

4. LEVERAGES

ASSIGNMENT SOLUTIONS

PROBLEM NO:1

a) Income Statement

Particulars	Firms			
	A	B	C	D
Sales (units)	5,000	5,000	5,000	5,000
Sales revenue (Units × price) (Rs)	1,00,000	1,60,000	2,50,000	3,50,000
Less: Variable cost	(30,000)	(80,000)	(1,00,000)	(2,50,000)
(Units × variable cost per unit) (Rs)				
Less: Fixed operating costs (Rs)	(60,000)	(40,000)	(1,00,000)	Nil
EBIT	10,000	40,000	50,000	1,00,000

b) Estimation of Various leverages

$$\text{DOL} = \frac{\text{Current sales(S)} - \text{Variable costs(VC)}}{\text{Current EBIT}}$$

$$\text{DOL (A)} = \frac{\text{Rs.1,00,000} - \text{Rs.30,000}}{\text{Rs.10,000}} = 7$$

$$\text{DOL (B)} = \frac{\text{Rs.1,60,000} - \text{Rs.80,000}}{\text{Rs.40,000}} = 2$$

$$\text{DOL (C)} = \frac{\text{Rs.2,50,000} - \text{Rs.1,00,000}}{\text{Rs.50,000}} = 3$$

$$\text{DOL (D)} = \frac{\text{Rs.3,50,000} - \text{Rs.2,50,000}}{\text{Rs.1,00,000}} = 1$$

The operating leverage exists only when there are fixed costs. In the case of firm D, there is no magnified effect on the EBIT due to change in sales. A 20 per cent increase in sales has resulted in a 20 per cent increase in EBIT. In the case of other firms, operating leverage exists. It is maximum in firm A, followed by firm C and minimum in firm B. The interception of DOL of 7 is that 1 per cent change in sales results in 7 per cent change in EBIT level in the direction of the change of sales level of firm A.

PROBLEM NO: 2a) Income statement

Particulars	Amount (Rs. In lakhs)
Sales	40
(-) Variable cost	(25)
Contribution	15
(-) Fixed cost	(6)
EBIT	9
(-) Interest	(3)
EBT	6

b)

$$\text{i) Operating leverage} = \frac{\text{Contribution}}{\text{EBIT}} = \frac{15 \text{ lakhs}}{9 \text{ lakhs}} = 1.67 \text{ times}$$

$$\text{ii) Financial leverage} = \frac{\text{EBIT}}{\text{EBT}} = \frac{9 \text{ lakhs}}{6 \text{ lakhs}} = 1.5 \text{ times}$$

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To **MASTER MINDS**, Guntur

PROBLEM NO: 3

Computation of Degree of Operating Leverage (DOL), Degree of Financial Leverage (DFL) and Degree of Combined Leverage (DCL):

Particulars	Firm N	Firm S	Firm D
a. Output (Units)	17,500	6,700	31,800
	Rs.	Rs.	Rs.
b. Selling Price/Unit	85	130	37
c. Sales Revenue (Output x Selling Price per Unit) (A)	14,87,500	8,71,000	11,76,600
d. Variable Cost/Unit	38.00	42.50	12.00
e. Less: Total Variable Cost (Output x Variable Cost per Unit) (B)	6,65,000	2,84,750	3,81,600
f. Contribution (C) (A-B)	8,22,500	5,86,250	7,95,000
g. Less: Fixed Cost	4,00,000	3,50,000	2,50,000
h. Earnings before Interest and Tax (EBIT)	4,22,500	2,36,250	5,45,000
i. Less: Interest on Loan	1,25,000	75,000	Nil
j. EBT	2,97,500	1,61,250	5,45,000
Operating Leverage (OL) = C / EBIT	8,22,500 / 4,22,500	5,86,250 / 2,36,250	7,95,000 / 5,45,000
	= 1.95	= 2.48	= 1.46
Financial Leverage (FL) = EBIT / PBT	4,22,500 / 2,97,500	2,36,250 / 1,61,250	5,45,000 / 5,45,000
	= 1.42	= 1.47	= 1.00
Combined Leverage (CL) = OL x FL	1.95 x 1.42	2.48 x 1.47	1.46 x 1
OR	8,22,500 / 2,97,500 = 2.77	5,86,250 / 1,61,250 = 3.64	7,95,000 / 5,45,000 = 1.46
CL = Contribution / EBT			

PROBLEM NO: 4

Contribution:

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

$$\text{EBIT} = C - F$$

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

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

[C- Contribution, S- Sales, V- Variable cost, F- Fixed Cost]

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

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

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

PROBLEM NO: 5

Computation of degree of Operating leverage, Financial leverage and Combined leverage of two companies

	Company A	Company B
Output units per annum	60,000	15,000
	(Rs.)	(Rs.)
Selling price / unit	30	250
Sales revenue	18,00,000 (60,000 units x Rs. 30)	37,50,000 (15,000 units x Rs. 250)
Less: Variable costs	6,00,000 (60,000 units x Rs. 10)	11,25,000 (15,000 units x Rs. 75)

Contribution (C)	12,00,000	26,25,000
Less: Fixed costs	7,00,000	14,00,000
EBIT (Earnings before Interest and tax)	5,00,000	12,25,000
Less: Interest @ 12% on debentures	48,000	78,000
PBT	4,52,000	11,47,000
Operating Leverage = Contribution / EBIT	2.4 (Rs. 12,00,000/ 5,00,000)	2.14 (Rs. 26,25,000 / Rs. 12,25,000)
Financial Leverage = EBIT / PBT	1.11 (Rs. 5,00,000/ Rs. 4,52,000)	1.07 (Rs. 12,25,000 / Rs. 11,47,000)
Combined Leverage = DOL x DFL	2.66 (2.4 x 1.11)	2.29 (2.14 x 1.07)

PROBLEM NO: 6

Total Assets = Rs 20 crores

Total Asset Turnover Ratio = 2.5

Hence, Total Sales = $20 \times 2.5 = \text{Rs } 50 \text{ crores}$

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) Earnings per Share

EPS = 8.40 crores / Number of Equity Shares = 8.40 crores / 50,00,000 = Rs 16.80

It indicates the amount the company earns per share. Investors use this as a guide while valuing the share and making investment decisions. It is also a indicator used in comparing firms within an industry or industry segment.

ii) Operating Leverage

Operating Leverage = Contribution / EBIT = 17.50 / 13.50 = 1.296

It indicates the choice of technology and fixed cost in cost structure. It is level specific. When firm operates beyond operating break-even level, then operating leverage is low. It indicates sensitivity of earnings before interest and tax (EBIT) to change in sales at a particular level.

iii) Financial Leverage

Financial Leverage = EBIT / PBT = 13.50 / 12.00 = 1.125

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

iv) Combined Leverage

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

Or, = Operating Leverage × Financial Leverage = 1.296 × 1.125 = 1.458

The combined leverage studies the choice of fixed cost in cost structure and choice of debt in capital structure. It studies how sensitive the change in EPS is vis-à-vis change in sales. The leverages – operating, financial and combined are measures of risk.

PROBLEM NO: 7

Income Statement

Particulars	Amount
a. Sales	6,00,000
b. Less: Variable cost @ 40%	(2,40,000)
c. Contribution @ 60%	3,60,000
d. Less: Fixed Cost	(1,00,000)
e. EBIT	2,60,000
f. Less: Interest (80,000 x 10%)	(8,000)
g. EBT	2,52,000

$$DOL = \frac{\text{Contribution}}{\text{EBIT}} = \frac{3,60,000}{2,60,000} = 1.3846 \cong 1.39$$

$$DFL = \frac{\text{EBIT}}{\text{EBT}} = \frac{2,60,000}{2,52,000} = 1.03$$

$$DCL = OL \times FL = 1.39 \times 1.03 = 1.43 \text{ (or)} \frac{3,60,000}{2,52,000} = 1.43$$

WORKING NOTES: Calculation of total sales from the given information

Total Assets = 2,00,000

Assets Turnover ratio = 3

We know that

$$\text{Asset Turnover ratio} = \frac{\text{Sales}}{\text{Assets}}$$

$$3 = \frac{\text{Sales}}{2,00,000}$$

∴ Total Sales = 6,00,000/-

Note: Income tax rate is irrelevant

PROBLEM NO: 8**a. Income Statement**

Particulars	Amount (Rs.)
a. Sales	10,00,000
b. V.C	(7,00,000)
c. Contribution	3,00,000
d. F.C	(2,00,000)
e. EBIT	1,00,000
f. Interest	(50,000)
g. EBT	50,000

b. Estimation of Various leverages

1) Degree of Operating Leverage = Contribution / EBIT = 3 times.

2) Degree of Financial Leverage = EBIT / EBT = 2 times.

3) Degree of Combined Leverage = 1 x 2 = 6 times.

∴ One percentage change in sales results in 3 times change in EBIT

One percent change in EBIT leads to 2 times change in EBT.

PART - B

c. If the firm wants to double its EBIT,

DOL = % change in EBIT / % change in sales

$$= 100 / 3 = 33.33\%$$

PROBLEM NO: 9

Operating Leverage (OL)

$$= \frac{\text{Contribution}}{\text{EBIT}} = \frac{\text{EBIT} + \text{Fixed Cost}}{\text{EBIT}} = \frac{\text{Rs. } 15,750 + \text{Rs. } 1,575}{15,750} = 1.1$$

$$\text{Financial Leverage (FL)} = \text{EBIT} / \text{EBT} = 15,750 / 7,000 = 2.25$$

$$\text{Combined Leverage (CL)} = 1.1 \times 2.25 = 2.475$$

Percentage Change in Earnings per share

DCL = % change in EPS / % change in Sales

$$2.475 = \% \text{ change in EPS} / 5\%$$

$$\therefore \% \text{ change in EPS} = 12.375\%$$

Hence if sales are increased by 5%, EPS will be increased by 12.375%.

PROBLEM NO: 10**Income Statement**

Sales (in units)	60,000	50,000
Sales Value @ Rs. 12 per unit	7,20,000	6,00,000
Variable Cost	(4,80,000)	(4,00,000)
Contribution	2,40,000	2,00,000
Fixed expenses	(1,00,000)	(1,00,000)
EBIT	1,40,000	1,00,000
Debenture Interest	(50,000)	(50,000)
EBT	90,000	50,000
Tax @ 30%	(27,000)	(15,000)
Profit after tax (PAT)	63,000	35,000
i) Earnings per share (EPS) Decrease in EPS = 12.6 - 7 = 5.6 % of decrease in EPS = $\frac{5.6}{12.6} \times 100 = 44.44\%$	12.6 $\left(\frac{63,000}{5,000} \right)$	7 $\left(\frac{35,000}{5,000} \right)$
ii) Operating Leverage = $\frac{\text{Contribution}}{\text{EBIT}}$	1.71 $\frac{2,40,000}{1,40,000}$	2 $\frac{2,00,000}{1,00,000}$
iii) Financial Leverage = $\frac{\text{EBIT}}{\text{EBT}}$	1.5555 $\frac{1,40,000}{90,000}$	2 $\frac{1,00,000}{50,000}$

PROBLEM NO: 11**Part A: Financial Leverage**

Estimation percentage of increase in EBT if there is 6% increase in EBIT,

- a) $DFL = EBIT / EBT = 40,000 / 35,000 = 1.143$ times.
 b) At any cost 1% change in EBIT leads to 1.143% change in EBT.
 \therefore If 6% change in EBIT = $6 \times 1.143 = 6.858\% \cong 6.86\%$

(Verification of answer)

Particulars	At 100%	At 106%
a. EBIT	40,000	42400
b. Interest	(5,000)	(5,000)
c. EBT	35,000	37400
	$\% \text{ of increase in EBT} = \frac{37,400 - 35,000}{35,000} = 6.86\%$	

Part B: Operating Leverage

Estimation percentage of increase in EBIT if there is 10% increase in sales,

- a) $DOL = \text{Contribution} / EBIT = 1,40,000 / 40,000 = 3.5$ times.
 b) At any cost, 1% change in sales leads to 3.5% change in EBIT.
 \therefore If 10% change in Sales = $10 \times 3.5 = 35\%$

(Verification of answer)

Particulars	Amount at 100%	Amount at 110%
a. Sale	2,00,000	2,20,000
b. Variable Cost	(60,000)	66,000
c. Contribution	1,40,000	1,54,000
d. Fixed Cost	(1,00,000)	1,00,000
e. EBIT	40,000	54,000
	$\% \text{ of increase in EBIT} = \frac{54,000 - 40,000}{40,000} = 35\%$	

Part C: Combined Leverage

Estimation percentage of increase in EBT if there is 6% increase in sales

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

$$\text{Or} = \text{Contribution} / \text{PBT}$$

$$DCL = 1,40,000 / 35,000 = 4 \text{ times}$$

At any cost, 1% change in sales leads to 4% change in EBT.

$$\therefore \text{If 6\% increase in Sales} = 6 \times 4 = 24\%$$

(verification of answer)

Particulars	At 100%	At 106%
a. Sales	2,00,000	2,12,000
b. Variable Cost	60,000	(63,600)
c. Contribution	1,40,000	1,48,400
d. Fixed Cost	(1,00,000)	(1,00,000)
e. EBIT	40,000	48,400
f. Interest	(5,000)	(5,000)
g. EBT	35,000	43,400
	$\% \text{ of increase in EBT} = \frac{43,400 - 35,000}{35,000} = 24\%$	

PROBLEM NO: 12**Income statement**

Particulars	Amount
Sales revenue (1,00,000 x 2)	2,00,000
Less: Variable Cost	70,000
Contribution	1,30,000
Less: Fixed Cost	1,00,000
EBIT	30,000
Less: Interest	3,688
EBT	26,312
Degree of Operating Leverage $\frac{\text{Contribution}}{\text{EBIT}}$	$\frac{1,30,000}{30,000} = 4.33$ times
Degree of Financial Leverage $\frac{\text{EBIT}}{\text{EBT}}$	$\frac{30,000}{26,312} = 1.14$ times
Degree of Combined Leverage $\frac{\text{Contribution}}{\text{EBT}}$	$\frac{1,30,000}{26,312} = 4.94$ times

Risky Situation: High degree of operating leverage together with high degree of financial leverage indicates risky situation.

Ideal Situation: High degree of operating leverage together with low degree of financial leverage (or) low degree of operating leverage together with high degree of financial leverage indicates ideal situation.

PROBLEM NO: 13

Estimation of Degree of Operating Leverage (DOL), Degree of Financial Leverage (DFL) and Degree of Combined Leverage (DCL)

	P	Q	R
Output (in units)	2,50,000	1,25,000	7,50,000
	Rs.	Rs.	Rs.
Selling Price (per unit)	7.50	7	10
Sales Revenues (Output × Selling Price)	18,75,000	8,75,000	75,00,000
Less: Variable Cost (Output × Variable Cost)	12,50,000	2,50,000	56,25,000
Contribution Margin	6,25,000	6,25,000	18,75,000
Less: Fixed Cost	5,00,000	2,50,000	10,00,000
Earnings before Interest and Tax (EBIT)	1,25,000	3,75,000	8,75,000
Less: Interest Expense	75,000	25,000	-
Earnings before Tax (EBT)	50,000	3,50,000	8,75,000
DOL = Contribution / EBIT	5	1.67	2.14
DFL = EBIT / EBT	2.5	1.07	1.00
DCL = DOL × DFL	12.5	1.79	2.14
Comment	Aggressive Policy	Moderate Policy	Moderate Policy with no financial leverage

PROBLEM NO: 14

Income Statements of Company A and Company B

	Company A (Rs.)	Company B (Rs.)
Sales	91,000	1,05,000
Less: Variable cost	<u>56,000</u>	<u>63,000</u>
Contribution	35,000	42,000
Less: Fixed Cost	<u>20,000</u>	<u>31,500</u>
Earnings before interest and tax (EBIT)	15,000	10,500
Less: Interest	<u>12,000</u>	<u>9,000</u>
Earnings before tax (EBT)	3,000	1,500
Less: Tax @ 30%	<u>900</u>	<u>450</u>
Earnings after tax (EAT)	<u>2,100</u>	<u>1,050</u>

Working Notes:**Company A**

$$i) \text{ Financial Leverage} = \frac{\text{EBIT}}{\text{EBT i.e EBIT - Interest}}$$

$$\text{So, } 5 = \frac{\text{EBIT}}{\text{EBIT} - 12,000}$$

$$\text{Or, } 5(\text{EBIT} - 12,000) = \text{EBIT}$$

$$\text{Or, } 4 \text{ EBIT} = 60,000$$

$$\text{Or, EBIT} = \text{Rs. } 15,000$$

$$ii) \text{ Contribution} = \text{EBIT} + \text{Fixed Cost} \\ = \text{Rs. } 15,000 + \text{Rs. } 20,000 = \text{Rs. } 35,000$$

$$iii) \text{ Sales} = \text{Contribution} + \text{Variable cost} \\ = \text{Rs. } 35,000 + \text{Rs. } 56,000 \\ = \text{Rs. } 91,000$$

Company B

$$i) \text{ Contribution} = 40\% \text{ of Sales (as Variable Cost is } 60\% \text{ of Sales)} \\ = 40\% \text{ of } 1,05,000 = \text{Rs. } 42,000$$

$$ii) \text{ Operating Leverage} = \frac{\text{Contribution}}{\text{EBIT}} \quad \text{Or, } 4 = \frac{\text{Rs. } 42,000}{\text{EBIT}} \\ \text{EBIT} = \frac{\text{Rs. } 42,000}{4} = \text{Rs. } 10,500$$

$$iii) \text{ Fixed Cost} = \text{Contribution} - \text{EBIT} = 42,000 - 10,500 = \text{Rs. } 31,500$$

PROBLEM NO: 15**Income Statement**

Particulars	A	B	C
Sales (W.N-2)	3,600	8,000	12,000
(-) Variable cost (B / F)	(2,400)	(6,000)	(6,000)
Contribution	1,200	2,000	6,000
(-) Fixed Cost (B / F)	(900)	(1,600)	(4,000)
EBIT (W.N-1)	300	400	2,000
(-) Interest	(200)	(300)	(1,000)
EBT (W.N-1)	100	100	1,000
(-) Tax	(45)	(45)	(450)
EAT	55	55	550

WORKING NOTE-1: Calculation of EBIT and Contribution

Particulars	A	B	C
Degree of financial Leverage (DFL)	3:1	4:1	2:1
$\frac{\text{EBIT}}{\text{EBT}} = \frac{\text{EBT} + \text{INT}}{\text{EBT}} = \text{DPL}$	$\frac{\text{EBT} + 200}{\text{EBT}} = 3$	$\frac{\text{EBT} + 300}{\text{EBT}} = 4$	$\frac{\text{EBT} + 1000}{\text{EBT}} = 2$

	3EBT-EBT=200	4EBT-EBT=300	2EBT-EBT=1000
	EBT=100	EBT=100	EBT=1000
EBIT=EBT+INT (A)	100+200=300	100+300=400	1000+1000=2000
Degree of operating leverage (DOL)	4:1	5:1	3:1
$\frac{\text{contribution}}{\text{EBIT}} = \text{DOL}$	$\frac{x}{300} = 4$	$\frac{x}{400} = 5$	$\frac{x}{2000} = 3$
Contribution (x) (B)	1200	2000	6000

WORKING NOTE-2: Calculation of sales

Particulars	A	B	C
Given VC As a % of sales	66.66%	75%	50%
$\frac{\text{Contribution}}{\text{Sales}}$	33.33%	25%	50%
Contribution	1200	2000	6000
Sales	$3600 \left(\frac{1200}{33.33\%} \right)$	$8000 \left(\frac{2000}{25\%} \right)$	$12000 \left(\frac{6000}{50\%} \right)$

PROBLEM NO: 16

Particulars	Situation A		Situation B	
	Plan XY	Plan XM	Plan XY	Plan XM
Selling price p.u	30	30	30	30
Variable cost p.u	(20)	(20)	(20)	(20)
Contribution per unit	10	10	10	10
Sales (units)	6,000	6,000	6,000	6,000
Total Contribution	60,000	60,000	60,000	60,000
Fixed Cost	(20,000)	(20,000)	(25,000)	(25,000)
EBIT	40,000	40,000	35,000	35,000
Interest (W.N)	(4,800)	(1,200)	(4,800)	(1,200)
EBT	35,200	38,800	30,200	33,800
$\text{DOL} = \frac{\text{Contribution}}{\text{EBIT}}$	$\frac{60,000}{40,000} = 1.5$	$\frac{60,000}{40,000} = 1.5$	$\frac{60,000}{35,000} = 1.71$	$\frac{60,000}{35,000} = 1.71$
$\text{DFL} = \frac{\text{EBIT}}{\text{EBT}}$	$\frac{40,000}{35,200} = 1.14$	$\frac{40,000}{38,800} = 1.03$	$\frac{35,000}{30,200} = 1.16$	$\frac{35,000}{33,800} = 1.04$
$\text{DCL} = \text{OL} \times \text{FL}$	$1.5 \times 1.14 = 1.71$	$1.5 \times 1.03 = 1.545$	$1.71 \times 1.16 = 1.984$	$1.71 \times 1.04 = 1.778$

WORKING NOTE: Interest Calculation

Plan XY = 40,000 x 12% = 4,800

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

PROBLEM NO: 17**Step-1: Calculation of EPS in A Ltd. & B Ltd.**

Particulars	A Ltd.	B Ltd.
EBIT	1,00,000	1,00,000
Less: Interest	-	(2,50,000 × 9%) 22,500
EBT	1,00,000	77,500
Less: Tax @ 50%	50,000	38,750
EAT / EAESH (A)	50,000	38,750
No. of Equity shares (B)	$50,000 \left(\frac{5L}{10} \right)$	$25000 \left(\frac{2.5L}{10} \right)$
EPS (A/B)	1/-	1.55/-

Step-2: Some reasons for higher level of EPS in B Ltd.

a) No. of shares in B Ltd. are less when compared to A Ltd.

- b) B Ltd. will get the advantage of tax shield, as interest is an allowable expenditure.
- c) The interest on debentures for B Ltd. is just 9% whereas return on capital employed is 20%, the additional benefit will also be passed on to equity share holders.

Ex: When return on capital employed is 8%

Particulars	A Ltd.	B Ltd.
EBIT (5,00,000 x 8%)	40,000	40,000
Less: Interest	-	22,500
EBT	40,000	17,500
Less: Tax @ 50%	20,000	8,750
EAT/EAESH	20,000	8,750
EPS	0.4	0.35

When return on capital employed is 9%

Particulars	A Ltd.	B Ltd.
EBIT	45,000	45,000
Less: Interest	-	22,500
EBT	45,000	22,500
Less: Tax @ 50%	22,500	11,250
EAT/EAESH	22,500	11,250
EPS	0.45	0.45

PROBLEM NO: 18

a)

Step 1: Finding of Sales Revenue:

$$\text{Given total Asset turnover ratio} = \frac{\text{Turnover (Sales)}}{\text{Total Assets}} = 3$$

$$\frac{\text{Sales}}{2,00,000} = 3$$

$$\text{Sales} = 6,00,000$$

Step 2: Profit Statement:

Particulars	Amount (Rs.)
a) Sales revenue	6,00,000
b) Less: Variable Cost (6,00,000 X 40%)	2,40,000
c) Contribution	3,60,000
d) Less: Fixed Cost	1,00,000
e) EBIT	2,60,000
f) Less: Interest (80,000 X 10%)	8,000
g) EBT	2,52,000
h) Less: Tax @ 35%	88,200
i) EAT / EAESH	1,63,800
j) No. of Equity Shares $\frac{60,000}{10}$	6,000 Shares
k) EPS $\left(\frac{\text{EAESH}}{\text{No. of Shares}} \right)$	27.3

Step 3: Calculation of Leverages:

$$\text{Degree of Operating Leverage} = \frac{\text{Contribution}}{\text{EBIT}} = \frac{3,60,000}{2,60,000} = 1.38$$

$$\text{Degree of Financial Leverage} = \frac{\text{EBIT}}{\text{EBT}} = \frac{2,60,000}{2,52,000} = 1.031$$

$$\text{Degree of Combined Leverage} = 1.39 \times 1.031 \cong 1.43 \text{ (or)} \frac{3,60,000}{2,52,000} = 1.43$$

b)

EPS is Rs. 1:

$$\begin{aligned} \text{We know that EPS} &= \frac{(\text{EBIT} - \text{Int})(1-t)}{n} \\ 1 &= \frac{(\text{EBIT} - 8,000)(1-0.35)}{6,000} \\ 6,000 &= (\text{EBIT} - 8,000)(0.65) \\ \text{EBIT} - 8,000 &= \frac{6,000}{0.65} = 9,230.76 \\ \text{EBIT} &= 17,230.76 \end{aligned}$$

If the level of EBIT is 17,231 then EPS will be equal to Rs. 1

EPS is Rs. 3:

$$\begin{aligned} \text{We know that EPS} &= \frac{(\text{EBIT} - \text{Int})(1-t)}{n} \\ 3 &= \frac{(\text{EBIT} - 8,000)(1-0.35)}{6,000} \\ \text{EBIT} - 8,000 &= \frac{18,000}{0.65} \\ \text{EBIT} &= 35,692.31 \end{aligned}$$

EPS is Rs. 0:

$$\begin{aligned} \text{We know that EPS} &= \frac{(\text{EBIT} - \text{Int})(1-t)}{n} \\ 0 &= \frac{(\text{EBIT} - 8,000)(1-0.35)}{6,000} \\ \text{EBIT} &= 8,000 \end{aligned}$$

PROBLEM NO: 19

$$\begin{aligned} \text{Total Assets} &= \text{Rs. } 48,00,000 \\ \text{Total Assets Turnover Ratio} &= 2.5 \\ \text{Total Sales} &= 48,00,000 \times 2.5 = \text{Rs. } 1,20,00,000 \end{aligned}$$

Computation of Profit after Tax (PAT)

Particulars	Amount
Sales	1,20,00,000
Less: Variable Cost (60% of Sales Contribution)	72,00,000
Contribution	48,00,000
Less: Fixed Cost (other than Interest)	28,00,000
	20,00,000
Less: Interest on Debentures (15% of 28,00,000)	4,20,000
PBT	15,80,000
Less: Tax @ 30%	4,74,000
PAT	11,06,000

$$\begin{aligned} \text{i) EPS} &= \text{PAT} / \text{No. of Equity Shares} \\ &= 11,06,000 / 1,00,000 = \text{Rs. } 11.06 \end{aligned}$$

$$\text{ii) DCL} = \frac{\text{Contribution}}{\text{EBIT}} \times \frac{\text{EBIT}}{\text{PBT}}$$

$$\begin{aligned} \text{Or} &= \text{Contribution} / \text{PBT} \\ &= 48,00,000 / 15,80,000 = 3.04 \end{aligned}$$

PROBLEM NO: 20

i) Degree of operating leverage = % Change in Operating income / % Change in Revenues

$$\text{PQR Ltd.} = 25\% / 27\% = 0.9259$$

$$\text{RST Ltd.} = 0.32 / 0.25 = 1.28$$

$$\text{TUV Ltd.} = 0.36 / 0.23 = 1.5652$$

$$\text{WXY Ltd.} = 0.40 / 0.21 = 1.9048$$

It is level specific.

ii) High operating leverage leads to high beta. So when operating leverage is lowest i.e. 0.9259, Beta is minimum (1) and when operating leverage is maximum i.e. 1.9048, beta is highest i.e. 1.40

PROBLEM NO. 21**Evaluation of proposal of process change assuming additional investment raised through debt**

Particulars	Existing	New
Sales	(5,000 × 100) 5,00,000	(7,00,000 × 95) 6,65,000
Less: Variable cost (W.N-1)	(2,50,000 / 5,000 = 50) 2,50,000	(7,000 × 40) 2,80,000
Contribution	2,50,000	3,85,000
Less: Fixed cost	2,00,000	2,50,000
EBIT	50,000	1,35,000
Less: Interest	-	(4,00,000 × 10%) 40,000
EBT	50,000	95,000

W.N-1: Under existing proposal total variable cost = 5,00,000 – 2,50,000 = Rs. 2,50,000

$$\therefore \text{Variable Cost per unit} = \frac{2,50,000}{5,000} = \text{Rs. } 50$$

Given that variable cost reduced by Rs.10 per unit under new proposal.

$$\therefore \text{Variable Cost per unit} = 50 - 10 = \text{Rs. } 40 \quad \text{Total Variable cost} = 7,000 \times 40 = \text{Rs. } 2,80,000$$

Conclusion: The overall profits of the company (EBT) have increased from Rs.50,000 to Rs.95,000. So it is advisable for the company to implement the proposed changes.

$$\text{Additional Return on Investment} = \frac{45,000}{4,00,000} \times 100 = 11.25\%$$

If additional investment is raised through equity then additional return on investment

$$= \frac{1,35,000 - 50,000}{4,00,000} \times 100 = 21.25\%$$

Particulars	Existing	New
Breakeven point = $\frac{\text{Fixed cost}}{\text{Contribution per unit}}$	= $\frac{2,00,000}{50} = 4,000$ units	= $\frac{2,50,000}{95 - 40} \cong 4,545.45 = 4,546$ units*
Degree of Operating Leverage = $\frac{\text{Contribution}}{\text{EBIT}}$	5 times	2.85 times

* Break-even point is rounded off to next number

Assumption: It is assumed that additional investment is raised through debt.

THE END