

Q.1

CALCULATE the operating leverage, financial leverage and combined leverage from the following data under Situation I and II and Financial Plan A and B:

Installed Capacity	4,000 units
Actual Production and Sales	75% of the Capacity
Selling Price	₹30 per unit
Variable Cost	₹15 per unit

Fixed Cost:

Under Situation I	₹ 15,000
Under Situation-II	₹ 20,000

Capital Structure:

	Financial Plan	
	A (₹)	B (₹)
Equity	10,000	15,000
Debt (Rate of Interest at 20%)	10,000	5,000
	20,000	20,000

Ans:

(i) **Operating Leverages:**

Particulars	Situation-I (₹)	Situation-II (₹)
Sales (S) (3,000 units @ ₹ 30/- per unit)	90,000	90,000
Less: Variable Cost (VC) @ ₹15 per unit	<u>(45,000)</u>	<u>(45,000)</u>
Contribution (C)	45,000	45,000
Less: Fixed Cost (FC)	<u>15,000</u>	<u>20,000</u>
EBIT	<u>30,000</u>	<u>25,000</u>
Operating Leverage $\left(\frac{C}{EBI} \right)$	$\frac{45,000}{30,000}$	$\frac{45,000}{25,000}$
	= 1.5	= 1.8

(ii) **Financial Leverages:**

	A (₹)	B (₹)
Situation I:		
EBIT	30,000	30,000
Less: Interest on debt	<u>(2,000)</u>	<u>(1,000)</u>
EBT	28,000	29,000
Financial Leverage $\left(\frac{EBI}{EBT} \right)$	$\frac{30,000}{28,000}$	$\frac{30,000}{29,000}$
	= 1.07	= 1.03
Situation-II:		
EBIT	25,000	25,000
Less: Interest on debt	<u>(2,000)</u>	<u>(1,000)</u>
EBT	23,000	24,000
Financial Leverage $\left(\frac{EBI}{EBT} \right)$	$\frac{25,000}{23,000}$	$\frac{25,000}{24,000}$
	= 1.09	= 1.04

(iii) Combined Leverages:

	A (₹)	B (₹)
(a) Situation I	$1.5 \times 1.07 = 1.61$	$1.5 \times 1.03 = 1.55$
(b) Situation II	$1.8 \times 1.09 = 1.96$	$1.8 \times 1.04 = 1.87$

Q.2 A firm has sales of ₹ 75,00,000 variable cost is 56% and fixed cost is ₹ 6,00,000. It has a debt of ₹ 45,00,000 at 9% and equity of ₹ 55,00,000. You are required to INTERPRET:

- The firm's ROI?
- Does it have favourable financial leverage?
- If the firm belongs to an industry whose capital turnover is 3, does it have a high or low capital turnover?
- The operating, financial and combined leverages of the firm?
- If the sales is increased by 10% by what percentage EBIT will increase?
- At what level of sales the EBT of the firm will be equal to zero?
- If EBIT increases by 20%, by what percentage EBT will increase?

Ans:

Income Statement

Particulars	Amount (₹)
Sales	75,00,000
Less: Variable cost (56% of 75,00,000)	(42,00,000)
Contribution	33,00,000
Less: Fixed costs	(6,00,000)
Earnings before interest and tax (EBIT)	27,00,000
Less: Interest on debt (@ 9% on ₹ 45 lakhs)	(4,05,000)
Earnings before tax (EBT)	22,95,000

$$(i) \text{ ROI} = \frac{\text{EBIT}}{\text{Capital employed}} \times 100 = \frac{\text{EBIT}}{\text{Equity} + \text{Debt}} \times 100$$
$$= \frac{27,00,000}{55,00,000 + 45,00,000} \times 100 = 27\%$$

(ROI is calculated on Capital Employed)

(ii) ROI = 27% and Interest on debt is 9%, hence, it has a favourable financial leverage.

$$(iii) \text{ Capital Turnover} = \frac{\text{Net Sales}}{\text{Capital}}$$

$$\text{Or} = \frac{\text{Net Sales}}{\text{Capital}} = \frac{\text{₹ } 75,00,000}{\text{₹ } 1,00,00,000} = 0.75$$

Which is very low as compared to industry average of 3.

(iv) Calculation of Operating, Financial and Combined leverages

$$(a) \text{ Operating Leverage} = \frac{\text{Contribution}}{\text{EBIT}} = \frac{\text{₹ } 33,00,000}{\text{₹ } 27,00,000} = 1.22 \text{ (approx)}$$

$$(b) \text{ Financial Leverage} = \frac{\text{EBIT}}{\text{EBT}} = \frac{\text{₹ } 27,00,000}{\text{₹ } 22,95,000} = 1.18 \text{ (approx)}$$

$$(c) \text{ Combined Leverage} = \frac{\text{Contribution}}{\text{EBT}} = \frac{\text{₹ } 33,00,000}{\text{₹ } 22,95,000} = 1.44 \text{ (approx)}$$

$$\text{Or} = \text{Operating Leverage} \times \text{Financial Leverage} = 1.22 \times 1.18 = 1.44 \text{ (approx)}$$

(v) Operating leverage is 1.22. So if sales is increased by 10%. EBIT will be increased by 1.22×10 i.e. 12.20% (approx)

(vi) Since the combined Leverage is 1.44, sales have to drop by $100/1.44$ i.e. 69.44% to bring EBT to Zero

$$\begin{aligned} \text{Accordingly, New Sales} &= \text{₹ } 75,00,000 \times (1-0.6944) \\ &= \text{₹ } 75,00,000 \times 0.3056 \\ &= \text{₹ } 22,92,000 \text{ (approx)} \end{aligned}$$

Hence at ₹22,92,000 sales level EBT of the firm will be equal to Zero.

(vii) Financial leverage is 1.18. So, if EBIT increases by 20% then EBT will increase by $1.18 \times 20 = 23.6\%$ (approx)

Q.3

A Company had the following Balance Sheet as on March 31, 2019:

Equity and Liabilities	(₹ in crore)	Assets	(₹ in crore)
Equity Share Capital (10 crore shares of ₹ 10 each)	100	Fixed Assets (Net)	250
Reserves and Surplus	20	Current Assets	150
15% Debentures	200		
Current Liabilities	80		
	400		400

The additional information given is as under:

Fixed Costs per annum (excluding interest) ₹ 80 crores

Variable operating costs ratio 65%

Total Assets turnover ratio 2.5

Income-tax rate 40%

Required:

CALCULATE the following and comment:

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

Computation of Profits after Tax (PAT)

	(₹ in crore)
Sales	1,000
Less: Variable operating cost (65% of ₹1,000 crore)	(650)
Contribution	350
Less: Fixed cost (other than Interest)	(80)
EBIT	270
Less: Interest on debentures (15% × ₹200 crore)	(30)
EBT	240
Less: Tax 40%	(96)
EAT (earnings available to equity share holders)	144

(i) Earnings per share (EPS)

$$\therefore \text{EPS} = \frac{\text{₹ 144 crores}}{10 \text{ crore equity shares}} = \text{₹ 14.40}$$

(ii) Operating Leverage

$$\text{Operating leverage} = \frac{\text{Contribution}}{\text{EBIT}} = \frac{350}{270} = 1.296$$

It indicates sensitivity of earnings before interest and tax (EBIT) to change in sales at a particular level.

(iii) Financial Leverage

$$\text{Financial Leverage} = \frac{\text{EBIT}}{\text{EBT}} = \frac{270}{240} = 1.125$$

The financial leverage is very comfortable since the debt service obligation is small vis-à-vis EBIT.

(iv) Combined Leverage

$$\text{Combined Leverage} = \frac{\text{Contribution}}{\text{EBIT}} \times \frac{\text{EBIT}}{\text{EBT}}$$

$$\text{Or, Operating Leverage} \times \text{Financial Leverage} = 1.296 \times 1.125 = 1.458$$

The combined leverage studies the choice of fixed cost in cost structure and choice of debt in capital structure. It studies how sensitive the change in EPS is vis-à-vis change in sales.

Q.4 The following summarises the percentage changes in operating income, percentage changes in revenues, and betas for four listed firms.

Firm	Change in revenue	Change in operating income	Beta
A Ltd.	35%	22%	1.00
B Ltd.	24%	35%	1.65
C Ltd.	29%	26%	1.15
D Ltd.	32%	30%	1.20

Required:

- CALCULATE the degree of operating leverage for each of these firms. Comment also.
- Use the operating leverage to EXPLAIN why these firms have different beta.

Ans:

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

A Ltd. = $0.22 / 0.35 = 0.63$

B Ltd. = $0.35 / 0.24 = 1.46$

C Ltd. = $0.26 / 0.29 = 0.90$

D Ltd. = $0.30 / 0.32 = 0.94$

It is level specific.

- High operating leverage leads to high beta. So when operating leverage is lowest i.e. 0.63, Beta is minimum (1) and when operating leverage is maximum i.e. 1.46, beta is highest i.e. 1.65

Q.5 The following information is related to YZ Company Ltd. for the year ended 31st March, 2020:

Equity share capital (of ₹ 10 each)	₹ 50 lakhs
12% Bonds of ₹ 1,000 each	₹ 37 lakhs
Sales	₹ 84 lakhs
Fixed cost (excluding interest)	₹ 6.96 lakhs
Financial leverage	1.49
Profit-volume Ratio	27.55%
Income Tax Applicable	40%

You are required to CALCULATE:

- Operating Leverage;
- Combined leverage; and
- Earnings per share.

Show calculations up-to two decimal points.

Ans:

Computation of Profits after Tax (PAT)

Particulars	Amount (₹)
Sales	84,00,000
Contribution (Sales × P/V ratio)	23,14,200
Less: Fixed cost (excluding Interest)	(6,96,000)
EBIT (Earnings before interest and tax)	16,18,200
Less: Interest on debentures (12% × ₹37 lakhs)	(4,44,000)
Less: Other fixed Interest (balancing figure)	(88,160)
EBT (Earnings before tax)	10,86,040*
Less: Tax @ 40%	4,34,416
PAT (Profit after tax)	6,51,624

(i) **Operating Leverage:**

$$= \frac{\text{Contribution}}{\text{EBIT}} = \frac{\text{₹ 23,14,200}}{\text{₹ 16,18,200}} = 1.43$$

(ii) **Combined Leverage:**

= Operating Leverage × Financial Leverage

$$= 1.43 \times 1.49 = 2.13$$

Or,

$$\text{Combined Leverage} = \frac{\text{Contribution}}{\text{EBIT}} \times \frac{\text{EBIT}}{\text{EBT}}$$

$$\text{Combined Leverage} = \frac{\text{Contribution}}{\text{EBT}} = \frac{\text{₹ 23,14,200}}{\text{₹ 10,86,040}} = 2.13$$

$$\text{Financial Leverage} = \frac{\text{EBIT}}{\text{EBT}} = \frac{\text{₹ 16,18,200}}{\text{₹ 10,86,040}} = 1.49$$

$$\text{So, EBT} = \frac{\text{₹ 16,18,200}}{1.49} = \text{₹ 10,86,040}$$

Accordingly, other fixed interest

$$= \text{₹ 16,18,200} - \text{₹ 10,86,040} - \text{₹ 4,44,000} = \text{₹ 88,160}$$

(iii) **Earnings per share (EPS):**

$$= \frac{\text{PAT}}{\text{No. of shares outstanding}} = \frac{\text{₹ 6,51,624}}{5,00,000 \text{ equity shares}} = \text{₹ 1.30}$$

Q.6

The capital structure of PS Ltd. for the year ended 31st March, 2020 consisted as follows:

Particulars	Amount in ₹
Equity share capital (face value ₹ 100 each)	10,00,000
10% debentures (₹ 100 each)	10,00,000

During the year 2019-20, sales decreased to 1,00,000 units as compared to 1,20,000 units in the previous year. However, the selling price stood at ₹ 12 per unit and variable cost at ₹ 8 per unit for both the years. The fixed expenses were at ₹ 2,00,000 p.a. and the income tax rate is 30%.

You are required to CALCULATE the following:

- The degree of financial leverage at 1,20,000 units and 1,00,000 units.
- The degree of operating leverage at 1,20,000 units and 1,00,000 units.
- The percentage change in EPS.

Ans:

Sales in units	1,20,000 (₹)	1,00,000 (₹)
Sales Value	14,40,000	12,00,000
Variable Cost	(9,60,000)	(8,00,000)
Contribution	4,80,000	4,00,000
Fixed expenses	(2,00,000)	(2,00,000)
EBIT	2,80,000	2,00,000
Debenture Interest	(1,00,000)	(1,00,000)
EBT	1,80,000	1,00,000
Tax @ 30%	(54,000)	(30,000)
Profit after tax (PAT)	1,26,000	70,000

(i) Financial Leverage = $\frac{\text{EBIT}}{\text{EBT}}$	$= \frac{₹ 2,80,000}{₹ 1,80,000} = 1.56$	$= \frac{₹ 2,00,000}{₹ 1,00,000} = 2$
(ii) Operating leverage = $\frac{\text{Contribution}}{\text{EBIT}}$	$= \frac{₹ 4,80,000}{₹ 2,80,000} = 1.71$	$= \frac{₹ 4,00,000}{₹ 2,00,000} = 2$
(iii) Earnings per share (EPS)	$\frac{₹ 1,26,000}{₹ 10,000} = ₹ 12.6$	$\frac{₹ 70,000}{₹ 10,000} = ₹ 7$
Decrease in EPS	$= ₹ 12.6 - ₹ 7 = ₹ 5.6$	
% decrease in EPS	$= \frac{5.6}{12.6} \times 100 = 44.44\%$	

Q.7

Following information has been extracted from the accounts of newly incorporated Textyl Pvt. Ltd. for the Financial Year 2020-21:

Sales	₹ 15,00,000
P/V ratio	70%
Operating Leverage	1.4 times
Financial Leverage	1.25 times

Using the concept of leverage, find out and verify in each case:

- The percentage change in taxable income if sales increase by 15%.
- The percentage change in EBIT if sales decrease by 10%.
- The percentage change in taxable income if EBIT increase by 15%.

Ans:

Workings:

- Contribution = Sales x P/V ratio
= ₹ 15,00,000 x 70% = ₹ 10,50,000
- Operating Leverage = $\frac{\text{Contribution}}{\text{Earnings before interest and tax (EBIT)}}$
Or, 1.4 = $\frac{₹ 10,50,000}{\text{EBIT}}$
EBIT = ₹ 7,50,000
- Financial leverage = $\frac{\text{EBIT}}{\text{EBT}}$
Or, 1.25 = $\frac{₹ 7,50,000}{\text{EBT}}$
EBT = ₹ 6,00,000
- Fixed Cost = Contribution – EBIT
= ₹ 10,50,000 – ₹ 7,50,000 = ₹ 3,00,000
- Interest = EBIT – EBT
= ₹ 7,50,000 – ₹ 6,00,000 = ₹ 1,50,000
- Income Statement

Particulars	Amount (₹)
Sales	15,00,000
Less: Variable cost (30% of ₹ 15,00,000)	4,50,000
Contribution (70% of ₹ 15,00,000)	10,50,000
Less: Fixed costs	3,00,000
Earnings before interest and tax (EBIT)	7,50,000
Less: Interest	1,50,000
Earnings before tax (EBT)	6,00,000

$$(i) \text{ Combined Leverage} = \frac{\text{Contribution}}{\text{EBT}} = \frac{\text{₹ } 10,50,000}{\text{₹ } 6,00,000} = \mathbf{1.75 \text{ times}}$$

$$\begin{aligned} \text{Or, Combined Leverage} &= \text{Operating Leverage} \times \text{Financial Leverage} \\ &= 1.4 \times 1.25 = \mathbf{1.75 \text{ times}} \end{aligned}$$

So, if sales is increased by 15% then taxable income (EBT) will be increased by $1.75 \times 15\% = \mathbf{26.25\%}$

Verification

Particulars	Amount (₹)
New Sales after 15% increase (₹ 15,00,000 + 15% of ₹ 15,00,000)	17,25,000
Less: Variable cost (30% of ₹ 17,25,000)	5,17,500
Contribution (70% of ₹ 17,25,000)	12,07,500
Less: Fixed costs	3,00,000
Earnings before interest and tax (EBIT)	9,07,500
Less: Interest	1,50,000
Earnings before tax after change (EBT)	7,57,500

$$\text{Increase in Earnings before tax (EBT)} = \text{₹ } 7,57,500 - \text{₹ } 6,00,000 = \text{₹ } 1,57,500$$

So, percentage change in Taxable Income (EBT) = $\frac{\text{₹ } 1,57,500}{\text{₹ } 6,00,000} \times 100 = \mathbf{26.25\%}$, hence **verified**.

$$(ii) \text{ Degree of Operating Leverage (Given)} = \mathbf{1.4 \text{ times}}$$

So, if sales is decreased by 10% then EBIT will be decreased by $1.4 \times 10\% = \mathbf{14\%}$

Verification

Particulars	Amount (₹)
New Sales after 10% decrease (₹ 15,00,000 - 10% of ₹ 15,00,000)	13,50,000
Less: Variable cost (30% of ₹ 13,50,000)	4,05,000
Contribution (70% of ₹ 13,50,000)	9,45,000
Less: Fixed costs	3,00,000
Earnings before interest and tax after change (EBIT)	6,45,000

$$\text{Decrease in Earnings before interest and tax (EBIT)} = \text{₹ } 7,50,000 - \text{₹ } 6,45,000 = \text{₹ } 1,05,000$$

So, percentage change in EBIT = $\frac{\text{₹ } 1,05,000}{\text{₹ } 7,50,000} \times 100 = \mathbf{14\%}$, hence **verified**.

$$(iii) \text{ Degree of Financial Leverage (Given)} = \mathbf{1.25 \text{ times}}$$

So, if EBIT increases by 15% then Taxable Income (EBT) will be increased by $1.25 \times 15\% = \mathbf{18.75\%}$

Verification

Particulars	Amount (₹)
New EBIT after 15% increase (₹ 7,50,000 + 15% of ₹ 7,50,000)	8,62,500
Less: Interest	1,50,000
Earnings before Tax after change (EBT)	7,12,500

Increase in Earnings before Tax = ₹ 7,12,500 - ₹ 6,00,000 = ₹ 1,12,500

So, percentage change in Taxable Income (EBT) = $\frac{₹ 1,12,500}{₹ 6,00,000} \times 100 = 18.75\%$,

hence verified.

Q.8

The following particulars relating to Navya Ltd. for the year ended 31st March 2021 is given:

Output	1,00,000 units at normal capacity
Selling price per unit	₹ 40
Variable cost per unit	₹ 20
Fixed cost	₹ 10,00,000

The capital structure of the company as on 31st March, 2021 is as follows:

Particulars	₹
Equity share capital (1,00,000 shares of ₹ 10 each)	10,00,000
Reserves and surplus	5,00,000
7% debentures	10,00,000
Current liabilities	5,00,000
Total	30,00,000

Navya Ltd. has decided to undertake an expansion project to use the market potential, that will involve ₹ 10 lakhs. The company expects an increase in output by 50%. Fixed cost will be increased by ₹ 5,00,000 and variable cost per unit will be decreased by 10%. The additional output can be sold at the existing selling price without any adverse impact on the market.

The following alternative schemes for financing the proposed expansion programme are planned:

- (i) Entirely by equity shares of ₹ 10 each at par.
- (ii) ₹ 5 lakh by issue of equity shares of ₹ 10 each and the balance by issue of 6% debentures of ₹ 100 each at par.
- (iii) Entirely by 6% debentures of ₹ 100 each at par.

FIND out which of the above-mentioned alternatives would you recommend for Navya Ltd. with reference to the risk and return involved, assuming a corporate tax of 40%.

Ans:

Statement showing Profitability of Alternative Schemes for Financing

(₹ in '00,000)

Particulars	Existing	Alternative Schemes		
		(i)	(ii)	(iii)
Equity Share capital (existing)	10	10	10	10
New issues	-	10	5	-
	10	20	15	10
7% debentures	10	10	10	10
6% debentures	-	-	5	10
	20	30	30	30
Debenture interest (7%)	0.7	0.7	0.7	0.7
Debenture interest (6%)	-	-	0.3	0.6
	0.7	0.7	1.0	1.3
Output (units in lakh)	1	1.5	1.5	1.5
Contribution per. unit (₹) (Selling price - Variable Cost)	20	22	22	22
Contribution (₹ lakh)	20	33	33	33
Less: Fixed cost	10	15	15	15
EBIT	10	18	18	18
Less: Interest (as calculated above)	0.7	0.7	1.0	1.3
EBT	9.3	17.3	17	16.7
Less: Tax (40%)	3.72	6.92	6.8	6.68
EAT	5.58	10.38	10.20	10.02
Operating Leverage (Contribution /EBIT)	2.00	1.83	1.83	1.83
Financial Leverage (EBIT/EBT)	1.08	1.04	1.06	1.08
Combined Leverage (Contribution/EBT)	2.15	1.91	1.94	1.98
EPS (EAT/No. of shares) (₹)	5.58	5.19	6.80	10.02
Risk	-	Lowest	Lower than option (3)	Highest
Return	-	Lowest	Lower than option (3)	Highest

From the above figures, we can see that the Operating Leverage is same in all alternatives though Financial Leverage differs. Alternative (iii) uses the maximum amount of debt and result into the highest degree of financial leverage, followed by alternative (ii). Accordingly, risk of the company will be maximum in these options. Corresponding to this scheme, however, maximum EPS (i.e., ₹ 10.02 per share) will be also in option (iii).

So, if Navya Ltd. is ready to take a high degree of risk, then alternative (iii) is strongly recommended. In case of opting for less risk, alternative (ii) is the next best option with a reduced EPS of ₹ 6.80 per share. In case of alternative (i), EPS is even lower than the existing option, hence not recommended.

Q.9

Company P and Q are having same earnings before tax. However, the margin of safety of Company P is 0.20 and, for Company Q, is 1.25 times than that of Company P. The interest expense of Company P is ₹ 1,50,000 and, for Company Q, is 1/3rd less than that of Company P. Further, the financial leverage of Company P is 4 and, for Company Q, is 75% of Company P.

Other information is given as below:

Particulars	Company P	Company Q
Profit volume ratio	25%	33.33%
Tax rate	45%	45%

You are required to PREPARE Income Statement for both the companies.

Ans:

Income Statement

Particulars	Company P (₹)	Company Q (₹)
Sales	40,00,000	18,00,000
Less: Variable Cost	30,00,000	12,00,000
Contribution	10,00,000	6,00,000
Less: Fixed Cost	8,00,000	4,50,000
EBIT	2,00,000	1,50,000
Less: Interest	1,50,000	1,00,000
EBT	50,000	50,000
Tax (45%)	22,500	22,500
EAT	27,500	27,500

Workings:

(i) Margin of Safety

For Company P = 0.20

For Company Q = 0.20 x 1.25 = 0.25

(ii) Interest Expenses

For Company P = ₹ 1,50,000

For Company Q = ₹ 1,50,000 (1-1/3) = ₹ 1,00,000

(iii) Financial Leverage

For Company P = 4

For Company Q = 4 x 75% = 3

(iv) EBIT

For Company A

Financial Leverage = EBIT/(EBIT- Interest)

4 = EBIT/(EBIT- ₹ 1,50,000)

4EBIT – ₹ 6,00,000 = EBIT

3EBIT = ₹ 6,00,000

EBIT = ₹ 2,00,000

For Company B

Financial Leverage = EBIT/(EBIT - Interest)

3 = EBIT/(EBIT - ₹ 1,00,000)

3EBIT - ₹ 3,00,000 = EBIT

2EBIT = ₹ 3,00,000

EBIT = ₹ 1,50,000

(v) Contribution

For Company A

Operating Leverage = 1/Margin of Safety

= 1/0.20 = 5

Operating Leverage = Contribution/EBIT

5 = Contribution/₹ 2,00,000

Contribution = ₹ 10,00,000

For Company B

Operating Leverage = 1/Margin of Safety

= 1/0.25 = 4

Operating Leverage = Contribution/EBIT

4 = Contribution/₹ 1,50,000

Contribution = ₹ 6,00,000

(vi) Sales

For Company A

Profit Volume Ratio = 25%

Profit Volume Ratio = Contribution/Sales 100

25% = ₹ 10,00,000/Sales

Sales = ₹ 10,00,000/25%

Sales = ₹ 40,00,000

For Company B

Profit Volume Ratio = 33.33%

Therefore, Sales = ₹ 6,00,000/33.33%

Sales = ₹ 18,00,000

Q.10

Debu Ltd. currently has an equity share capital of ₹ 1,30,00,000 consisting of 13,00,000 Equity shares. The company is going through a major expansion plan requiring to raise funds to the tune of ₹ 78,00,000. To finance the expansion the management has following plans:

Plan-I : Issue 7,80,000 Equity shares of ₹ 10 each.

Plan-II : Issue 5,20,000 Equity shares of ₹ 10 each and the balance through long-term borrowing at 12% interest p.a.

Plan-III : Issue 3,90,000 Equity shares of ₹ 10 each and 39,000, 9% Debentures of ₹ 100 each.

Plan-IV : Issue 3,90,000 Equity shares of ₹ 10 each and the balance through 6% preference shares.

EBIT of the company is expected to be ₹ 52,00,000 p.a.

Considering corporate tax rate @ 40%, you are required to-

- (i) CALCULATE EPS in each of the above plans.
- (ii) ASCERTAIN financial leverage in each plan and comment.

Ans: 4.

Sources of Capital	Plan I	Plan II	Plan III	Plan IV
Present Equity Shares	13,00,000	13,00,000	13,00,000	13,00,000
New Issue	7,80,000	5,20,000	3,90,000	3,90,000
Equity share capital (₹)	2,08,00,000	1,82,00,000	1,69,00,000	1,69,00,000
No. of Equity shares	20,80,000	18,20,000	16,90,000	16,90,000
12% Long term loan (₹)	—	26,00,000	—	—
9% Debentures (₹)	—	—	39,00,000	—
6% Preference Shares (₹)	—	—	—	39,00,000

Computation of EPS and Financial Leverage

Sources of Capital	Plan I	Plan II	Plan III	Plan IV
EBIT (₹)	52,00,000	52,00,000	52,00,000	52,00,000
Less: Interest on 12% Loan (₹)	—	3,12,000	—	—
Less: Interest on 9% debentures (₹)	—	—	3,51,000	—
EBT (₹)	52,00,000	48,88,000	48,49,000	52,00,000
Less: Tax@ 40%	20,80,000	19,55,200	19,39,600	20,80,000
EAT (₹)	31,20,000	29,32,800	29,09,400	31,20,000
Less: Preference Dividends (₹)	—	—	—	2,34,000
(a) Net Earnings available for equity shares (₹)	31,20,000	29,32,800	29,09,400	28,86,000
(b) No. of equity shares	20,80,000	18,20,000	16,90,000	16,90,000
(c) EPS (a ÷ b) (₹)	1.50	1.61	1.72	1.71

Financial leverage $\left(\frac{\text{EBIT}}{\text{EBT}}\right)$	1.00	1.06	1.07	1.08*
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$$* \text{ Financial Leverage in the case of Preference dividend} = \left(\frac{\text{EBIT}}{(\text{EBIT} - \text{Interest}) - \left(\frac{\text{Dp}}{(1-t)}\right)} \right)$$

$$= \left(\frac{52,00,000}{(52,00,000 - 0) - \left(\frac{2,34,000}{(1-.40)}\right)} \right) = \left(\frac{52,00,000}{48,10,000} \right) = 1.08$$

Q.11

The selected financial data for A, B and C companies for the current year ended 31st March are as follows:

Particulars	A	B	C
Variable Expenses as a % of sales	60	50	40
Interest	₹ 1,00,000	₹ 4,00,000	₹ 6,00,000
Degree of Operating Leverage	4:1	3:1	2.5:1
Degree of Financial Leverage	3:1	5:1	2.5:1
Income Tax Rate	30%	30%	30%

- (a) PREPARE income statement for A, B and C companies
 (b) COMMENT on the financial position and structure of these companies

Ans: 4. **Income Statement of companies A, B and C**

Particulars	A	B	C
Sales	₹15,00,000	₹30,00,000	₹41,66,667
Less: Variable Expenses	₹9,00,000	₹15,00,000	₹16,66,667
Contribution	₹6,00,000	₹15,00,000	₹25,00,000
Less: Fixed Cost	₹4,50,000	₹10,00,000	₹15,00,000
EBIT	₹1,50,000	₹5,00,000	₹10,00,000
Less: Interest	₹1,00,000	₹4,00,000	₹6,00,000
PBT	₹50,000	₹1,00,000	₹4,00,000
Less: Tax @ 30%	₹15,000	₹30,000	₹1,20,000
PAT	₹35,000	₹70,000	₹2,80,000

Working Notes:

$$(i) \text{ Degree of Financial Leverage} = \frac{\text{EBIT}}{\text{EBIT} - \text{Interest}}$$

$$\text{DFL} \times (\text{EBIT} - \text{Int}) = \text{EBIT}$$

$$\text{DFL} \times \text{EBIT} - \text{Int} \times \text{DFL} = \text{EBIT}$$

$$\text{DFL} \times \text{EBIT} - \text{EBIT} = \text{Int} \times \text{DFL}$$

$$\text{EBIT}(\text{DFL} - 1) = \text{Int} \times \text{DFL}$$

$$\text{EBIT} = \frac{\text{int} \times \text{DFL}}{\text{DFL} - 1}$$

For A,

$$EBIT_A = \frac{₹ 1,00,000 \times 3}{3-1}$$

$$EBIT_A = ₹150000$$

For B

$$EBIT_B = \frac{₹ 4,00,000 \times 5}{5-1}$$

$$EBIT_B = ₹500000$$

For C

$$EBIT_C = \frac{₹ 6,00,000 \times 2.5}{2.5-1}$$

$$EBIT_C = ₹10,00,000$$

$$(ii) DOL = \frac{\text{Contribution}}{EBIT}$$

$$\text{Contribution} = DOL \times EBIT$$

$$\text{Contribution}_A = 4 \times ₹1,50,000$$

$$\text{Contribution}_A = ₹6,00,000$$

$$\text{Contribution}_B = 3 \times ₹5,00,000$$

$$\text{Contribution}_B = ₹15,00,000$$

$$\text{Contribution}_C = 2.5 \times ₹10,00,000$$

$$\text{Contribution}_C = ₹25,00,000$$

$$(iii) \text{Fixed Cost} = \text{Contribution} - EBIT$$

$$\text{Fixed Cost}_A = ₹6,00,000 - ₹1,50,000 = ₹4,50,000$$

$$\text{Fixed Cost}_B = ₹15,00,000 - ₹5,00,000 = ₹10,00,000$$

$$\text{Fixed Cost}_C = ₹25,00,000 - ₹10,00,000 = ₹15,00,000$$

$$(iv) \text{Contribution} = \text{Sales} - VC$$

$$VC = \text{Sales} - \text{Contribution}$$

$$\text{Sales} \times VC \text{ Ratio} = \text{Sales} - \text{Contribution}$$

$$\text{Contribution} = \text{Sales} - \text{Sales} \times VC \text{ Ratio}$$

$$\text{Contribution} = \text{Sales}(1-VC \text{ Ratio})$$

$$\text{Sales} = \frac{\text{Contribution}}{1-VC \text{ Ratio}}$$

$$\text{Sales}_A = ₹6,00,000 / (1-0.6) = ₹15,00,000$$

$$\text{Sales}_B = ₹15,00,000 / (1-0.5) = ₹30,00,000$$

$$\text{Sales}_C = ₹25,00,000 / (1-0.4) = ₹41,66,667$$

Of all the companies, A has the highest degree of Operating Leverage, B has highest degree of Financial Leverage and C is equally leveraged on both Operating and Financial fronts. If we consider combined leverage companies will have the leverages of 12, 15 and 6.25 (by multiplying both operating and financial leverages). This means A is undertaking a higher degree of operating risk while B is undertaking a higher degree of financial risk.

Q.12

The capital structure of ABC Ltd. for the year ended 31st March 2022 consisted as follows:

Particulars	Amount in ₹
Equity share capital (face value ₹ 100 each)	20,00,000
10% debentures (₹ 100 each)	20,00,000

During the year 2021-22, sales decreased to 1,00,000 units as compared to 1,20,000 units in the previous year. However, the selling price stood at ₹ 15 per unit and variable cost at ₹ 10 per unit for both the years. The fixed expenses were at ₹ 2,00,000 p.a. and the income tax rate is 30%.

You are required to CALCULATE the following:

- The degree of financial leverage at 1,20,000 units and 1,00,000 units.
- The degree of operating leverage at 1,20,000 units and 1,00,000 units.
- The percentage change in EPS.

Ans:

Sales in units	1,20,000 (₹)	1,00,000 (₹)
Sales Value	18,00,000	15,00,000
Variable Cost	(12,00,000)	(10,00,000)
Contribution	6,00,000	5,00,000
Fixed expenses	(2,00,000)	(2,00,000)
EBIT	4,00,000	3,00,000
Debenture Interest	(2,00,000)	(2,00,000)
EBT	2,00,000	1,00,000
Tax @ 30%	(60,000)	(30,000)
Profit after tax (PAT)	1,40,000	70,000
(i) Financial Leverage = $\frac{EBIT}{EBT}$	$= \frac{4,00,000}{2,00,000} = 2$	$= \frac{3,00,000}{1,00,000} = 3$
(ii) Operating leverage = $\frac{Contribution}{EBIT}$	$= \frac{6,00,000}{4,00,000} = 1.50$	$= \frac{5,00,000}{3,00,000} = 1.67$
(iii) Earnings per share (EPS)	$\frac{1,40,000}{20,000} = ₹ 7$	$\frac{70,000}{20,000} = ₹ 3.5$
Decrease in EPS	$= ₹ 7 - ₹ 3.5 = ₹ 3.5$	
% decrease in EPS	$\frac{3.5}{7} \times 100 = 50\%$	

Q.

Following data of PC Ltd. under Situations 1, 2 and 3 and Financial Plan A and B is given:

Installed Capacity (units)		3,600
Actual Production and Sales (units)		2,400
Selling price per unit (₹)		30
Variable cost per unit (₹)		20
Fixed Costs (₹):	Situation 1	3,000
	Situation 2	6,000
	Situation 3	9,000

Capital Structure:

Particulars	Financial Plan	
	A	B
Equity	₹ 15,000	₹ 22,500
Debt	₹ 15,000	₹ 7,500
Cost of Debt	12%	12%

Required:

- CALCULATE the operating leverage and financial leverage.
- FIND out the combinations of operating and financial leverage which give the highest value and the least value.

Ans:

(i) Operating Leverage

	Situation 1	Situation 2	Situation 3
	(₹)	(₹)	(₹)
Sales (S)			
2,400 units @ ₹ 30 per unit	72,000	72,000	72,000
Less: Variable Cost (VC) @ ₹ 20 per unit	48,000	48,000	48,000
Contribution (C)	24,000	24,000	24,000
Less: Fixed Cost (FC)	3,000	6,000	9,000
EBIT	21,000	18,000	15,000
Operating Leverage $= \frac{C}{EBIT}$	$\frac{₹ 24,000}{₹ 21,000}$ = 1.14	$\frac{₹ 24,000}{₹ 18,000}$ = 1.33	$\frac{₹ 24,000}{₹ 15,000}$ = 1.60

Financial Leverage

	Financial Plan	
	A (₹)	B (₹)
Situation 1		
EBIT	21,000	21,000
Less: Interest on debt (₹ 15,000 x 12%); (₹ 7,500 x 12%)	1,800	900
EBT	19,200	20,100
Financial Leverage = $\frac{EBIT}{EBT}$	$\frac{₹ 21,000}{₹ 19,200} = 1.09$	$\frac{₹ 21,000}{₹ 20,100} = 1.04$
Situation 2		
EBIT	18,000	18,000
Less: Interest on debt	1,800	900
EBT	16,200	17,100
Financial Leverage = $\frac{EBIT}{EBT}$	$\frac{₹ 18,000}{₹ 16,200} = 1.11$	$\frac{₹ 18,000}{₹ 17,100} = 1.05$

Situation 3		
EBIT	15,000	15,000
Less: Interest on debt	1,800	900
EBT	13,200	14,100
Financial Leverage = $\frac{EBIT}{EBT}$	$\frac{₹ 15,000}{₹ 13,200} = 1.14$	$\frac{₹ 15,000}{₹ 14,100} = 1.06$

(ii) Combined Leverages

$$CL = OL \times FL$$

		Financial Plan	
		A (₹)	B (₹)
(a)	Situation 1	$1.14 \times 1.09 = 1.24$	$1.14 \times 1.04 = 1.19$
(b)	Situation 2	$1.33 \times 1.11 = 1.48$	$1.33 \times 1.05 = 1.40$
(c)	Situation 3	$1.60 \times 1.14 = 1.82$	$1.60 \times 1.06 = 1.70$

The above calculations suggest that the highest value is in Situation 3 financed by Financial Plan A and the lowest value is in the Situation 1 financed by Financial Plan B.

Q.

From the following financial data of Company X and Company Y:

- (i) PREPARE their Income Statements.
- (ii) CALCULATE Margin of Safety for both the Companies
- (iii) CALCULATE Percentage change in EPS for both the companies, if percentage change in sales is 25%

(in ₹)

	Company X	Company Y
Variable Cost	72,000	65% of Sales
Fixed Cost	35,000	-
Interest Expenses	12,000	6,000
Financial Leverage	4:1	-
Operating Leverage	-	5:1
Income Tax Rate	30%	30%
Sales	-	1,45,000

Ans:

(i) **Income Statement**

Particulars	Co. X (₹)	Co. Y (₹)
Sales	1,23,000 (WN 2)	1,45,000
(-) Variable Cost	(72,000)	(94,250) (65% on sales)
Contribution	51,000 (WN 2)	50,750
(-) Fixed Cost	(35,000)	(40,600)
EBIT	16,000 (WN 1)	10,150 (WN 3)
(-) Interest	(12,000)	(6,000)
EBT	4,000	4,150
(-) Tax @ 30%	(1,200)	(1,245)
EAT	2,800	2,905

WN 1: Calculation of EBIT for Co. X using Financial Leverage

$$FL = \frac{EBIT}{EBT} \text{ or } \frac{EBIT}{EBIT - \text{Interest}}$$

$$4 = \frac{EBIT}{EBIT - 12,000}$$

$$\mathbf{EBIT = ₹ 16,000}$$

$$EBT = ₹ 16,000 - ₹ 12,000 = ₹ 4,000$$

WN 2: Calculation of Contribution and Sales using reverse mechanism

$$\begin{aligned} \text{Contribution} &= \text{EBIT} + \text{Fixed Cost} \\ &= ₹ 16,000 + ₹ 35,000 \end{aligned}$$

$$\mathbf{\text{Contribution} = ₹ 51,000}$$

$$\text{Sales} = \text{Contribution} + \text{Variable Cost}$$

$$\mathbf{\text{Sales} = ₹ 1,23,000}$$

WN 3: Calculation of EBIT for Co. Y using Operating leverage

$$OL = \text{Contribution} / \text{EBIT}$$

$$5 = \frac{50,750}{\text{EBIT}}$$

$$\text{EBIT} = ₹ 10,150$$

- (ii) Margin of Safety (MOS) is inversely proportionate to the Operating Leverage as higher the safety margin lower would be the business risk

$$\text{MOS} = \frac{1}{OL}$$

$$\text{Operating Leverage (Co. X)} = \frac{51,000}{16,000}$$

$$\text{Operating Leverage (Co. X)} = 3.1875 : 1$$

$$\text{Therefore, MOS for Co. X} = 1 / 3.1875$$

$$\mathbf{\text{MOS for Co. X} = 31.37\%}$$

$$\text{Operating Leverage (Co. Y)} = 5 : 1$$

$$\text{Therefore, MOS for Co. X} = \frac{1}{5}$$

$$\mathbf{\text{MOS for Co. Y} = 20\%}$$

- (iii) Combined leverage measures the percentage change in EPS due to percentage change in sales

$$\text{Combined Leverage} = \frac{\text{Contribution}}{\text{EBT}}$$

$$\begin{aligned} \text{Combined Leverage (Co. X)} &= \frac{51,000}{4,000} \\ &= 12.75 \end{aligned}$$

$$\text{Combined Leverage} = \frac{\% \text{ change in EPS}}{\% \text{ change in sales}}$$

$$12.75 = \frac{\% \text{ change in EPS}}{25\%}$$

$$\% \text{ change in EPS (Co. X)} = 318.75\%$$

$$\begin{aligned} \text{Combined Leverage (Co. Y)} &= \frac{50,750}{4,150} \\ &= 12.23 \end{aligned}$$

$$12.23 = \frac{\% \text{ change in EPS}}{25\%}$$

$$\% \text{ change in EPS (Co. Y)} = 305.75\%$$