5. LEVERAGES

NO. OF PROBLEMS IN 41E OF CA INTER: CLASSROOM - 14, ASSIGNMENT - 21

NO. OF PROBLEMS IN 42E OF CA INTER: CLASSROOM - 14, ASSIGNMENT - 14

NO. OF PROBLEMS IN 43E OF CA INTER: CLASSROOM - 16, ASSIGNMENT - 16

MODEL - WISE ANALYSIS OF PREVIOUS EXAMINATIONS OF IPCC AND CA INTER

NO.	MODEL NAME	M-11	N-11	M-12	N-12	M-13	N-13	M-14	N-14	M-15	N-15	M-16	N-16	M-17	N-17	M-18(O)	M-18(N)	N-18(O)	N-18(N)	M-19(O)	M-19(N)	N-19(O)	N-19(N)
1.	Basic Problems	5	8	-	5	-	5	-	-	4	-	5	5	5	-	-	5	5	-	-	-	-	-
2.	Effect on EBIT-EPS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.	Interpretation of Risk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4.	Missing Values	-	-	-	-	-	-	-	-	-	5	-	-	-	-	-	8	-	-	-	-	-	-
5.	Comprehensive Problems	-	-	8	-	-	-	8	4	-	-	-	-	-	8	-	-	-	10	-	-	-	-
6.	Financial Leverage if there is no Preference Dividend	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7.	Return on Investment - EPS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SIGNIFICANCE OF EACH PROBLEM COVERED IN THIS MATERIAL

Problem No. in this material	Problem No. in NEW SM	Problem No. in OLD SM	Problem No. in OLD PM	RTP	MTP	Previous Exams	Remarks
CR 1	ILL-3	ILL-35		-	-	N18(O) - 5M	
CR 2	-	-	6	-	-	-	
CR 3	PQ-2	ILL-36		-	-	-	
CR 4	-	-	2	-	-	-	
CR 5	ILL-2	ILL 34	-	-	-	-	
CR 6	-	-	-	-	M17	-	
CR 7	-	-	-	-	-	-	
CR 8	-	-	14	-	-	N09	
CR 9	-	-	-	-	M18	-	
CR 10	PQ-4	ILL-37	-	M18	-	-	
CR 11	-	-	20	-	-	-	
CR 12	-	-	-	-	-	-	
CR 13	-	-	10	-	-	M15, M17	
CR 14	-	-	-	-	-	-	
CR 15	-	-	-	-	-	-	
CR 16	-	-	-	-	-	-	
ASG 1	-	-	3	-	-	-	
ASG 2	-	-	-	-	-	-	TN
ASG 3	-	-	-	-	-	-	
ASG 4	-	-	-	-	-	-	
ASG 5	-	-	-	-	-	-	PDK
ASG 6	-	-	-	-	-	-	
ASG 7	-	-	-	-	-	-	

ASG 8	-	-	-	-	-	-	
ASG 9	-	-	-	N18 (N&O)	-	-	
ASG 10	-	-	-	-	-	-	
ASG 11	-	-	-	-	-	-	
ASG 12	-	-	-	-	-	-	
ASG 13	-	-	-	-	-	-	
ASG 14	-	-	-	-	-	M12	
ASG 15	-	-	-	-	-	-	
ASG 16	-	-	-	-	-	-	

MEANING OF LEVERAGE:

1. The term leverage represents influence or power. In financial analysis leverage represents the influence of one financial variable over some other related financial variable.
2. These financial variables may be costs, output, sales revenue, Earnings Before Interest and Tax (EBIT), Earning per share (EPS) etc.
3. Generally, if we want to calculate impact of change in variable X on variable Y, it is termed as Leverage of Y with X, and it is calculated as follows:

$$\text{Measurement of Leverage} = \frac{\text{change in } Y / Y}{\text{change in } X / X}$$

TYPES OF LEVERAGE:

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 indicated 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 indicated total risk.

Chart showing operating leverage, financial leverage and combined leverage:

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

Combined Leverage

1. Operating Leverage $= \frac{\%\ \text{Change in E.B.I.T.}}{\%\ \text{Change in sales}}$ or $\frac{\left\{\frac{\text{Increase in E.B.I.T.}}{\text{E.B.I.T.}}\right\}}{\left\{\frac{\text{Increase in sales}}{\text{Sales}}\right\}}$

2. Degree of Operating Leverage $= \frac{\text{Contribution}}{\text{E.B.I.T}}$

3. Financial Leverage $= \frac{\%\ \text{Change in E.P.S}}{\%\ \text{Change in E.B.I.T.}} = \frac{\text{Increase in E.P.S./E.P.S}}{\text{Increase in E.B.I.T./E.B.I.T.}}$

4. Degree of Financial Leverage $= \frac{EBIT}{EBIT - Fixed\,Financial\ Charge} = \frac{EBIT}{EBT}$

5. Combined leverage = Operating leverage x Financial leverage

$= \frac{\%\ Change\ in\ E.B.I.T.}{\%\ Change\ in\ Sales} \times \frac{\%\ Change\ in\ E.P.S.}{\%\ Change\ in\ E.B.I.T}$

$= \frac{\%\ Change\ in\ E.P.S.}{\%\ Change\ in\ Sales}$

6. Degree of Combined leverage = Degree of Operating leverage X Degree of Financial leverage

$= \frac{Contribution}{E.B.I.T} \times \frac{E.B.I.T}{EBT} = \frac{Contribution}{EBT}$

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

8. Break Even Point $= \frac{Fixed\,cost}{Contribution\,per\,unit\,/\,PV\,Ratio}$

IMPACT OF FEW COMBINATIONS OF OPERATING & FINANCIAL LEVERAGES IS GIVEN BELOW:

Operating Leverage	Financial Leverage	Combined Leverage
High (High fixed cost structure)	High (High level of debt financing)	This combination is very risky i.e. having both high leverages. It shows that the firm is employing excessive assets, for which it has to pay fixed cost and simultaneously it is also using large amount of debt capital. This combination should normally be avoided
Low (Low fixed cost structure)	Low (Low level of debt capital)	This represents a situation, which management is making a cautious approach. It is not possible for a company to maximize the return to the shareholders in this type of situation. This situation should be avoided.
High (High fixed cost structure)	Low (Low level of debt capital)	This situation is not advantageous to shareholders.
Low (Low fixed cost structure)	High (High level of debt financing)	This situation does not take true advantage of debt financing to maximize return on the equity. This is considered to be ideal situation for the maximization of profit with minimum risk. Since, operating leverage is low, full advantage of debt financing can be taken to increase return on equity.

BREAK-EVEN ANALYSIS AND OPERATING LEVERAGE:

1. Break-even analysis is a generally used to study the Cost Volume Profit analysis. It is concerned with computing the break-even point. At this point of production level and sales there will be no profit and loss i.e. total cost is equal to total sales revenue.

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

2. There is a relationship between leverage and Break-even point. Both are used for profit planning. In brief the relationship between leverage, break-even point and fixed cost as under:

Leverage	Break-even point
1. Firm with high leverage	1. Higher Break-even point
2. Firm with low leverage	2 .Lower Break-even point
Fixed cost	**Operating leverage**
1. High fixed cost	1. High degree of operating leverage

2. Lower fixed cost	2. Lower degree of operating leverage

MARGIN OF SAFETY AND OPERATING LEVERAGE

In cost accounting, one studies that margin of safety (MOS) may be calculated as follows:

$$MOS = \frac{Sales - BEP\ sales}{sales} X 100$$

Higher margin of safety indicates lower business risk and higher profit and vice versa. If we both multiply and divide above formula with profit volume (PV) ratio then:

$$MOS = \frac{Sales - BEP\ \ sales}{sales} X \frac{PV\ ratio}{PV\ ratio} = \frac{Sales\ X\ PV - BEP\ X\ PV}{sales X\ PV}$$

We know that:

$$PV\ ratio = \frac{Contribution}{Sales} or\ Sales\ X\ PV\ ratio = Contribution$$

$$Further,\ BEP = \frac{Fixed\ cost}{Pv\ ratio} or\ BEP\ X\ PVratio = Fixed\ cost$$

$$So,\ MOS = \frac{Contribution - Fixed\ cost}{Contribution} = \frac{EBIT}{contribution}$$

we know that:

$$DOL = \frac{Contribution}{EBIT}$$

$$Hence,\ Degree\ of\ Operating\ leverage = \frac{1}{Margin of safety}$$

If Margin of safety	Business Risk	DOL (= 1/MOS)
Rises	Falls	Falls
Falls	Rises	Rises

When DOL is more than one (1), operating leverage exists. More is the DOL higher is operating leverage.

Analysis and Interpretation of operating leverage

	Situation	Result
1	No Fixed Cost	No operating leverage
2	Higher Fixed cost	Higher Break-even point
3	Higher than Break-even level	Positive operating leverage
4	Lower than Break-even level	Negating operating leverage

FINANCIAL LEVERAGE AS A 'DOUBLE EDGED SWORD':

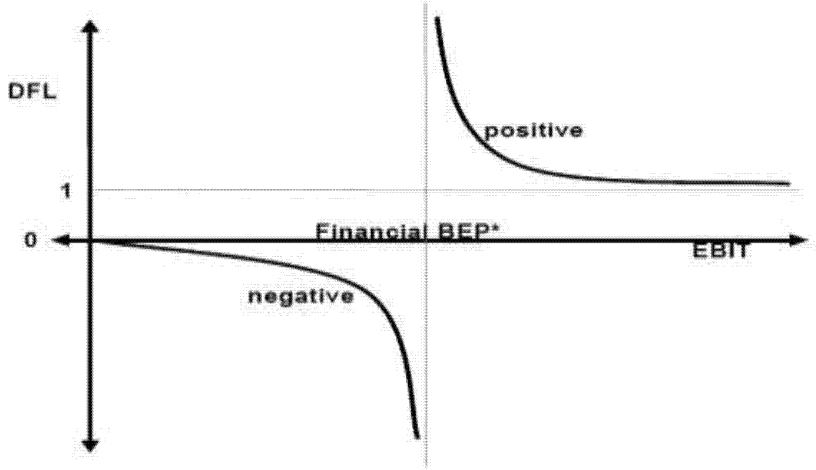
1. On one hand when cost of 'fixed cost fund' is less than the return on investment financial leverage will help to increase return on equity and EPS. The firm will also benefit from the saving of tax on interest on debts etc.
2. However, when cost of debt will be more than the return it will affect return of equity and EPS unfavorably and as a result firm can be under financial distress. This is why financial leverage is known as "**double edged sword".**
3. Effect on EPS and ROE:

   When, ROI > Interest - Favorable - Advantage

   When, ROI < Interest - Unfavorable - Disadvantage

When, ROI = Interest - Neutral - Neither advantage nor disadvantage.

Note: DFL can never be between zero and one. It can be zero or less or it can be one or more.



4. *Financial BEP is the level of EBIT at which earning per share is zero. If a company has not issued preference shares then Financial BEP is simply equal to amount of Interest.
5. When EBIT is much higher than Financial BEP, DFL will be slightly more than one. With decrease in EBIT, DFL will increase. At Financial BEP, DFL will be infinite. When EBIT is slightly less than Financial BEP, DFL will be negative infinite. With further reduction in EBIT, DFL will move towards zero. At zero EBIT, DFL will also be zero.

PROBLEMS FOR CLASSROOM DISCUSSION

MODEL 1: BASIC PROBLEMS

PROBLEM NO 1: A firm's details are as under:

Sales (@ Rs.100 per unit)	Rs.24,00,000
Variable Cost	50%
Fixed Cost	Rs.10,00,000

It has borrowed Rs.10,00,000 @ 10% p.a. and its equity share capital is Rs.10,00,000 (Rs. 100 each)

Calculate:

a) Operating Leverage

b) Financial Leverage

c) Combined Leverage

d) Return on Investment

e) If the sales increases by Rs.6,00,000; what will the new EBIT (increase in EBIT)?

(A) (NEW SM, OLD SM, SIMILAR: N18 (O) - 5M) (ANS.: a. 6 TIMES, b. 2 TIMES, c. 12 TIMES, d. 10 %, e. RS. 3,00,000)

(SOLVE PROBLEM NO. 1 OF ASSIGNMENT PROBLEMS AS REWORK)

CONCEPT QUESTIONS:

1. What would be the impact on Combined Leverage, If Fixed cost Increases by Rs.2 00,000?
2. What would be the impact on combined leverage, if rate of interest increases by 1%?

Note:_____

_____

PROBLEM NO 2: You are given the following information of 5 firms of the same industry:

Name of the firm	Change in Revenue	Change in Operating	Change in Earning per

		income	share
M	28%	26%	32%
N	27%	34%	26%
P	25%	38%	23%
Q	23%	43%	27%
R	25%	40%	28%

You are required to calculate: (1) Degree of Operating Leverage and (2) Degree of Combined Leverage, of all firms. *(A) (ANS.: DOL: 0.93, 1.26, 1.52, 1.87, 1.60; DFL: 1.14, 0.96, 0.92, 1.17, 1.12)*

(SOLVE PROBLEM NO. 2 OF ASSIGNMENT PROBLEMS AS REWORK)

CONCEPT QUESTIONS:

1. What would be the impact on operating leverage if change (%) in operating income increases/decreases by 10%
2. What would be the impact on financial leverage if change (%) in EPS increases/decreases by 10%

Note:_____

_____

PROBLEM NO 3: X Corporation 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; the cost accounting department has currently identified variable cost of Rs.9 per unit. Calculate the degree of operating leverage for sales volume of 25,000 units and 30,000 units. *(A) (OLD PM) (ANS.: OPERATING LEVERAGE: FOR 25,000 UNITS IS 5 TIMES & FOR 30,000 UNITS IS 3 TIMES)*

(SOLVE PROBLEM NO. 3 OF ASSIGNMENT PROBLEMS AS REWORK)

CONCEPT QUESTIONS:

1. What would be the impact on Operating Leverage if Break Even Point increases by 10,000 units?
2. What would be the impact on Operating Leverage if Break Even Point decreases by 10,000 units?

Note:_____

_____

PROBLEM NO 4: From the following information find out DOL using MOS

PARTICULARS	PRODUCT X
Sales (50 x 1000 units)	50,000
Variable Cost (30 x 1000 units)	30,000
Contribution	20,000
Fixed Cost	15,000

CONCEPT QUESTIONS:

1. What is the interlink between MOS and DOL?
2. What is the interlink between MOS and BEP?

(NEW SM) (SOLVE PROBLEM NO. 4 OF ASSIGNMENT PROBLEMS AS REWORK)

Note:_____

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MODEL 2: EFFECT ON EBIT - EPS

PROBLEM NO 5: (PRINTED SOLUTION AVAILABLE): Betatronics Ltd. has the following balance sheet and income statement information:

Balance Sheet as on March 31st

Liabilities	(Rs.)	Assets	(Rs.)
Equity capital (Rs. 10 per share)	8,00,000	Net fixed assets	10,00,000

10% Debt	6,00,000	Current assets	9,00,000
Retained earnings	3,50,000		
Current liabilities	1,50,000		
	19,00,000		19,00,000

Income Statement for the year ending March 31:

Particulars	(Rs.)
Sales	3,40,000
Operating expenses (including Rs. 60,000 depreciation)	1,20,000
EBIT	2,20,000
Less: Interest	60,000
Earnings before tax	1,60,000
Less: Taxes	56,000
Net Earnings (EAT)	1,04,000

a) Determine the degree of operating, financial and combined leverages at the current sales level, if all operating expenses, other than depreciation, are variable costs.

b) If total assets remain at the same level, but sales (i) increase by 20 percent and (ii) decrease by 20 percent, what will be the earnings per share at the new sales level?

(B) (NEW SM, OLD SM) (ANS. a. 1.27 TIMES, 1.375 TIMES, 1.75 TIMES & b. (I) RS. 1.755 (II) RS. 0.845)

(SOLVE PROBLEM NO. 5 OF ASSIGNMENT PROBLEMS AS REWORK)

CONCEPT QUESTIONS:

1. What would be the impact on Combined Leverage, If Interest rate increases to 15%?
2. What would be the impact on Operating Leverage, if sales decreases by 10%?

Note:_____

MODEL 3: INTERPRETATION OF RISK

PROBLEM NO 6: (PRINTED SOLUTION AVAILABLE) From the following information available for four companies, calculate EBIT, EPS, Operating leverage, Financial leverage and interpret the results.

Particulars		P	Q	R	S
Selling price/unit	Rs.	15	20	25	30
Variable cost/unit	Rs.	10	15	20	25
Quantity	(Nos.)	20,000	25,000	30,000	40,000
Fixed costs	Rs.	30,000	40,000	50,000	60,000
Interest	Rs.	15,000	25,000	35,000	40,000
Tax rate	%	40	40	40	40
No. of equity shares		5,000	9,000	10,000	12,000

(B) (ANS.: P IS RS. 70,000, RS. 6.6, 1.43, 1.27, Q IS RS. 85,000, RS. 4, 1.47, 1.42 & R IS RS.1,00,000, RS. 3.9, 1.50, 1.54 & S IS RS. 1,40,000, RS.5, 1.43, 1.40) (SOLVE PROBLEM NO. 6 OF ASSIGNMENT PROBLEMS AS REWORK)

CONCEPT QUESTIONS:

1. What would be the impact on Operating Leverage, Financial Leverage and Combined Leverage, If Sales Quantity increases by 2,000 units?
2. What would be the impact on Operating Leverage, Financial Leverage and Combined Leverage, If Sales Quantity decreases by 2,000 units?

Note:_____

MODEL 4: MISSING VALUES

PROBLEM NO 7: A company operates at a production level of 5,000 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 (EAT)? ***(B) (OLD PM) (ANS.: RS. 8,750)***

(SOLVE PROBLEM NO. 7 OF ASSIGNMENT PROBLEMS AS REWORK)

CONCEPT QUESTIONS:

1. What would be the impact on EBIT, If Combined leverage is taken as 30 times?
2. What would be the impact on combined leverage if tax rate is taken as 40%?

Note:_____

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PROBLEM NO 8: The following details of A Ltd. for the year ended 31.3.1995 are furnished:

Operating leverage	3:1
Financial leverage	2:1
Interest charges per annum	Rs. 20 lakhs
Corporate tax rate	50%
Variable cost as percentage of sales	60%

Prepare the Income Statement of the company. ***(A) (MTP M17) (ANS.: EAT: RS.10,00,000)***

(SOLVE PROBLEM NO. 8 OF ASSIGNMENT PROBLEMS AS REWORK)

CONCEPT QUESTIONS:

1. What would be the impact on sales if Operating Leverage is taken as 5:1?
2. What would be the impact on operating leverage if variable cost is taken as 40% instead of 60%?

Note:_____

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PROBLEM NO 9: The Gudia Enterprises manufactures and sells a typical electronic toy. The selling price and variable cost per toy are Rs.20 and Rs.10 respectively. Operating fixed costs amount to Rs.5 lakhs. The interest expense is Rs.2.5 lakhs and DFL is 2. Find out DOL and Sales volume respectively.

(A) (ANS.: 2 TIMES & 1,00,000 UNITS) (SOLVE PROBLEM NO. 9 OF ASSIGNMENT PROBLEMS AS REWORK)

CONCEPT QUESTIONS:

1. What would be the impact on Degree of Operating Leverage and Sales volume if Fixed cost increases by 2,00,000.?
2. What would be the impact on Degree of Operating Leverage and Sales volume if Interest increases by Rs. 50,000?

Note:_____

_____

PROBLEM NO 10: The Sale revenue of TM excellence Ltd. @ Rs.20 Per unit of output is Rs.20 lakhs and Contribution is Rs.10 lakhs. At the present level of output the DOL of the company is 2.5. The company does not have any Preference Shares. The number of Equity Shares is 1 lakh. Applicable corporate Income Tax rate is 50% and the rate of interest on Debt Capital is 16% p.a. What is the EPS (At sales revenue of 20 lakhs) and amount of Debt Capital of the company if a 25% decline in Sales will wipe out EPS.

(NEW SM) (ANS.: EPS=1.25, DEBT CAPITAL = RS.3,37,500) (SOLVE PROBLEM NO. 10 OF ASSIGNMENT PROBLEMS AS REWORK)

CONCEPT QUESTIONS:

1. What would be the impact on Degree of Operating Leverage and Sales volume if Fixed cost increases by 2,00,000?
2. What would be the impact on Degree of Operating Leverage and Sales volume if Interest increases by Rs. 50,000?

Note:_____

MODEL 5: COMPREHENSIVE PROBLEMS

PROBLEM NO 11: (PRINTED SOLUTION AVAILABLE) Z Limited is considering the installation of a new project costing Rs.80,00,000. Expected annual sales revenue from the project is Rs.90,00,000 and its variable costs are 60 percent of sales. Expected annual fixed cost other than interest is Rs.10,00,000. Corporate tax rate is 30 percent. The company wants to arrange the funds through issuing 4,00,000 equity shares of Rs.10 each and 12 percent debentures of Rs.40,00,000.

You are required to:

a) Calculate the operating, financial and combined leverages and Earnings per Share (EPS).

b) Determine the likely level of EBIT, if EPS is (1) Rs. 4, (2) Rs. 2, (3) Rs. 0 *(OLD PM, N09)*

(A) (ANS.: A) 1.384, 1.226, 1.696, 3.71; B) 1) RS. 27,65,714; 2) RS. 16,22,857; 3) RS. 4,80,000)

(SOLVE PROBLEM NO. 11 OF ASSIGNMENT PROBLEMS AS REWORK)

CONCEPT QUESTIONS:

1. What would be the impact on EPS if there is change in tax rate?
2. What would be the impact on EPS if there is change in Debenture interest and number of shares?

Note:_____

PROBLEM NO 12: (PRINTED SOLUTION AVAILABLE) A firm has sales of Rs.75,00,000 variable cost of Rs.42,00,000 and fixed cost of Rs. 6,00,000. It has a debt of Rs.45,00,000 at 9% and equity of Rs.55,00,000.

a) What is the firm's ROI?

b) Does it have favorable financial leverage?

c) If the firm belongs to an industry whose asset turnover is 3, does it have high or low asset leverage?

d) What are the operating, financial and combined leverages of the firm?

e) If the sales drop to Rs.50,00,000, what will be the new EBIT?

f) At what level the EBT of the firm will be equal to zero?

(A) (SIMILAR: RTP N18, MTP2 M18 (N)) (ANS.: A. 27% B. IS FAVORABLE FINANCIAL LEVERAGE C. THE FIRM'S ASSET TURNOVER RATIO IS LESS THAN THE INDUSTRY RATIO, D. 1.222, 1.1764, 1.438, E. RS. 16,00,290, F. SALES RS. 22,84,091)

(SOLVE PROBLEM NO. 12 OF ASSIGNMENT PROBLEMS AS REWORK)

CONCEPT QUESTIONS:

1. What would be the impact on EBT, If Fixed cost is considered as 10 Lakhs, Debt amount is taken as 75 Lakhs.
2. When does the financial leverage becomes adverse?

Note:_____

PROBLEM NO 13: (PRINTED SOLUTION AVAILABLE) Calculate the operating leverage, financial leverage and combined leverage from the following data under Situation I and II and Financial Plans A and B:

Installed Capacity	4,000 Units
Actual Production and Sales	75% of the Capacity
Selling Price	Rs. 30 per Unit
Variable cost	Rs. 15 per Unit

Fixed Cost:

Under Situation I	Rs. 15,000
Under Situation II	Rs. 20,000

Capital structure:

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

(A) (NEW SM, OLD SM, RTP M18) (ANS.: IN SITUATION I: PLAN A IS 1.5 TIMES, 1.07 TIMES, 1.61 TIMES & PLAN B IS 1.5 TIMES, 1.03 TIMES, 1.55 TIMES & IN SITUATION II: PLAN A IS 1.8 TIMES, 1.09 TIMES, 1.96 TIMES & PLAN B IS 1.8 TIMES, 1.04 TIMES, 1.87 TIMES)

(SOLVE PROBLEM NO. 13 OF ASSIGNMENT PROBLEMS AS REWORK)

CONCEPT QUESTIONS:

1. Analyse the impact on Combined Leverage if selling price increases (or) decreases by Rs.10?
2. "Financial leverage indirectly effected by change in fixed cost". Comment

Note:_____

_____

PROBLEM NO 14: (PRINTED SOLUTION AVAILABLE) The capital structure of JCPL ltd is as follows.

Particulars	Rs.
Equity Share Capital of Rs.10/- each	8,00,000
10% Preference Share capital of Rs.10/- each	5,00,000
12% Debentures of Rs.100/- each	7,00,000
	20,00,000

Additional Information:

Profit after tax (tax rate 30%) Rs.2,80,000

Operating expenses (including depreciation Rs. 96,800) being 1.50 times of EBIT

Equity Share dividend paid 15%

Market Price per equity share Rs.23 /-

Required to calculate:

i) Operating and Financial Leverage

ii) Cover for the preference and Equity share of dividend.

iii) The earning yield and price earnings ratio.

iv) The net funds flow. ***(A) (OLD PM)***

(ANS: (I) 1.20 TIMES, 1.21 TIMES (II) 5.6 TIMES, 1.92 TIMES (III) 12.5%, 8 TIMES (IV) RS. 2,06,800)

(SOLVE PROBLEM NO. 14 OF ASSIGNMENT PROBLEMS AS REWORK)

CONCEPT QUESTIONS:

1. What is the interlink between earnings yield and Price earnings ratio?
2. What would be the impact on net funds flow if depreciation is taken as Rs.2,00,000?

Note:_____

_____

MODEL 6: FINANCIAL LEVERAGE WHEN THERE IS PREFERENCE DIVIDEND

PROBLEM NO 15: The operating and total leverage of Enigma Company are 2 and 5 respectively. Total variable costs at the existing level of operations amount to Rs.6.5 lakhs. Interest expense and dividend on preference shares are Rs.75,000 and Rs.36,000 respectively. Corporate tax is 60%. Find out the sales revenue. ***(A) (ANS: SALES: RS. 12,00,000) (SOLVE PROBLEM NO. 15 OF ASSIGNMENT PROBLEMS AS REWORK)***

CONCEPT QUESTIONS:

1. What would be impact on Sales, if the Corporate tax is considered 40%.
2. What is the interlink between preference dividend and tax rate, while finding financial leverage?

MODEL 7: RETURN ON INVESTMENT- EPS

PROBLEM NO 16: The following data relate to two companies A ltd. and B Ltd.:

Particulars	A Ltd.	B Ltd.
Capital Employed:		
Equity share capital (in Rs.10 shares)	5,00,000	2,50,000
9% Debentures	---	2,50,000
earnings before interest and tax	1,00,000	1,00,000
Return on capital employed	20%	20%

The equity shareholders of A Ltd. find that in spite of same return earned by their company on the total capital employed, their earnings per share is much less as compared to B Ltd.

You are required to state for the satisfaction of the shareholders of A Ltd., the reasons for such lower earnings per share on their capital. Assume the tax at 50%.

(A) (ANS.: EPS OF A LTD IS RS. 1 & B LTD IS RS. 1.55) (SOLVE PROBLEM NO. 16 OF ASSIGNMENT PROBLEMS AS REWORK)

CONCEPT QUESTIONS:

1. What would be the impact on EPS if return on capital employed is taken as 10%?
2. What would be the impact on EPS if return on capital employed is taken as 30%?

Note: _____

_____

ASSIGNMENT PROBLEMS

MODEL 1: BASIC PROBLEMS

PROBLEM NO 1: 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 to calculate:

a) Operating Leverage

b) Financial Leverage

c) Combined Leverage

d) Return on Investment

e) If sales increases by 20%, what would be the new EBIT

(C) (OLD PM) (ANS.: a) 1.67 b) 1.50 c) 2.505 d) 12% e) 3,00,000)

PROBLEM NO 2: The following summarizes the percentage changes in operating income, percentage changes in revenues, and betas for four pharmaceutical firms.

Firm Ltd	Change in Revenue	Change in operating Income
PQR Ltd.	27%	25%
RST Ltd.	25%	32%

TUV Ltd.	23%	36%
TUV Ltd.	21%	40%

Required: Calculate the degree of operating leverage for each of these firms. Comment also

(OLD PM, M15, M17) (ANS.: 0.9259, 1.28, 1.5652, 1.9048)

PROBLEM NO 3: X Ltd. has estimated that for a new product its break-even point is 2,000 units if the item is sold for Rs. 14 per unit; the cost accounting department has currently identified variable cost of Rs. 9 per unit. Calculate the degree if operating leverage for sales volume of 2,500 units and 3,000 units. What do you infer from the degree of operating leverage at the sales volume of 2,500 and 3,000 and their difference if any? *(C) (TN) (ANS.: DOL: FOR 2,500 UNITS: 5; FOR 3,000 UNITS: 3)*

MODEL 2: EFFECT ON EBIT - EPS

PROBLEM NO 4: From the following information find out DOL using MOS

PARTICULARS	PRODUCT A
Sales (100 x 2,500 units)	2,50,000
Variable Cost (50 x 2,500 units)	1,25,000
Contribution	1,25,000
Fixed Cost	75,000

(ANS.: DOL: 2.5; MOS: 0.4)

PROBLEM NO 5: The following data is available for XYZ Ltd:

Sales	Rs.2,00,000
Less: Variable Cost @ 30%	60,000
Contribution	1,40,000
Less: Fixed cost	1,00,000
EBIT	40,000
Less: Interest	5,000
Profit Before Tax	35,000

Find out:

a) Using the concept of financial leverage, by what percentage will the taxable income increase if EBIT increases by 6%.

b) Using the concept of operating leverage, by what percentage will EBIT increase if there is 10% increase in sales, and

c) Using the concepts of leverage, by what percentage will the taxable income increase if the sales increase by 6%. Also verity the results in view of the above figures.

(A) (ANS.: A. %CHANGE IN EPS IS 6.8, B. %CHANGE IN EBIT IS 35, C. %CHANGE IN EPS IS 24)

MODEL 3: INTERPRETATION OF RISK

PROBLEM NO 6: The following figure relates to two companies: **(Rs. in Lakhs)**

	P Ltd.	Q Ltd.
Sales	500	1,000
Variable Costs	200	300
Contribution	300	700
Fixed Costs	150	400
EBIT	150	300
Interest	50	100
Profit Before Tax	100	200

You are required to:

a) Calculate the operating, financial and combined leverages for the two companies; and

b) Comment on the relative risk position of them.

(A) (ANS.: A. FOR P LTD. 2 TIMES, 1.5 TIMES, 3 TIMES & Q LTD. 2.33 TIMES, 1.5 TIMES, 3.495 TIMES)

MODEL 4: MISSING VALUES

PROBLEM NO 7: A company operates at a production level of 1,000 units. The contribution us Rs. 60 p.u. operating Leverage is 6, combined Leverage is 24. if the tax rate is 30%, what would be its earnings after tax? *(A) (PDK) (ANS.: EAT: RS.1,750)*

PROBLEM NO 8: From the following prepare Income Statement of Company A, B and C. Briefly comment on each company's performance:

Company	A	B	C
DOFL	3:1	4:1	2:1
Interest	Rs. 200	Rs. 300	Rs. 1000
DOL	4:1	5:1	3:1
Variable Cost as % to sales	66.67%	75%	50%
Income-tax Rate	45%	45%	45%

(A) (ANS.: SALES FOR COMPANY A RS. 3,600 & COMPANY B RS. 8,000 & COMPANY C RS. 12,000)

PROBLEM NO 9: X Ltd. manufactures and sells an electronic toy. The selling price and variable cost per toy are Rs.300 and Rs.100 respectively. Operating Fixed costs amounts to Rs.50,00,000. The Interest Expenses are Rs.10,00,000 and Degree of Financial Leverage is 3 times. Find out Degree of Operating Leverage and Sales volume respectively. *(A) (ANS.: A) DOL: 4.33 TIMES; B) 32,500 UNITS)*

MODEL 5: COMPREHENSIVE PROBLEMS

PROBLEM NO 10: The Sale revenue of Ram Ltd. @ Rs.50 Per unit of output is Rs.50 lakhs and Contribution is Rs.20 lakhs. At the present level of output the DOL of the company is 3. The company does not have any Preference Shares. The number of Equity Shares is 2 lakhs. Applicable corporate Income Tax rate is 40% and the rate of interest on Debt Capital is 10% p.a. What is the EPS (At sales revenue of Rs.50 lakhs) and amount of Debt Capital of the company if a 20% decline in Sales will wipe out EPS. *(NEW SM) (Ans.: EPS=1.2, DEPT CAPITAL= RS.60,00,000)*

PROBLEM NO 11: The well Established Company's most recent balance sheet is as follows:

Liabilities	Amount	Assets	Amount
Equity capital (Rs.10 per share)	Rs.60,000	Net fixed assets	Rs.1,50,000
10% Long-term debt	80,000	Current assets	50,000
Retained earnings	20,000		
Current liabilities	40,000		
	2,00,000		2,00,000

The company's total asset turnover ratio is 3, its fixed operating costs are Rs.1,00,000 and the variable costs ratio is 40%. The income tax rate is 35 percent.

a) Calculate all the three types of leverages.

b) Determine the likely level of EBIT if EPS is (i) Re 1, (ii) Rs 3, and (iii) Zero.

(A) (ANS.: A. DOL IS 1.38, DOFL IS 1.031, DOCL IS 1.42, B. (I) RS. 17,230.76 (II) RS. 35,692 (III) RS. 8,000)

PROBLEM NO 12: A firm has sales of Rs. 100,00,000 variable cost is 60% and fixed cost is Rs. 10,00,000. It has a debt of Rs. 45,00,000 at 10% and equity of Rs. 55,00,000. You are required to interpret:

i) The firm's ROI?

ii) Does it have favourable financial leverage?

iii) If the firm belongs to an industry whose capital turnover is 3, does it have a high or low capital turnover?

iv) The operating, financial and combined leverages of the firm?

v) If the sales is increased by 10% by what percentage EBIT will increase?

vi) At what level of sales the EBT of the firm will be equal to zero?

vii) If EBIT increases by 20%, by what percentage EBT will increase?

(A) (RTP N18 (N)) (ANS.: I) ROI: 27%; II) FAVOURABLE FINANCIAL LEVERAGE; III) CAPITAL TURNOVER: 0.75; IV) OL: 1.22; FL: 1.18; CL: 1.44; V) 12.20%; VI) RS. 22,92,000; VII) 23.6%)

PROBLEM NO 13: 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	Rs.30
Variable cost per unit	Rs.20

Fixed cost:

Situation 'A' = Rs. 20,000

Situation 'B' = Rs. 25,000

Capital structure of the company is as follows:

Particulars	Financial Plans	
	XY (Rs.)	XM(Rs.)
Equity	12,000	35,000
Debt (cost of debt 12%)	40,000	10,000
	52,000	45,000

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

(A) (ANS.: FINANCIAL PLAN XY, SITUATION A IS 1.5 & 1.14, SITUATION B IS 1.71 & 1.16 & FINANCIAL PLAN XM, SITUATION A IS 1.5 & 1.03, SITUATION B IS 1.71 & 1.04)

PROBLEM NO 14: The capital structure of JCPL Ltd. is as follows:

	Rs.
Equity share capital of Rs. 10 each	8,00,000
8% Preferences share capital of Rs. 10 each	6,25,000
10% Debenture of Rs. 100 each	4,00,000
	18,25,000

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.

You are required to calculate:

i) Operating and financial leverage.

ii) Cover for the preference and equity share of dividends.

iii) The earning yield and price earnings ratio.

iv) The net fund flow. *(A) (M12 - 8M)*

(ANS.: I) OL: 1.30, FL: 1.15; II) PREFERENCE DIVIDEND COVER: 1.10 TIMES; III) 8.25%, P/E RATIO: 12.1 TIMES; IV) NET FUNDS FLOW: 1,02,000)

MODEL 6: FINANCIAL LEVERAGE WHEN THERE IS PREFERENCE DIVIDEND

PROBLEM NO 15: The operating and total leverage of a Company are 3 and 6 respectively. Total variable costs at the existing level of operations amount to Rs.10,00,000. Interest expense and dividend on preference shares are Rs.2,50,000 and Rs.1,00,000 respectively. Corporate tax is 50%. Find out the sales revenue. *(A) (ANS: SALES: RS. 37,00,000)*

MODEL 7: RETURN ON INVESTMENT - EPS

PROBLEM NO 16: The following data relate to two companies A ltd. and B Ltd.:

Particulars	A Ltd	B Ltd
Capital Employed:		
Equity share capital (in Rs.10 shares)	10,00,000	4,00,000
15% Debentures	---	6,00,000
earnings before interest and tax	1,20,000	1,20,000
Return on capital employed	12%	12%

The equity shareholders of B Ltd. find that in spite of same return earned by their company on the total capital employed, their earnings per share is much less as compared to A Ltd.

You are required to state for the satisfaction of the shareholders of B Ltd., the reasons for such lower earnings per share on their capital. Assume the tax at 50%. *(A) (ANS: EPS OF A LTD IS RS. 0.6 & B LTD IS RS. 0.375)*

PRINTED SOLUTIONS TO SOME SELECTIVE PROBLEMS

PROBLEM NUMBERS TO WHICH SOLUTIONS ARE PROVIDED: 5, 6, 11, 12, 13, 14

PROBLEM NO. 5

INCOME STATEMENT

Particulars	Amount (Rs.)
i) Sales	3,40,000
ii) **Less:** Variable Cost (W.N.-1)	60,000
iii) Contribution (a-b)	2,80,000
iv) **Less:** Fixed Cost	60,000
v) **EBIT (c-d)**	**2,20,000**
vi) **Less:** Interest	60,000
vii) **EBT (e-f)**	**1,60,000**
viii) **Less:** Tax @ 35% (W.N.-2)	56,000
ix) **EAT (g-h)**	**1,04,000**

$\therefore$ Degree of Operating Leverage = $\frac{\text{Contribution}}{\text{EBIT}} = \frac{2,80,000}{2,20,000}$ = 1.27 times

$\therefore$ Degree of Financial Leverage = $\frac{\text{EBIT}}{\text{EBT}} = \frac{2,20,000}{1,60,000}$ = 1.375 times

$\therefore$ Degree of Combined Leverage = DOL x DFL = 1.27 x 1.375 = 1.75 times

WORKING NOTES:

W.N.- 1: **Calculation of Variable Cost:**

Variable Cost = Operating Exp. - Depreciation

= 1,20,000 - 60,000 = 60,000

W.N.- 2: Tax Rate = $\frac{\text{Amount of Tax}}{\text{Taxable Amount}} = \frac{56,000}{1,60,000}$ = 35%

EPS at the new sales level:

Particulars	If sales Increase by 20%	If sales Decrease by 20%
(A)Combined Leverage	1.75	1.75
(B)Impact on Change in combined leverage if Increase/Decrease by 20%	35% (1.75*20%)*100	35% (1.75*20%)*100
(C) EPS (EAT/No. of shares)	1.3 (104000/80000)	1.3 (104000/80000)
(D) Impact on EPS	1.755 (1.3 X 135%)	0.845 (1.3X65%)

PROBLEM NO. 6

INCOME STATEMENT:

Particulars	P	Q	R	S
a) Quantity Sold (Units)	20,000	25,000	30,000	40,000
b) Contribution / unit	Rs.5	Rs.5	Rs.5	Rs.5
c) Total Contribution (a x b)	1,00,000	1,25,000	1,50,000	2,00,000
d) Fixed Cost	(30,000)	(40,000)	(50,000)	(60,000)
e) EBIT (c-d)	**70,000**	**85,000**	**1,00,000**	**1,40,000**
f) Interest	(15,000)	(25,000)	(35,000)	(40,000)
g) EBT	55,000	60,000	65,000	1,00,000
h) Tax @ 40%	(22,000)	(24,000)	(26,000)	(40,000)
i) EAT	33,000	36,000	39,000	60,000
j) No. of Shares	5,000	9,000	10,000	12,000
k) EPS (i / j)	**Rs.6.6**	**Rs.4**	**Rs.3.9**	**Rs.5**
l) Operating Leverage = $\frac{\text{Contribution}}{\text{EBIT}}$	**1.43**	**1.47**	**1.50**	**1.43**
m) Financial Leverage = $\frac{\text{EBIT}}{\text{EBT}}$	**1.27**	**1.42**	**1.54**	**1.40**
n) Combined Leverage = (l) x (m) (O.L x F.L)	**1.82**	**2.09**	**2.31**	**2.00**

PROBLEM NO. 11

i) Calculation of Leverages and Earnings per Share (EPS)

INCOME STATEMENT

Particulars	(Rs.)
Sales Revenue	90,00,000
Less: Variable Cost @ 60%	54,00,000
Contribution	36,00,000
Less: Fixed Cost other than Interest	10,00,000
Earnings before Interest and Tax (EBIT)	26,00,000
Less: Interest (12% on Rs. 40,00,000)	4,80,000
Earnings before tax (EBT)	21,20,000

Less: Tax @ 30%	6,36,000
Earnings after tax (EAT)/ Profit after tax (PAT)	14,84,000

1. **Calculation of Operating Leverage (OL):**

$$\text{Operating Leverage} = \frac{\text{Contribution}}{\text{EBIT}} = \frac{\text{Rs.36,00,000}}{\text{26,00,000}} = 1.3846$$

2. **Calculation of Financial Leverage (FL):**

$$\text{Financial Leverage} = \frac{\text{EBIT}}{\text{EBT}} = \frac{\text{Rs.26,00,000}}{\text{Rs.21,20,000}} = 1.2264$$

3. **Calculation of Combined Leverage (CL):**

Combined Leverage = OL × FL = 1.3846 × 1.2264 = 1.6981 (Or),

Contribution / EBT = Rs.36,00,000 / Rs. 21,20,000 = 1.6981

4. **Calculation of Earnings per Share (EPS):**

$$\text{EPS} = \frac{\text{EAT/PAT}}{\text{No. of Equity Shares}} = \frac{\text{Rs.14,84,000}}{\text{Rs.400000}} = 3.71$$

5. **Calculation of likely levels of EBIT at Different EPS:**

$$\text{EPS} = \frac{(\text{EBIT} - \text{I})(1 - \text{T})}{\text{No. of Equity Shares}}$$

a) **If EPS is Rs. 4:**

4 = (EBIT - 4,80,000) (1 - 0.3) / 4,00,000 Or, EBIT - Rs. 4,80,000 = Rs. 16,00,000 / 0.70

EBIT - Rs. 4,80,000 = Rs. 22,85,714 Or, EBIT = Rs. 27, 65,714

b) **If EPS is Rs. 2:**

2 = (EBIT - 4,80,000) (1- 0.3)) / 4,00,000 Or, EBIT - Rs. 4,80,000 = Rs. 8,00,000 / 0.70

EBIT - Rs. 4,80,000 = Rs. 11,42,857 Or, EBIT = Rs. 16, 22,857

c) **If EPS is Rs. Zero:**

0 = (EBIT - 4,80,000) (1- 0.3) / 4,00,000 Or, EBIT = Rs. 4,80,000

PROBLEM NO: 12

INCOME STATEMENT

Particulars	Amount (Rs.)
Sales	75,00,000
Less: Variable cost (56% of 75,00,000)	42,00,000
Contribution	33,00,000
Less: Fixed cost	6,00,000
EBIT	27,00,000
Less: Interest @ 9% on Rs.45,00,000	4,05,000
EBT	22,95,000

1. ROI $= \frac{\text{EBIT}}{\text{Capital Employed}} \times 100 = \frac{\text{EBIT}}{\text{Equity} + \text{Debt}} \times 100$

$$= \frac{27,00,000}{55,00,000 + 45,00,000} \times 100 = 27\%$$

2. ROI = 27% and interest on debt is 9%

Hence it has a favorable financial leverage

3. Capital Turn over $= \frac{\text{Net Sales}}{\text{Capital employed}} = \frac{75,00,000}{100,00,000} = 0.75$

Which is very low as compared to industry average 3.

4. Calculation of leverages

a) Operating leverage = $\frac{\text{Contribution}}{\text{EBIT}} = \frac{33,00,000}{27,00,000} = 1.22$ times

b) Financial leverage = $\frac{\text{EBIT}}{\text{EBT}} = \frac{27,00,000}{22,95,000} = 1.18$ times

c) Combined leverage = $\frac{\text{Contribution}}{\text{EBT}} = \frac{33,00,000}{22,95,000} = 1.44$ times

5. Operating leverage is 1.22. So is sales increased by 10% EBIT will increased by 1.22 x 10% = 12.20%.

Operating leverage = 1.22

If sales drop to Rs.50,00,000 i.e. reduced by 33.33% $\left(\frac{75L - 50L}{75L} x100\right)$

1% change in sales = 1.22% change in EBIT

33.33% change in sales = 1.22 x 33.33 = 40.667 % change in EBIT

EBIT will also decrease by 40.667%

$\therefore$ Proposed EBIT = 27,00,000×(100% - 40.667%) = 16,01,991

6. EBT of firm will be equal to zero

EBT = 0

EBIT - Int = 0

EBIT = Interest

Contribution - Fixed Cost = Interest

Since VC = 56% of Sales

44% of sales = Interest + Fixed cost

Sales = $\frac{\text{Interest} + \text{Fixed Cost}}{44\%} = \frac{4,05,000 + 6,00,000}{44\%}$ = Rs.22,84,091

$\therefore$ At Sales level of Rs.22,84,091, EBT becomes Zero

PROBLEM NO. 13

Step-1: Calculation of total contribution

Particulars	
a) Installed capacity **(In units)**	4000
b) Actual Production (4,000 ×75%) **(In units)**	3000
c) Contribution for each unit (30-15)	Rs.15
d) Total contribution (3,000×15)	Rs.45,000

Step-2: Calculation of leverages under situation I & II and plans A&B

Particulars	Situation I		Situation II	
	Plan A	Plan B	Plan A	Plan B
Contribution	45,000	45,000	45,000	45,000
Less: Fixed cost	15,000	15,000	20,000	20,000
EBIT	30,000	30,000	25,000	25,000
Less: Interest	(10,000×20%) 2,000	(5,000×20%) 1,000	2,000	1,000
EBT	28,000	29,000	23,000	24,000
$DOL = \frac{\text{Contribution}}{\text{EBIT}}$	1.5 times	1.5 times	1.8 times	1.8 times
$DFL = \frac{\text{EBIT}}{\text{EBT}}$	1.07 times	1.03 times	1.09 times	1.04 times
DCL = DOLxDFL	1.61 times	1.55 times	1.96 times	1.87 times

Note:

1. Operating Leverage is independent of Capital Structure.
2. DOL = Degree of Operating Leverage, DFL = Degree of Financial Leverage & DCL = Degree of Combined Leverage.

PROBLEM NO. 14

WORKING NOTES:

Particulars	Amount (Rs.)
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

ii) Cover for Preference Dividend

= PAT / Preference Share Dividend = 2,80,000 / 50,000 = 5.6 times

Cover for Equity Dividend

= (PAT - Preference Dividend) / Equity Share Dividend

= (2,80,000 - 50,000) / 1,20,000 = 2,30,000 / 1,20,000 = **1.92 times**

iii) Earning Yield Ratio

= EPS / Market Price × 100

$= \frac{2,30,000}{\frac{80,000}{23}} \times 100$ = 2.875 / 23 × 100 = 12.5%

Price - Earnings Ratio (PE Ratio)

= Market Price / EPS = 23 / 2.875 = **8 times**

iv) Net Funds Flow:

= Net PAT + Depreciation-Total Dividend

= Rs. 2,80,000 + Rs. 96,800 - Rs. (50,000 + 1,20,000) = Rs. 3,76,800 - Rs. 1,70,000

Net Funds Flow = **Rs. 2,06,800**

ADDITIONAL PROBLEMS FOR STUDENTS SELF PRACTICE

PROBLEM NO 1: Calculate the operating leverage, financial leverage and combined leverage for the following firms:

Particulars	N	S	D
Production (in units)	17,500	6,700	31,800
Fixed costs (Rs.)	4,00,000	3,50,000	2,50,000
Interest on loan (Rs.)	1,25,000	75,000	Nil
Selling price per unit (Rs.)	85	130	37
Variable cost per unit (Rs)	38.00	42.50	12.00

(B) (OLD PM) (ANS.: DOL: 1.95, 2.48, 1.46, DFL: 1.42, 1.47, 1.00 DCL: 2.77, 3.65, 1.46)

PROBLEM NO 2: Calculate the operating leverage for each of the four firms A, B, C and D from the following price and cost data.

Particulars	Firms			
	A	B	C	D
Sale price per unit (in Rs.)	20	32	50	70
Variable cost per unit (in Rs.)	6	16	20	50
Fixed operating cost (in Rs.)	60,000	40,000	1,00,000	Nil

What conclusions can you draw with respect to levels of fixed cost and the degree of operating leverage result? Explain. Assume number of units sold is 5,000. *(A) (NEW SM, OLD SM)*

(ANS.: FOR EVERY 1% CHANGE IN SALES EBIT WILL CHANGE BY 7 TIMES, 2 TIMES, 3 TIMES & 1 TIME RESPECTIVELY FOR A, B, C, D)

PROBLEM NO 3: A Company had the following Balance Sheet as on March 31, 2006: **(Rs. in crores)**

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

The additional information given is as under:

Fixed Costs per annum (excluding interest)	Rs. 4 crores
Variable operating costs ratio	65%
Total Assets turnover ratio	2.5
Income-tax rate	30%

Required:

Calculate the following and comment:

a) Earnings per share

b) Operating Leverage

c) Financial Leverage

d) Combined Leverage *(A) (NEW SM, OLD SM, OLD PM, SIMILAR: N18 (O) - 5M)*

(ANS.: A. RS. 16.80, B. 1.296 TIMES, C. 1.125 TIMES, D. 1.458 TIMES)

PROBLEM NO 4: The capital structure of ABC Ltd. as at 31.3.15 consisted of ordinary share capital of Rs. 5,00,000 (face value Rs. 100 each) and 10% debentures of Rs. 5,00,000 (Rs. 100 each). In the year ended with March 15, sales decreased from 60,000 units to 50,000 units. During this year and in the previous year, the selling price was Rs.12 per unit; variable cost stood at Rs. 8 per unit and fixed expenses were at Rs.1,00,000 p.a. The income tax rate was 30%.
You are required to calculate the following:

i) The percentage of decrease in earnings per share.

ii) The degree of operating leverage at 60,000 units and 50,000 units.

iii) The degree of financial leverage at 60,000 units and 50,000 units. *(A) (OLD PM)*

(ANS.: (I) 5.6%, 44.44% (II) OPERATING LEVERAGE: 1.71 & 2 (III) FINANCIAL LEVERAGE: 1.56 & 2)

PROBLEM NO 5: From the following financial data of Company A and Company B: Prepare their Income Statements.

	Company A (Rs.)	Company B (Rs.)
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

(B) (OLD PM, N09) (ANS.: EAT FOR COMPANY A IS RS. 2,100 & COMPANY B IS RS. 1,050)

PROBLEM NO 6: The following information related to XL Company Ltd. for the year ended 31st March, 2016 are available to you:

Equity share capital of Rs. 10 each	Rs. 25 lakh
11% Bonds of Rs.1000 each	Rs. 18.5 lakh
Sales	Rs. 42 lakh
Fixed cost (Excluding Interest)	Rs. 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) Earnings per Share

(A) (OLD PM, MTP1 M18 (N) - 5M, SIMILAR: RTP M20 (N&O) (90%)) (ANS.: DOL=1.48, DCL = 2.06 & EPS = 1.36)

PROBLEM NO 7: Saraju Ltd. produces electronic components with a selling price per unit of Rs.100. Fixed cost amounts to Rs.2,00,000. 5,000 units are produced and sold each year. Annual profits amount to Rs. 50,000. The company's all equity-financed assets are Rs. 5,00,000. The company proposes to change its production process, adding Rs.4,00,000 to investment and Rs.50,000 to fixed operational costs. The consequences of such proposal are:

a) Reduction in variable cost per unit by Rs. 10.

b) Increase in output by 2,000 units.

c) Reduction in S.P./unit to 95.

Assuming an average cost of capital 10%, examine the above proposal and advise whether or not the company should make the change. Also measure degree of operating leverage and break-even point.

(A) (ANS.: IT IS ADVISABLE FOR THE COMPANY TO IMPLEMENT THE PROPOSED CHANGES)

THE END