	<u>6,00,000</u>
EBIT	9,00,000
Less: Interest	<u>3,00,000</u>
EBT	6,00,000

$$\text{Operating leverage} = \frac{C}{EBIT} = \frac{15,00,000}{9,00,000} = 1.67$$

$$\text{Financial leverage} = \frac{EBIT}{EBT} = \frac{9,00,000}{6,00,000} = 1.50$$

Answer 6**Contribution:**

$$C = S - V \text{ and } EBIT = C - F$$

$$10,00,000 = C - 20,00,000$$

$$\Rightarrow C = 30,00,000$$

$$\text{Operating leverage} = C / EBIT = 30,00,000 / 10,00,000 = 3 \text{ times}$$

$$\text{Financial leverage} = EBIT / EBT = 10,00,000 / 8,00,000 = 1.25 \text{ times}$$

$$\text{Combined leverage} = OL \times FL = 3 \times 1.25 = 3.75 \text{ times}$$

Answer 7**Computation of Earnings after tax**

$$\text{Contribution} = \text{Rs. } 60 \times 1,000 = \text{Rs. } 60,000$$

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

$$6 \times \text{Financial Leverage} = 24$$

$$\text{Financial Leverage} = 4$$

$$\text{Operating Leverage} = \frac{\text{Contribution}}{EBIT} \quad 6 = \frac{60000}{EBIT}$$

$$EBIT = 10000$$

$$\text{Financial Leverage} = \frac{EBIT}{EBT} \quad 4 = \frac{10,000}{EBT}$$

$$EBT = 2500$$

$$\text{Since tax rate} = 30\%$$

$$\text{Earnings after Tax (EAT)} = EBT (1 - 0.30)$$

$$= 2,500 (0.70)$$

$$= 1,750$$

Answers 8**Calculation of Leverages:**

	Rs.
Sales	60,00,000
Less: Variable Cost (Sales x 100/150)	<u>40,00,000</u>
Contribution	20,00,000
Less: Fixed Cost	<u>5,00,000</u>
EBIT	15,00,000
Less: Interest on Debentures	<u>3,30,000</u>
EBT	11,70,000

Operating Leverage = Contribution/ EBIT = Rs.20,00,000 /Rs.15,00,000 =1.3333

Financial Leverage = EBIT/ EBT = Rs.15,00,000 /Rs.11,70,000 = 1.2821

Combined Leverage = OL x FL or Contribution/ EBT

=1.3333x1.2821

= 1.7094.

Answer 9

Following are the formula for Return on Assets & Return on Equity:

$$ROA = \frac{NOPAT}{Sales} \times \frac{Sales}{Capital\ employed}$$

$$ROE = ROA + \frac{D}{E} (ROA - K_d)$$

Where

$$NOPAT = EBIT * (1 - T_c)$$

Capital employed = Shareholders funds + Loan funds

D = Debt amount in capital structure

E = Equity capital amount in capital structure

K_d = Interest rate * (1 - T_c) in case of fresh loans of a company.

K_d = Yield to maturity *(1- T_c) in case of existing loans of a company.

In the above formula for Return on Equity, we can observe that if cost of debt is more than return on assets then ROE will be less than ROA and if in this situation Debt equity ratio is higher, it will magnify the deficiency. It means that financial leverage is a double edged sword. It magnifies profits as well as losses.

Answer 10

$$\begin{aligned} ROE &= [ROI + \{(ROI - r) \times D/E\}] (1 - t) \\ &= [0.20 + \{(0.20 - 0.10) \times 0.60\}] (1 - 0.40) \\ &= [0.20 + 0.06] \times 0.60 = 0.1560 \\ ROE &= 15.60\% \end{aligned}$$

Answer 11

Business Risk: It is measured by operating leverage and is dependent upon operating fixed cost. Higher the fixed cost higher the operating leverage and vice versa. It is inversely related to margin of safety. Higher the sales, higher the MOS and lower business risk.

Financial Risk: It is measured by financial leverage and is dependent upon Interest and dividend on preference shares. It should be neither too high nor too low. Lower financial risk results in lower return to investors while higher financial risk results in higher expectations of equity shareholders which ultimately results in lower wealth. Hence it should be optimum.

Answer 12

Particulars	Company A	Company B
Sales	91000	105000
Variable Cost	-56000	-63000
Contribution	35000	42000
Fixed Cost	-20000	-31500
EBIT	15000	10500
Interest	-12000	-9000
EBT	3000	1500
Tax @30%	900	-450
EAT	2100	1050

Company A:

$$DFL = \frac{EBIT}{EBIT - Interest} \quad 5 = \frac{E}{E - 12000} \quad E = 15000$$

Company B:

$$DFL = \frac{Contribution}{Contribution - Fixed Cost} \quad 4 = \frac{42000}{42000 - FC} \quad FC = 31500$$

Answer 13

	P	Q	R
Operating Leverage= $\frac{Contribution}{Contribution - Fixed Cost}$	$\frac{625000}{625000 - 500000} = 5$	$\frac{625000}{625000 - 250000} = 1.67$	$\frac{1875000}{1875000 - 1000000} = 2.14$
Financial Leverage= $\frac{EBIT}{EBIT - Interest}$	$\frac{125000}{125000 - 75000} = 2.50$	$\frac{375000}{375000 - 25000} = 1.07$	$\frac{875000}{875000 - 0} = 1$
Combined Leverage= $\frac{Contribution}{Contribution - FC - Int}$	$\frac{625000}{625000 - 500000 - 75000} = 12.5$	$\frac{625000}{625000 - 250000 - 25000} = 1.79$	$\frac{1875000}{1875000 - 1000000} = 2.14$

Comments: Company P has highest level of business, financial and combined risk. R has higher business risk than Q but it has lower financial risk than Q.

Answer 14

(i)

$$Break\ even\ sales\ quantity = \frac{Fixed\ Cost}{Contribution\ per\ unit} = \frac{35,00,000}{20} = 1,75,000$$

$$\text{Cash Break even sales quantity} = \frac{\text{Cash Fixed Cost}}{\text{Contribution per unit}} = \frac{20,00,000}{20} = 1,00,000$$

(ii)

$$\text{PV Ratio} = \frac{\text{Contribution per unit}}{\text{Selling price}} = \frac{20}{37.5} = 53.33\%$$

(iii) No. of units to be sold to earn an EBIT of Rs.2,50,000 = (2,50,000 + 35,00,000)/20 = 1,87,500

(iv) After tax profit of Rs.250000 means EBIT of Rs.4,16,666 (Rs.250000/0.6) and contribution of Rs.39,16,667 (Rs.416667+3500000). Now No. of units = 3916667/20 = 195833 units.

Answer 15

Working notes:

Actual production & sales = 10,000 x 60% = 6,000 units

Contribution = 6,000 units x `10 = `60,000

Interest: XY = 40,000 x 12% = 4,800

XM = 10,000 x 12% = 1,200

	Plan	Situation A Fixed Cost ` 20,000	Situation B Fixed Cost ` 25,000
Operating Leverage= $\frac{\text{Contribution}}{\text{Contribution} - \text{Fixed Cost}}$	XY & XM	$\frac{60000}{60000 - 20000} = 1.5$	$\frac{60000}{60000 - 25000} = 1.71$
Financial Leverage= $\frac{\text{EBIT}}{\text{EBIT} - \text{Interest}}$	XY	$\frac{40000}{40000 - 4800} = 1.14$	$\frac{35000}{35000 - 4800} = 1.16$
	XM	$\frac{40000}{40000 - 1200} = 1.03$	$\frac{35000}{35000 - 1200} = 1.04$

Answer 16

$$\text{Total Assets Turnover Ratio} = \frac{\text{Sales}}{\text{Total Assets}}$$

$$2.5 = \frac{\text{Sales}}{4800000}$$

$$\text{Sales} = 1,20,00,000$$

(i) Calculation of EPS

Particulars	Amount (` in lakhs)
Sales	120
Variable Cost (60%)	-72
Contribution	48
Fixed Cost	-28
EBIT	20

Interest (28 x 15%)	-4.2
PBT	15.8
Tax @30%	-4.74
PAT	11.06
No. of equity shares	1
EPS	11.06

(ii) Combined Leverage

$$DTL = \frac{\text{Contribution}}{\text{Contribution} - \text{Fixed Cost} - \text{Interest}}$$

$$DTL = \frac{4800000}{4800000 - 2800000 - 420000} = 3.04$$

Answer 17

Working notes:

- Profit before tax = 1,82,000/70% = 2,60,000
- EBIT = PBT + Interest = 2,60,000 + 40,000 = 3,00,000
Let us assume that depreciation is fixed and other operating expenses are variable.
- Contribution = EBIT + Fixed Cost = 3,00,000 + 90,000 = 3,90,000
- Operating expenses = 3,00,000 x 1.5 = 4,50,000
- Variable expenses = 4,50,000 – 90,000 = 3,60,000

(i) Operating and financial leverage

$$\text{Degree of operating leverage} = \frac{\text{Contribution}}{\text{Contribution} - \text{Fixed Cost}} = \frac{3,90,000}{3,90,000 - 90,000} = 1.30$$

$$\text{Degree of financial leverage} = \frac{\text{EBIT}}{\text{EBIT} - \text{Interest} - \frac{D_P}{1-t}} = \frac{3,00,000}{3,00,000 - 40,000 - \frac{50,000}{0.70}} = 1.59$$

(ii) Cover the preference and equity share dividend: This language suggests that question want us to calculate a combined coverage ratio for equity & preference dividend.

$$\text{Coverage ratio} = \frac{\text{Profit after tax}}{\text{Equity \& preference dividend}} = \frac{1,82,000}{50,000 + 1,20,000} = 1.07$$

(iii)

$$\text{EPS} = (182000 - 50,000) / 80000 = 1.65$$

$$\text{Earning yield} = \frac{\text{EPS}}{\text{MPS}} = \frac{1.65}{20} = 8.25\%$$

$$\text{PE ratio} = \frac{\text{MPS}}{\text{EPS}} = \frac{20}{1.65} = 12.12 \text{ times}$$

(iv) Net fund flow

Fund from operation = Profit after tax + Depreciation = 1,82,000 + 90,000 = 2,72,000

Answer 18

Contribution = Sales - Variable cost

$$14 - 9 = 5$$

Fixed cost = BEP units X cont. p.u.

$$20,000 \times 5 = 1,00,000$$

$$\text{DOL (25,000 units)} = \frac{\text{Contribution}}{\text{Contribution} - \text{Fixed cost}}$$

$$\text{DOL} = \frac{1,25,000}{1,25,000 - 1,00,000} = 5$$

$$\text{DOL (30,000 units)} = \frac{\text{Contribution}}{\text{Contribution} - \text{Fixed cost}}$$

$$\text{DOL} = \frac{1,50,000}{1,50,000 - 1,00,000} = 3$$

Answer 19**W.N. 1**

P/V Ratio = Contribution / sales

25.55% = Contribution / 42,00,000

Contribution = 10,73,100

(i) Operating Leverage:

$$\text{Operating Leverage} = \frac{\text{Contribution}}{\text{Contribution} - \text{Fixed cost}}$$

$$\text{Operating Leverage} = \frac{10,73,100}{10,73,100 - 3,48,000}$$

Operating Leverage = 1.48

(ii) Combined Leverage:

Combined Leverage = Operating Leverage X Financial Leverage

Combined Leverage = 1.48 X 1.39 = 2.06

(iii) Earnings per share:

EPS = EAESH / No of share

EAESH = (EBIT - Int.) (1 - Tax Rate)

EAESH = (7,25,100 - 2,03,500) X .65 = 3,39,040

EPS = 3,39,040 / 2,50,000 = 1.36

Answer 20

$$\text{DOL} = \frac{\text{Contribution}}{\text{Contribution} - \text{Fixed cost}} = \frac{\text{Contribution}}{\text{EBIT}}$$

Particular	N	S	D
(A) Contribution = sales - Variable cost	47 p.u.	87.5 p.u.	25
(B) No. of unit	17,500	6,700	31,800
(C) Total Contribution (A x B)	8,22,500	5,86,250	7,95,000
(D) Fixed cost	4,00,000	3,50,000	2,50,000
(E) EBIT	4,22,500	2,36,250	5,45,000
(F) = C/D = DOL = $\frac{\text{Contribution}}{\text{EBIT}}$	1.95	2.48	1.46
(G) Interest	1,25,000	75,000	Nil
(H) = E-G = PAT	2,97,500	1,61,250	5,45,000
(I) = E/H = DFL = $\frac{\text{EBIT}}{\text{EBIT}-\text{Interest}}$	1.42	1.47	1
(J) DTL = DOL X DFL	2.78	3.65	1.46

Answer 21

Margin of Safety (MOS) is the excess of total sales over the Break even sales. MOS defines the amount upto which level sales can decline before occurring loss.

Therefore MOS = Total Sales - Break even sales and MOS ratio = $\frac{\text{Sales}-\text{Break even sales}}{\text{Sales}}$

Break even sales (BE sales) will depends on contribution margin (BE sales = Fixed Cost / Contribution margin). Contribution margin is related to operating leverage also. Operating leverage is calculated as Contribution / Operating profit and contribution margin plays an imported role in it. if sales are expected to increase, lower operating leverage will result in higher profit higher variable cost and lower fixed cost will result into higher MOS and risk will be lower and vice versa.

So like Operating leverage, MOS is a measure of risk as to what extent an organisation is exposed to change in sales volume.

Answer 22**Working Notes:**

$$1. \text{ Total Assets Turnover Ratio} = \frac{\text{Total Sales}}{\text{Total Assets}}$$

$$1.5 = \frac{\text{Total Sales}}{20 \text{ crores}}$$

$$\text{Total Sales} = 20 * 2.5 = \text{Rs. } 50 \text{ crores}$$

2. Computation of Profit after Tax (PAT)

	Rs. (In crores)
Sales	50.00
Less: Variable Operating Cost @ 65%	32.50
Contribution	17.50
Less: Fixed Cost (other than interest)	(4.00)
EBIT	13.50
Less: Interest on Debentures (15%*10)	(1.50)
PBT	12.00
Less: Tax @ 30%	(3.60)
PAT	8.40

$$(i) \text{ Earnings per Share} = \frac{\text{Earnings available to equity shareholders}}{\text{No. of shares}}$$

$$= \underline{8.40}$$

$$= \frac{50}{3} = \text{Rs. } 16.80$$

Comment: It indicates earning capacity of a company and shows the dividend paying capacity of the company. A higher EPS associated with lower business and financial risk leads to increase in market price of the company and hence maximisation of wealth.

(ii) **Operating Leverage** = $\frac{\text{Contribution}}{\text{EBIT}}$

$$= \frac{17.50}{13.50} = 1.296$$

Comment: It refers to proportionate change in EBIT with respect to proportionate change in sales. If DOL Increases, business risk will increase and if DOL decreases, business risk will decrease.

(iii) **Financial Leverage** = $\frac{\text{EBIT}}{\text{PBT}}$

$$= \frac{13.50}{12.00} = 1.125$$

Comment: It refers to proportionate change in EPS with respect to proportionate change in EBIT.

(iv) **Combined Leverage** = Operating Leverage*Financial Leverage

$$= 1.296 * 1.125 = 1.458$$

Comment: It refers to proportionate change in EPS with respect to proportionate change in level of activity or volume of activity.

Answer 23

Depending on the type of business, industry, country in which the business operates and the top management the level of risk that a business faces can vary. It is important, however, that every business seeks to minimize their risk as businesses with lower risk have a higher possibility of success. The higher the risk a business has, the lower the company’s worth. However, it must also be kept in mind that certain business decisions involve considerable risk but also with the possibility of making a very high return. Therefore, business owners must make sure risks taken are well researched and calculated. The main difference between business risk and financial risk is that business risk is related to the business operations and not being able to generate adequate income to cover operating expenses, whereas financial risk is more related to the possibility of not being able to cover debt and meet financial obligations. Business risk is independent of the portion of the debt that a business holds, as opposed to financial risk that is very much influenced by the level of debt.

Answer 24

1. Degree of Operating Leverage (DOL) = $\frac{\% \text{ change in EBIT}}{\% \text{ change in Sales}}$
2. Degree of Combined Leverage (DCL) = $\frac{\% \text{ change in EPS}}{\% \text{ change in Sales}}$

Firm	DOL	DCL
P	$\frac{25\%}{27\%} = 0.926$	$\frac{30\%}{27\%} = 1.11$