Ch - 1 Financial Decisions - Leverages

Q. No		R1	R2	R3	Special Point
ICAI Module					
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Q.2	Illustration 2				
Q.3	Illustration 3				
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Q.5	Illustration 5				
Q.6	Practical Q1				
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Previous Year Exam Questions					
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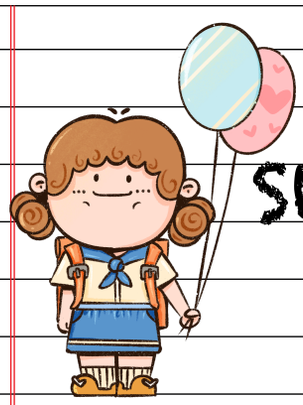
Q37.	May 2023				
Q38.	Nov 2021				
Q39.	May 2022				
Q40.	Nov 2022				



SUPER STAR QUESTIONS

Q8. Practical Q4
Q10. Practical Q10
Q13. Practical Q8
Q26. PY Nov 19
Q27. PY Jan 21

Q11. Practical Q6
Q14. Practical Q9
Q16. Additional Question
Q40. RTP Nov 22
Q24. PY Dec 21

LEVERAGE

Financial (DFL) occurs due to fixed financial cost eg - Interest

Operational (DOL) occurs due to fixed operational cost. eg - rent, depreciation, salary

Combined (DCL) occurs due to both, fixed financial cost and operational cost

Example -

(1) With fixed Cost

	Before	+ve	-ve
Sale	10,000	20,000	5,000
(-) Variable Cost	(3,000)	(6,000)	(1,500)
contribution	7,000	14,000	3,500
(-) fixed cost	(4,000)	(4,000)	(4,000)
↳ eg - rent, salary			
EBIT	3,000	10,000	(500)

2 times → 20,000

more than 3 times

(2) Without fixed cost

Sale	10,000	20,000
(-) Variable Cost	(3,000)	(6,000)
contribution	7,000	14,000
(-) fixed cost	(0)	(0)
EBIT	7,000	14,000

2 times → 20,000

2 times

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

$\therefore$, (1) $DOL = \frac{7,000}{3,000} = 2.33$ times

$3000 + 2.33\,(3,000) = 10,000$

↳ increased by 2.33 times

(2) $DOL = \frac{7,000}{7,000} = 1$ time

When fixed cost is zero, DOL would always be '1'

(3) high fixed cost

Sale	10,000	20,000
(-) Variable cost	(3,000)	(6,000)
contribution	7,000	14,000
(-) fixed cost	(6,000)	(6,000)
EBIT	1,000	8,000

$DOL = \frac{7,000}{1,000} = 7$ times

conclusion

	fixed Cost	DOL
1.	4,000	2.33 times
2.	6,000	7 times

If fixed cost increases DOL increases. Hence, leverage more, risk is more.

Summary

Companies like PVR, Air India having high fixed cost like rent, interest, salary will have more leverage. Although there is no sale during covid, still all such fixed cost remain constant. Hence, company is taking high risk. As an investor we should prefer to invest in a company having low fixed cost as well as low leverage.

Case Study

Air India - 1,000 aircrafts

Debt. - 10,000 Cr.	Adverse impact of leverage
ROI - 18%	ROI - 6%
Int. - 10%	Int. - 10%
Profit - 8%	loss - (4%)

Interpretation of leverage.

DFL ज़्यादा	DOL ज़्यादा
Debt. ज़्यादा	fixed cost ज़्यादा
Int. ज़्यादा	Rent / Salary ज़्यादा
Risk ज़्यादा	Risk ज़्यादा
Benefit ज़्यादा	Profit ज़्यादा
Profit ज़्यादा	

Let's understand DOL, DFL, DCL with the help of following example

	FY23	FY24	Change
Sale	20,000	24,000	20%
(-) Variable cost (30%)	(6,000)	(7,200)	20%
contribution	14,000	16,800	20%
(-) fixed cost	(4,000)	(4,000)	0%
EBIT	10,000	12,800	28%
(-) Interest	(5,000)	(5,000)	0%
EBT	5,000	7,800	56%

Answer :

$$DOL_{(F_1)} = \frac{\text{Contribution}}{\text{EBIT}} = \frac{14,000}{10,000} = 1.4$$

$$DOL_{(F_2)} = \frac{\%\text{ change in EBIT}}{\%\text{ change in Sales}} = \frac{28\%}{20\%} = 1.4$$

$$DFL_{(F_1)} = \frac{\text{EBIT}}{\text{EBT}} = \frac{10,000}{5,000} = 2$$

$$DFL_{(F_2)} = \frac{\%\text{ change in EBT}}{\%\text{ change in EBIT}} = \frac{56\%}{28\%} = 2$$

$$DCL = DOL \times DFL = 1.4 \times 2 = 2.8$$

$$DCL_{(F_1)} = \frac{\text{Contri}}{\cancel{\text{EBIT}}} \times \frac{\cancel{\text{EBIT}}}{\text{EBT}}$$

$$DFL_{(F_2)} = \frac{\cancel{\%\text{ change in EBIT}}}{\%\text{ change in Sales}} \times \frac{\%\text{ change in EBT}}{\cancel{\%\text{ change in EBIT}}}$$

DCL (F1) = Contri / EBT

= 14,000 / 5,000

= 2.8

DCL (F2) = % change in EBT / % change in Sales

= 56% / 20%

= 2.8

QUESTION

Date :	N.B. Pg. No	Stars :	Illustration 1

Q.1 A Company produces and sells 10,000 shirts. The selling price per shirt is ₹ 500. Variable cost is ₹ 200 per shirt and fixed operating cost is ₹ 25,00,000.

(a) CALCULATE operating leverage.

(b) If sales are up by 10%, then COMPUTE the impact on EBIT ?

Point To Be Noted : _____

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Date :	N.B. Pg. No	Stars :	Illustration 2

Q.2 CALCULATE the operating leverage for each of the four firms A, B, C and D from the following price and cost data :

	Firms			
	A	B	C	D
Sale Price/unit	20	32	50	70
Variable cost/unit	6	16	20	50
Fixed Operating cost	60,000	40,000	1,00,000	nil

What calculations 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.

Point To Be Noted : _____

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Q.3 A firm's details are as under:

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

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

Consider tax @ 50 %. CALCULATE:

(a) Operating Leverage

(b) Financial Leverage

(c) Combined Leverage

(d) Return on Investment

(e) If the sales increases by ₹ 6,00,000; what will the new EBIT?

Point To Be Noted : _____

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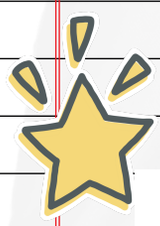

Financial leverage	1.49
Profit-volume Ratio	27.55%
Income Tax Applicable	40%

You are required to CALCULATE:

(i) Operating Leverage; (ii) Combined leverage; and

(iii) Earnings per share.

Show calculations up-to two decimal points.

Point To Be Noted : _____

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Q.5 Following are the selected financial information of A Ltd. and B Ltd. for the year ended March 31st, 2021:

	A Ltd	B Ltd
Variable Cost Ratio	60%	50%
Interest	20,000	1,00,000
Operating Leverage	5	2
Financial Leverage	3	2
Tax Rate	30%	30%

You are required to FIND out:

(i) EBIT (ii) Sales

(iii) Fixed Cost (iv) Identify the company which is better placed with reasons based on leverages.

Point To Be Noted : _____

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Date :	N.B. Pg. No	Stars :	Practical Q1

Q.6 From the following information extracted from the books of accounts of Imax Ltd., CALCULATE percentage change in earnings per share, if sales increase by 10% and Fixed Operating cost is ₹ 1,57,500.

Particulars	Amount in (₹)
EBIT (Earnings before Interest and Tax)	31,50,000
Earnings before Tax (EBT)	14,00,000

Point To Be Noted : _____

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Date :	N.B. Pg. No	Stars :	Practical Q2

Q.7 Consider the following information for Mega Ltd.:

Production level	2,500 units
Contribution per unit	₹ 150
Operating leverage	6
Combined leverage	24
Tax rate	30%

Required: COMPUTE its earnings after tax.

Point To Be Noted : _____

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Date :	N.B. Pg. No	Stars :	Practical Q4

Q.8 The capital structure of PS Ltd. for the year ended 31st March 2021 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 2020-21, 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:

(i) The degree of financial leverage at 1,20,000 units and 1,00,000 units.

(ii) The degree of operating leverage at 1,20,000 units and 1,00,000 units.

(iii) The percentage change in EPS.

Point To Be Noted : _____

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Date :	N.B. Pg. No	Stars :	Practical Q5

Q.9 The Sale revenue of TM excellence Ltd. @ ₹ 20 Per unit of output is ₹ 20 lakhs and Contribution is ₹ 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 are 1 lakh. Applicable corporate Income Tax rate is 50% and the rate of interest on Debt Capital is 16% p.a. CALCULATE 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.

Date :	N.B. Pg. No	Stars :	Practical Q10

Q.10 The following details of a company for the year ended 31st March, 2021 are given below:

Operating Leverage	2:1
Combined Leverage	2.5:1
Fixed Cost (excl Interest)	₹ 3.4 lakhs
Sales ₹ 50 lakhs	
8% Debentures of ₹100 each	₹ 30.25 lakhs
Equity Share capital of ₹10 each	₹ 34 lakhs
Income Tax Rate	30%

CALCULATE:

(i) Financial Leverage

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

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

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

Point To Be Noted : _____

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Date :	N.B. Pg. No	Stars :	Practical Q12

Q.12 You are given the following information of 5 firms of the same industry:

Name of the firm	Chg in Revenue	Change in Operating Income	Chg in EPS
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 for all firms:

(i) Degree of operating leverage and

(ii) Degree of combined leverage.

Point To Be Noted : _____

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Date :	N.B. Pg. No	Stars :	Practical Q8

Q.13 CALCULATE the operating leverage, financial leverage and combined leverage from the following data under Situation I and II and Financial Plan A and B:

Fixed Cost:

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

Capital Structure:

	Financial Plan	
	A(₹)	B(₹)
Equity	10,000	15,000
Debt (ROI 20%)	10,000	5,000
	20,000	20,000

Point To Be Noted : _____

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Date :	N.B. Pg. No	Stars :	Practical Q7 (similar)

Q.15 A Company had the following Balance Sheet as on March 31, 2017.

Liabilities and Equity	Amount (₹)	Assets	Amount (₹)
Equity Share Capital of ₹10 each	10,00,000	Fixed Assets	30,00,000
Reserves and Surplus	2,00,000	Current Assets	18,00,000
15% Debentures	28,00,000		
Current Liabilities	8,00,000		
	48,00,000		48,00,000

The additional information given is a sunder:

Fixed cost per annum (excluding Interest) - ₹ 28,00,000 Variable Operating Cost Ratio –60%

Total Assets Turnover Ratio – 2.5IncomeTaxRate–30%

Calculate the following and comment :

(i) Earnings per share

(ii) Combined Leverage.

Point To Be Noted : _____

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Date :	N.B. Pg. No	Stars :	Additional Question

Q.16 Z Limited is considering the installation of a new project costing ₹ 80,00,000. Expected annual sales revenue from the project is ₹ 90,00,000 and its variable costs are 60 percent of sales. Expected annual fixed cost other than interest is ₹ 10,00,000. Corporate tax rate is 30 percent. The company wants to arrange the funds through issuing 4,00,000 equity shares of ₹ 10 each and 12 percent debentures of ₹ 40,00,000.

You are required to:

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

ii) Determine the likely level of EBIT, if EPS is ₹ 4, or ₹ 2, or 0.

Point To Be Noted : _____

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Q.20 Following is the Balance Sheet of Soni Ltd. as on 31st March, 2018 :

Liabilities	Amount in
Share holder's Fund	25,00,000
Equity Share Capital(10each)	5,00,000
Reserve and Surplus	50,00,000
Non-Current Liabilities (12 Debentures)	20,00,000
Current Liabilities	1,00,00,000
Total	Amount
Assets	60,00,000
Non-Current Assets Current Assets	40,00,000
Total	1,00,00,000

Additional Information:

(i) Variable Cost is 60% of Sales.

(i) Fixed Cost p.a. excluding interest ₹ 20,00,000.

(ii) Total Asset Turnover Ratio is 5 times.

(iii) Income Tax Rate 25% You are required to:

(1) Prepare Income Statement

(2) Calculate the following and comment:

(a) Operating Leverage

(b) Financial Leverage

(c) Combined Leverage

Point To Be Noted : _____

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Q.23 A company had the following balance sheet as on 31st March, 2021 :

Liabilities	Rs in Crores	Assets	Rs. in Crore s
Equity Share Capital (75 lakhs Shares of Rs.10 each)	7.50	Building	12.50
Reserves and Surplus	1.50	Machinery	6.25
15% Debentures	15.00	Current Assets	
Current Liabilities	6.00	Stock	3.00
		Debtors	3.25
		Bank Balance	5.00
	30.00		30.00

The additional information given is as under:

Fixed cost per annum (excluding Rs.6 crores interest)

Variable operating cost ratio 60%

Total assets turnover ratio 2.5

Income-tax rate 40%

Calculate the following and comment:

(i) Earnings per share

(ii) Operating Leverage

(iii) Financial Leverage

(iv) Combined Leverage

Q.25 The balance sheet of Gitashree Ltd. is given Below :

Liabilities	₹
Shareholders fund	
Equity share capital of ₹ 10 each ₹ 1,80,000	
Retained earnings ₹ 60, 000	2,40,000
Non current liabilities 10% debt	2,40,000
Current liabilities	1,20,000
	6,00,000
Assets	
Fixed assets	4,50,000
Current assets	1,50,000
	6,00,000

The company's total assets turnover ratio is 4. Its fixed operating cost is ₹ 2,00,000 and its variable operating cost ratio is 60%. The income tax rate is 30%.

Calculate :

i) (a) Degree of Operating leverage
(b) Degree of financial leverage
(c) Degree of combined leverage

(ii) Find out EBIT if EPS is (a) ₹ 1 (b) ₹ 2 and (c) ₹ 0.

Date :	N.B. Pg. No	Stars :	May 2019, Marks 10

Q.21 The capital structure of the Shiva Ltd. consists of equity share capital of ₹ 20,00,000 (Share of ₹ 100 per value) and ₹ 20,00,000 of 10% Debentures, sales increased by 20% from 2,00,000 units to 2,40,000 units, the selling price is ₹ 10 per unit; variable costs amount to₹ 6 per unit and fixed expenses amount to ₹ 4,00,000. The income tax rate is assumed to be 50%.

You are required to calculate the following:

The percentage increase in earnings per share;

Financial leverage at 2,00,000 units and 2,40,000 units

Operating leverage at 2,00,000 units and 2,40,000 units.

Comment on the behaviour of operating and Financial leverages in relation to increase in production from 2,00,000 units to 2,40,000 units.

Point To Be Noted : _____

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Date :	N.B. Pg. No	Stars :	Nov. 2020, Marks 10

Q.22 The following data is available for Stone Ltd. :

Sales	5,00,000
(-) Variable cost @ 40%	2,00,000
Contribution	3,00,000
(-) Fixed cost	2,00,000
EBIT	1,00,000
(-) Interest	25,000
Profit before tax	75,000

Using the concept of leverage, find out

(i) The percentage change in taxable income if EBIT increases by 10%.

(ii) The percentage change in EBIT if sales increase by 10%.

(iii) The percentage change in taxable income if sales increase by 10%. Also verify the results in each of the above case.

Date :	N.B. Pg. No	Stars :	Jan 2021, 10 Marks

Q.26 The information related to XYZ company Ltd. for the year ended 31st March 2020 are as follows :

Equity share Capital of ₹ 100 each	₹ 50 Lakhs
12% Bonds of ₹ 1000 each	₹ 30 Lakhs
Sales	₹ 84 Lakhs
Fixed Cost (Excluding Interest)	₹ 7.5 Lakhs
Financial Leverage	1.39
Profit Volume Ration	25%
Market Tax Rate Applicable	₹ 200
Income Tax Rate Applicable	30 %

Your are required to compute the following :

(i) Operating Leverages
(ii) Combined Leverage
(iii) Earning per share
(iv) Earning Yield

Point To Be Noted : _____

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Date :	N.B. Pg. No	Stars :	Nov. 2022, Marks 10

Q.28 The following information is available for SS Ltd.

Profit volume (PV) ratio	30 %
Operating leverage	2.00
Financial leverage	1.50
Loan	₹ 1,25,000
Post tax interest rate	5.6%
Tax rate	30%
Market price per share (MPS)	₹ 140
Price Earnings Ratio (PER)	10

You are required to :

(i) Prepare the Profit Loss statement of SS Ltd. and

(ii) Find out the number of Equity shares

Point To Be Noted : _____

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DON'T FORGET

Date :	N.B. Pg. No	Stars :	May 2018

Q.30 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

Point To Be Noted : _____

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Q.31 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:

(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?

Point To Be Noted : _____

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Date :	N.B. Pg. No	Stars :	May 2019

Q.32 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.

Point To Be Noted : _____

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Q.33 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:

(i) CALCULATE the degree of operating leverage for each of these firms. Comment also.

(ii) Use the operating leverage to EXPLAIN why these firms have different beta.

Q.11 Betatronics Ltd. has the following balance sheet and income statement information:

Balance Sheet as on March 31st 2022

Liabilities	₹	Assets	₹
Equity share (₹ 10/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 31st 2022

Particulars	₹
Sales	3,40,000
Operating expenses (including ₹ 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,

COMPUTE the earnings per share at the new sales level?

Point To Be Noted : _____

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Q.17 From the following details of X Ltd., prepare the Income Statement for the year ended 31st December, 2017:

Financial Leverage	2
Interest	₹ 2,000
Operating Leverage	3
Variable cost as a percentage of sales	75%
Income tax rate	30%

Q.14 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/unit	₹ 40
Variable Cost/unit	₹ 20
Fixed cost	₹ 1,00,000

The Capital Structure of the Company as on 31st March 2022 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%.

Date :	N.B. Pg. No	Stars :	May 2018, Marks 10

Q.19 The following data have been extracted from the books of LM Ltd: Sales –₹100 lakhs

Interest Payable per annum - ₹ 10 lakhs

Operating leverage - 1.2

Combined leverage - 2.16

You are required to calculate:

(a) The financial leverage, (b) Fixed cost and (c) P/V ratio

Point To Be Noted : _____

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Date :	N.B. Pg. No	Stars :	Dec. 2021, Marks 10

Q.24 Information of A Ltd. is given below:

Earnings after tax: 5% on sales

Income tax rate: 50%

Degree of Operating Leverage: 4 times

10% Debenture in capital structure: ₹ 3 lakhs

Variable costs: ₹ 6 lakhs

Required:

(i) From the given data complete following statement:

Sales	XXX
Less: Variable costs	₹ 6,00,000
Contribution	XXX
Less: Fixed costs	XXX
EBIT	XXX
Less: Interest expenses	XXX
EBT	XXX
Less: Income tax	XXX
EAT	XXX

(ii) Calculate Financial Leverage and Combined Leverage.

(iii) Calculate the percentage change in earning per share, if sales increased by 5%

Point To Be Noted : _____

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Date :	N.B. Pg. No	Stars :	May 2022, Marks 10

Q.27 Details of a company for the year ended 31st March 2022 are given below :

Sales	₹ 86 Lakhs
Profit Volume (P/V) Ratio	35%
Fixed cost excluding interests expenses	₹ 10 Lakhs
10 % Debt	₹ 55 Lakhs
Equity share capital of ₹ 10 each	₹ 75 Lakhs
Income Tax rate	40 %

Required :

(i) Determine company's Returen on capital Employed (Per-tax) and EPS.

(ii) Does the company have favourable financial leverage ?

(iii) Calculate operating and combined leverages of the company

(iv) Calculate percentage change in EBIT, if sales increases by 10%

(v) At what level of sales the earning before tax (EBT) of company will be equal to zero ?

Point To Be Noted : _____

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Q.29 Following information is given for X Ltd. :

Total contribution (₹)	4,25,000
Operating leverage	3.125
15% Preference shares (₹ 100 each)	1,000
Number of equity shares	2,500
Tax rate	50%

Calculate EPS of X Ltd, if 40% decreases in sales will results EPS to zero

Point To Be Noted : _____

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Q.40 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 plAnswer :

(ii) ASCERTAIN financial leverage in each plan and comment.

Point To Be Noted : _____

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Self Assessment Questions

Date :	N.B. Pg. No	Stars :	May 2020

Q.34 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:

(i) Operating Leverage;

(ii) Combined leverage; and

(iii) Earnings per share.

Show calculations up-to two decimal points.

Point To Be Noted : _____

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Date :	N.B. Pg. No	Stars :	Nov. 2020

Q.35 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:

(a) The degree of financial leverage at 1,20,000 units and 1,00,000 units.

(b) The degree of operating leverage at 1,20,000 units and 1,00,000 units.

(c) The percentage change in EPS.

Point To Be Noted : _____

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Date :	N.B. Pg. No	Stars :	May 2021

Q.36 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:

(i) The percentage change in taxable income if sales increase by 15%.

(ii) The percentage change in EBIT if sales decrease by 10%.

(iii) The percentage change in taxable income if EBIT increase by 15%.

Point To Be Noted : _____

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Date :	N.B. Pg. No	Stars :	May 2023

Q.37 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

Point To Be Noted : _____

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Date :	N.B. Pg. No	Stars :	May 2023

Q.37 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

Point To Be Noted : _____

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Date :	N.B. Pg. No	Stars :	May 2022

Q.39 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.

Point To Be Noted : _____

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Date :	N.B. Pg. No	Stars :	Nov 2021

Q.38 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%.

Point To Be Noted : _____

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Q.4 The following information is related to Yizi Company Ltd. for the year ended 31st March, 2021:

Equity shares 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:

(i) Operating Leverage; (ii) Combined leverage; and (iii) Earnings per share.

Show calculations up-to two decimal points.

Ans: Computation of profit after Tax (PAT)

Particulars	(₹)
Sales	84,00,000
Contribution (Sales x P/V) ratio	23,14,200
Less: Fixed cost (excluding interest)	(6,96,000)
EBIT (Earning before interest and tax)	16,18,200
Less: Interest on debentures (12% x ₹37 lakh)	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:

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

(ii) Combined Leverage:

=Operating Leverage x Financial Leverage

= 1.43 x 1.49 = 2.13

OR,

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

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

Financial Leverage = $\frac{EBIT}{EBT} = \frac{16,18,200}{EBT} = 1.49$

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

Accordingly, other fixed interest = ₹ 16,18,200 − ₹ 10,86,040 − ₹ 4,44,000
= 88,160

(iii) Earnings per share (EPS):]

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

Q.5

Following are the selected financial information of A Ltd. And B Ltd. For the current Financial Year.

Particulars	**A Ltd.**	**B. Ltd.**
Variable Cost Ratio	60%	50%
Interest	₹20,000	₹1,00,000
Operating Leverage	5	2
Financial Leverage	3	2
Tax Rate	30%	30%

You are required to FIND out:

(i) EBIT
(ii) Sales
(iii) Fixed Cost
(iv) Identify the company which is better placed with reasons based on leverages.

Ans: **Company A**

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

So, 3 $= \frac{EBIT}{EBIT - ₹20,000}$

Or, 3 (EBIT – 20,000) = EBIT
Or, 2 EBIT = 60,000
Or, EBIT = 30,000

(ii) Operating Leverage $= \frac{Contribution}{EBIT}$ Or, $5 = \frac{Contribution}{₹30,000}$
Or, Contribution = ₹1,50,000

Sales $= \frac{Contribution}{P/V\ Ratio\ (1 - variable\ cost\ ratio)} = \frac{₹1,50,000}{40\%} = ₹3,75,000$

(iii) Fixed Cost = Contribution –EBIT
= ₹ 1,50,000 − 30,000
Or, Fixed Cost = ₹ 1,20,000

Company B

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

So, 2 $= \frac{EBIT}{EBIT - ₹1,00,000}$

Or, 2 (EBIT – ₹ 1,00,000) = EBIT
Or, 2 EBIT - ₹ 2,00,000 = EBIT
Or, EBIT = ₹2,00,000

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

Or, 2 $= \frac{Contribution}{₹2,00,000}$

Or, Contribution = ₹4,00,000

Sales $= \frac{Contribution}{P/V\ Ratio\ (1 - variable\ cost\ ratio)} = \frac{₹\ 4,00,000}{50\%}$ = ₹8,00,000

(iii) Fixed Cost = Contribution –EBIT
= ₹ 4,00,000 − ₹2,00,000
Or, Fixed Cost = ₹ 2,00,000

	Company A (₹)	**Company B (₹)**
Sales	3,75,000	8,00,000
Less:	2,25,000	4,00,000
Contribution	1,50,000	4,00,000
Less: Fixed Cost	1,20,000	2,00,000
Earnings before interest and tax (EBIT)	30,000	2,00,000
Less: Interest	20,000	1,00,000
Interest before tax (EBT)	10,000	1,00,000
Less: Tax @ 30%	3,000	30,000
Earnings after tax (EAT)	7,000	70,000

Comment based on Leverage

Comment based on leverage – Company B is better than company A of the following reasons:

- Capacity of Company B to meet interest liability is better than that of companies A (from EBIT/interest ratio)

  [$A = \frac{₹30,000}{₹20,000}$ = 1.5 B = $\frac{₹20,000}{₹1,00,000}$ = 2]
- Company B has the least financial risk as the total risk (business and financial) of company B is lower (combined leverage of Company A-15 and Company B-4)

Q.13 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 (ROI 20%)	10,000	5,000
	20,000	20,000

Ans: **(i) Operating Leverage (OL)**

	Situation-I (₹)	**Situation-II** (₹)
Sales (3000 units @ 30 percent unit)	90,000	90,000
Less: Variable Cost (@15 percent unit)	45,000	45,000
Contribution (C)	45,000	45,000
Less: Fixed Cost	15,000	20,000
EBIT	30,000	25,000
Operating Leverage (OL) $=\frac{C}{EBIT}$	$=\frac{45,000}{30,000}$ =1.5	$=\frac{45,000}{30,000}$ =1.8

(ii) Financial Leverage (FL)

	A (₹)	**B (₹)**
Situation I		
EBIT	30,000	30,000
Less: Interest on debt	2,000	1,000
EBT	**28,000**	**28,000**
Financial Leverage (FL) $=\frac{EBIT}{EBT}$	$=\frac{30,000}{28,000}$ **=1.07**	$=\frac{30,000}{29,000}$ **=1.034**

	A (₹)	B (₹)
Situation-II		
EBIT	25,000	25,000
Less: Interest on debt	2,000	1,000
EBT	23,000	24,000
Financial Leverage (FL) $=\frac{EBIT}{EBT}$	$=\frac{25,000}{23,000}$	$=\frac{25,000}{24,000}$
	=1.09	=1.04

(iii) Combined Leverage (CL)

	A	B
Situation-I		
CL =FL x OL	1.5x1.07=1.61	1.5x1.03=1.55
Situation-II		
CL x FL x OL	1.8x1.09=1.96	1.8x1.04=1.872

Q.18 From the following information prepare income statement of Company A and B "

Particulars	Company A	Company B
Margin of safety	0.20	0.25
Interest	3,000	2,000
Profit volume ratio	25%	33.33$
Financial leverage	4	3
Tax Rate	45%	45%

Ans: Income Statement

Particulars	Company A (₹)	Company B (₹)
Sales	80,000	36,000
Less: Variable Cost	60,000	24,000
Contribution	20,000	12,000
Less: Fixed Cost	16,000	9,000
EBIT	4,000	3,000
Less: Interest	3,000	2,000
EBT	1,000	1,000
Tax (45%)	450	450
EAT	550	550

Workings:

(i) Company A

Financial Leverage = EBIT/(EBIT-Interest)

4 = EBIT/(EBIT- ₹3,000)

4EBIT- ₹ 12,000 = EBIT

	3EBIT	= ₹ 12,000
	EBIT	= ₹ 4,000
	Company B	
	Financial Leverage	= EBIT/(EBIT- interest)
	3	= EBIT/(EBIT - ₹ 2,000)
	3EBIT -₹6000	= EBIT
	2EBIT	= ₹ 6,000
	EBIT	= ₹ 3,000
(ii)	**Company A**	
	Operating Leverage	= 1/Margin of Safety
	= 1/0.20	= 5
	Operating Leverage	= Contribution/EBIT
	5	= Contribution / ₹ 4,000
	Contribution	= ₹ 20,000
	Company B	
	Operating Leverage	= 1/Margin of Safety
	=1/0.25	= 4
	Operating Leverage	= Contribution/EBIT
	Operating Leverage	= Contribution/EBIT
	4	= Contribution / ₹ 3,000
	Contribution	= ₹ 12,000
(iii)	**Company A**	
	Profit Volume Ratio	= 25% (Given)
	Profit Volume Ratio	= Contribution/Sales x100
	25%	=₹20,000/Sales
	Sales	= ₹ 20,000/25%
	Sales	= ₹ 80,000
	Company B	
	Profit Volume Ratio	= 33.33%
	Therefore, Sales	= ₹ 12,000/33.33%
	Sales	= ₹ 36,000

Ch 6
Leverage

1 Introduction

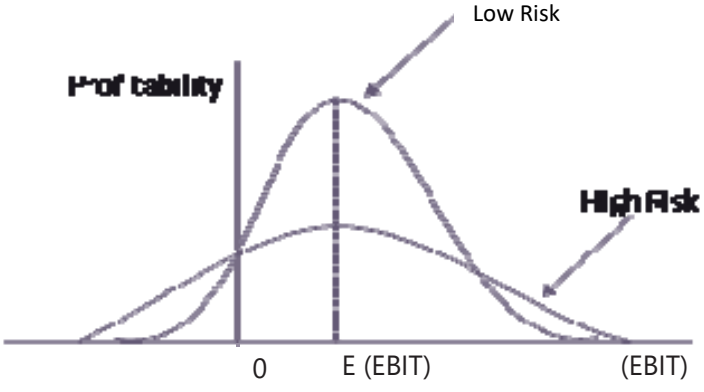
- A firm can finance its operations through common and preference shares, with retained earnings, or with debt. Usually a firm uses a combination of these financing instruments.
- Capital structure refers to a firm's debt-to-equity ratio, which provides insight into how risky a company is Capital structure decisions by firms will have an effect on the expected profitability of the firm, the risks faced by debt holders and shareholders, the probability of failure, the cost of capital and the market value of the firm.

1.1 Business Risk and Financial Risk

- Risk facing the common shareholders is of two types, namely business risk and financial risk. Therefore, the risk faced by common shareholders is a function of these two risks, i.e. Business Risk, Financial Risk

a) **Business Risk :** It refers to the risk associated with the firm's operations. It is the uncertainty about the future operating income (EBIT), i.e. how well can the operating incomes be predicted ?

Business risk can be measured by the standard deviation of the Basic Earning Power ratio.



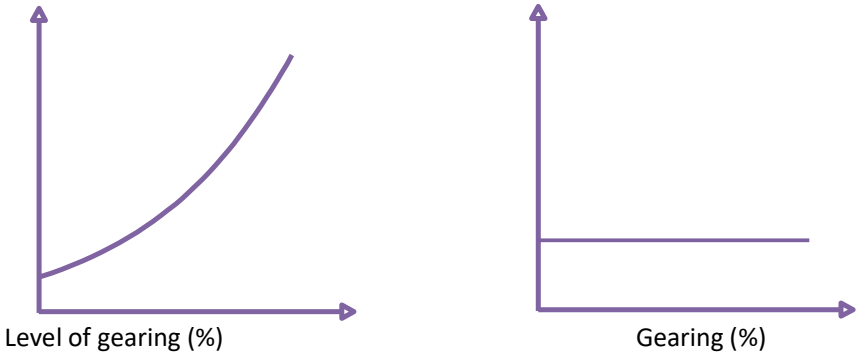
b) **Financial Risk :** It refers to the additional risk placed on the firm's shareholders as a result of debt use i.e. the additional risk a shareholder bears when a company uses debt in addition to equity financing. Companies that issue more debt instruments would have higher financial risk than companies financed mostly or entirely by equity.

Risk	Business Risk	Financial Risk
a) Meaning	It is associated with firm's operation's, and refers to the uncertainty about future Net Operating Income (EBIT)	It is the additional risk placed on Equity Shareholders due to theuse of Debt Funds.
b) Measurement	It can be measured by the standard deviation of the BasicEarning power, i.e. ROCE.	It can be measured using ratios like leverage multiplier, Debt to assets,etc.
c) Linked to	Economic Climate.	Use of Debt Funds.

Risk	Business Risk	Financial Risk
d) Reduction	Every firm would be susceptible to business risk due to changes in the overall economic climate & business operating conditions.	A firm which is entirely financed by equity (i.e. anunlevered Firm) will have almost no financial risk.

2 Debt versus Equity Financing

- Financing a business through borrowing is cheaper than using equity. This is because :
  a) Lenders require a lower rate of return than ordinary shareholders. Debt financial securities present a lower risk than shares for the finance providers because they have prior claims on annual income and liquidation.
  b) A profitable business effectively pays less for debt capital than equity for another reason: the debt interest can be offset against pre-tax profits before the calculation of the corporate tax, thus reducing the tax paid.
  c) Issuing and transaction costs associated with raising and servicing debt are generally less than for ordinary shares.
- These are some benefits from financing a firm with debt. Still firms tend to avoid very high gearing levels.
- One reason is financial distress risk. This could be induced by the requirement to pay interest regardless of the cash flow of the business. If the firm goes through a rough period in its business activities it may have trouble paying its bondholders, bankers and other creditors their entitlement.
- The relationship between Expected return (Earnings per share) and the level of gearing can be represented as :



Relationship between leverage and risk

- Leverage can occur in either the operating or financing portions of the income statement.
- The effect of leverage is to magnify the effects of changes in sales volume on earnings. Let's now discuss in detail Operating, Financing and Combined Leverages.

3 MEANING AND TYPES OF LEVERAGE

1.3.1 Meaning of Leverage

- Leverage refers to the ability of a firm in employing long term funds having a fixed cost, to enhance returns to the owners. In other words, leverage is the amount of debt that a firm uses to finance its assets. A firm with a lot of debt in its capital structure is said to be highly levered. A firm with no debt is said to be unlevered.
- The term Leverage in general refers to a relationship between two interrelated variables. In financial analysis it represents the influence of one financial variable over some other related financial variable. These financial variables may be costs, output, sales revenue, Earnings Before Interest and Tax (EBIT), Earning per share (EPS) etc.

3.2 Types of Leverage

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

a) Operating Leverage
b) Financial Leverage

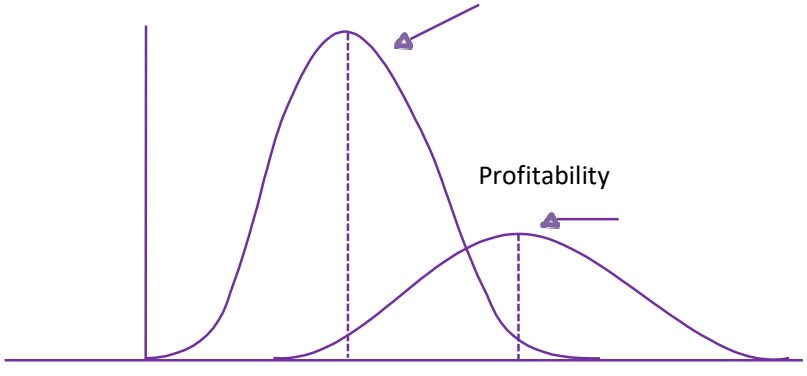
c) Combined Leverage

3.3 Chart Showing Operating Leverage, Financial Leverage and Combined leverage

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

3.4 Operating Leverage

- Operating leverage (OL) may be defined as the employment of an asset with a fixed cost in the hope that sufficient revenue will be generated to cover all the fixed and variable costs.
- The use of assets for which a company pays a fixed cost is called operating leverage. With fixed costs the percentage change in profits accompanying a change in volume is greater than the percentage change in volume. The higher the turnover of operating assets, the greater will be the revenue in relation to the fixed charge on those assets.



High Operating leverage

EBITL EBITH :

Operating leverage is a function of three factors :

i) Amount of fixed cost

ii) Variable contribution margin and

iii) Volume of sales.

$$\text{Operating Leverage (OL)} = \frac{\text{Contrubution (C)}}{\text{Earnings before interest and tax (EBIT)}}$$

Where, Contribution (C) = Sales – Variable cost

EBIT = Sales – Variable cost – Fixed cost

3.5 Break-Even Analysis and Leverage

- Break-even analysis is a generally used method to study the Cost Volume Profit analysis. This technique can be explained in two ways :
  a) 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.
  b) This technique is used to determine the possible profit/loss at any given level of production or sales.
- 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 leverage	1. Higher Break-even point
2. Firm with no 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

3.6 Degree of Operating Leverage (DOL)

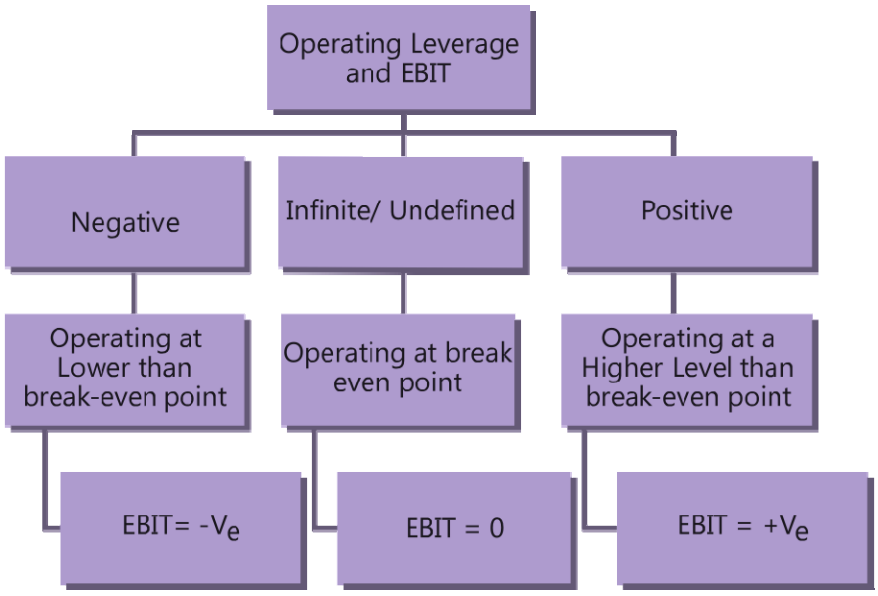
- The operating leverage may also be defined as "the firm's ability to use fixed operating cost to magnify the effects of changes in sales on its earnings before interest and taxes."

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

OR

$$= \frac{\frac{\Delta \text{ EBIT}}{\text{EBIT}}}{\frac{\Delta \text{ Sales}}{\text{Salse}}}$$

- Δ EBIT means changes in EBIT Δ Sales means changes in Sales
- When DOL is more than one (1), operating leverage exists. More is the DOL higher is operating leverage.
- A positive DOL/OL means that the firm is operating at higher level than the break-even level and both sales and EBIT moves in the same direction. In case of negative DOL/OL firm operates at lower than the break-even and EBIT is negative.



Positive and Negative Operating Leverage

Sr. No.	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	Negative operating leverage

3.7 Financial Leverage

- Financial leverage (FL) maybe defined as 'the use of funds with a fixed cost in order to increase earnings per share. In other words, it is the use of company funds on which it pays a limited return.
- Financial leverage involves the use of funds obtained at a fixed cost in the hope of increasing the return to common stockholders.

Where, EBIT = Sales – Variable cost – Fixed cost

EBT = EBIT – Interest

3.8 Degree of Financial Leverage (DFL)

- Degree of financial leverage is the ratio of the percentage increase in earnings per share (EPS) to the percentage increase in earnings before interest and taxes (EBIT).
- Financial Leverage (FL) is also defined as 'the ability of a firm to use fixed financial charges to magnify the effect of changes in EBIT on EPS'.

$$\text{Degree of Financial Leverage (DFL)} = \frac{\text{Percentage change in Earning per share (EPS)}}{\text{Percentage change in Earnings before Interest \& Tax (EBIT)}}$$

OR

$$= \frac{\frac{\Delta \text{ EPS}}{\text{EPS}}}{\frac{\Delta \text{ EBIT}}{\text{EBIT}}}$$

- Δ EPS means change in EPS and Δ EBIT means change in EBIT.

- When DFL is more than one (1), financial leverage exists. More is DFL higher is financial leverage.
- A positive DFL/ FL means firm is operating at a level higher than break-even point and EBIT and EPS moves in the same direction. Negative DFL/ FL indicates the firm is operating at lower than break-even point and EPS is negative.
- Analysis and Interpretation of Financial leverage

Sr. No.	Situation	Result
1	No Fixed Financial Cost	No Financial leverage
2.	Higher Fixed Financial cost	Higher Financial Leverage
1.	When EBIT is higher than Financial Break-even point	Positive Financial leverage
4.	When EBIT is levy then Finance Break-even point	Negative Financial leverage

3.9 Financial Leverage as 'Trading on Equity'

- Financial leverage indicates the use of funds with fixed cost like long term debts and preference share capital along with equity share capital which is known as trading on equity.
- The basic aim of financial leverage is to increase the earnings available to equity shareholders using fixed cost fund.
- A firm is known to have a positive leverage when its earnings are more than the cost of debt.
- If earnings is equal to or less than cost of debt, it will be an unfavourable leverage.
- When the quantity of fixed cost fund is relatively high in comparison to equity capital it is said that the firm is ''trading on equity".

3.10 Financial Leverage as a 'Double edged Sword'

- 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. However, when cost of debt will be more than the return it will affect return of equity and EPS unfavourably and as a result firm can be under financial distress. This is why financial leverage is known as "double edged sword".
- Effect on EPS and ROE :

  When, ROI > Interest – Favorable Advantage

  When, ROI < Interest – Unfavorable – Disadvantage

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

3.11 Combined Leverage

- Combined leverage maybe defined as the potential use of fixed costs, both operating and financial, which magnifies the effect of sales volume change on the earning per share of the firm.

3.12 Degree of Combined Leverage (DCL)

- Degree of combined leverage (DCL) is the ratio of percentage change in earning per share to the percentage change in sales. It indicates the effect the sales changes will have on EPS.
- Like operating leverage and financial leverage, combined leverage can also be positive and negative combined leverage.
- Analysis and Interpretation of Combined leverage.

SR. No.	Situation	Result
1.	No Fixed Cost and Fixed Financial Fixed Cost	No Combined leverage
2.	Higher Fixed cost	Higher Combined Leverage
3.	Sales level higher than break-even level	Positive combined leverage
4.	Sales leverage lower than break-even level	Negative Combined leverage

4 IDEAL COMBINATION OF LEVERAGE

- Combined leverage is analysed by reference to the combination of DOL and DFL, as under-

DOL	DFL	Effect	Reasons and Significance
High	High	Risky	High DOL - High operating risk - High fixed costs& BEP. High DFL - Small fall in EBIT will lead to greater fallin EBT.
High	Low	Careful	High DOL's impact is sought to be set off with low financial risk. Hence equity shareholders interest is safeguarded.
Low	Low	Cautious & Conservative	Low DOL - Low operating risk - Low fixed costs & BEP. But Equity shareholder's gains are notmaximized, since DFL is low.
Low	High	Preferable	Low DOL - Low operating risk - Low fixed costs & BEP. Due to high DFL (favorable gearing), small rise in EBIT leads to greater rise in EBT and EPS. Hence Equity shareholders gains are maximized.

5 RELATIONSHIP BETWEEN SALES & CAPITAL EMPLOYED

- Increase in sales leads to increase in EBIT, EBT and ROI. Hence, a firm may be tempted to try to raise its capital Turnover Ratio (i.e. Sales ÷ Capital employed) without restraint, merely by increasing the numerator (i.e. Sales).
- However, as a sales increases, there is a need for increase in the amount of capital base (i.e. funds employed), both fixed assets and net working capital. Extra production can be achieved only by installing more machinery (i.e. Fixed Assets). Increase in activity levels also entail more purchase of Raw materials (hence more stockholding and creditors), more money blocked in debtors, etc.
- Hence, as sales increases, both current assets and current liabilities also increase, but not necessarily in proportion to the current ratio. Hence current ratio may register a fall and affect the liquidity position of the firm adversely.
- To avoid this adverse effect, an increase in sales and activity levels, must be supported by an adequate capital base and increase in the amount of funds employed, more particularly in working capital.

Ch - 1 Financial Decisions - Leverages

Q. No		R1	R2	R3	Special Point
ICAI Module					
Q.1	Illustration 1				% change in sales
Q.2	Illustration 2				-
Q.3	Illustration 3				return on investment
Q.4	Illustration 4				interest - bal. fig.
Q.5	Illustration 5				Comparision b/w companies
Q.6	Practical Q1				% change in EPS
Q.7	Practical Q2				Calculate PAT
Q.8	Practical Q4				degree of change, % change in EPS
Q.9	Practical Q5				Debt capital
Q.10	Practical Q10				asset turnover ratio, if EBT zero
Q.11	Practical Q6				all leverages, increase, decrease
Q.12	Practical Q11				Use of F_2
Q.13	Practical Q8				2 situations, 2 plans
Q.14	Practical Q9				analyzing schemes
Q.15	Practical Q7 (similar)				asset turnover, different EPS
Q.16	Additional Question				Income statement
Q.17	Additional Question				P/V ratio
Q.18	Practical Q3				
Previous Year Exam Questions					
Q19.	May 2019				leverages + P/V ratio
Q20.	Nov 2018				asset turnover ratio
Q21.	May 2018				increase in units percentage changes
Q22.	Nov 2020				

Q23.	July 2021				Similar to Q15
Q24.	Dec 2021				% change in EPS
Q25.	May 2022				EBIT
Q26.	Nov 2019				Earning Yield
Q27.	Jan 2021				Return on capital employed.
Q28.	May 2022				pre tax interest
Q29.	Nov 2022				negative interest
Q.30	May 202				
RTP Questions					
Q30.	May 2018				different situations
Q31.	Nov 2018				percentage changes
Q32.	May 2019				EPS, leverages
Q33.	Nov 2019				Beta
Q34.	May 2020				leverages, EPS
Q35.	Nov 2020				change in units
Q36.	May 2021				percentage changes
Q37.	May 2023				comparision of companies
Q38.	Nov 2021				Alternative Schemes
Q39.	May 2022				margin of safety
Q40.	Nov 2022				DFL (preference Dividend)

SUPER STAR QUESTIONS

Q8. Practical Q4
Q10. Practical Q10
Q13. Practical Q8
Q26. PY Nov 19
Q27. PY Jan 21

Q11. Practical Q6
Q14. Practical Q9
Q16. Additional Question
Q40. RTP Nov 22
Q24. PY Dec 21

LEVERAGE

Financial (DFL) occurs due to fixed financial cost eg - Interest

Operational (DOL) occurs due to fixed operational cost. eg - rent, depreciation, salary

Combined (DCL) occurs due to both, fixed financial cost and operational cost

Example -

(1) With fixed cost

	Before		+ve		-ve
Sale	10,000	2 times →	20,000		5,000
(-) Variable cost	(3,000)		(6,000)		(1,500)
contribution	7,000		14,000		3500
(-) fixed cost	(4,000)		(4,000)		(4,000)
↳ eg - rent, salary					
EBIT	3,000		10,000		(500)

more than 3 times

(2) Without fixed cost

Sale	10,000	2 times →	20,000
(-) Variable cost	(3,000)		(6,000)
contribution	7,000		14,000
(-) fixed cost	(0)		(0)
EBIT	7,000		14,000

2 times

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

$\therefore$, (1) $DOL = \frac{7,000}{3,000} = 2.33$ times

$3000 + 2.33\,(3,000) = 10,000$

↳ increased by 2.33 times

(2) $DOL = \frac{7,000}{7,000} = 1$ time

When fixed cost is zero, DOL would always be '1'

(3) high fixed cost

Sale	10,000	20,000
(-) Variable cost	(3,000)	(6,000)
contribution	7,000	14,000
(-) fixed cost	(6,000)	(6,000)
EBIT	1,000	8,000

$DOL = \frac{7,000}{1,000} = 7$ times

conclusion

	fixed Cost	DOL
1.	4,000	2.33 times
2.	6,000	7 times

If fixed cost increases DOL increases. Hence, leverage more, risk is more.

Summary

Companies like PVR, Air India having high fixed cost like rent, interest, salary will have more leverage. Although there is no sale during covid, still all such fixed cost remain constant. Hence, company is taking high risk. As an investor we should prefer to invest in a company having low fixed cost as well as low leverage.

Case Study

Air India - 1,000 aircrafts

Debt. - 10,000 Cr.	Adverse impact of leverage
ROI - 18%.	ROI - 6%.
Int. - 10%.	Int. - 10%.
Profit - 8%	loss - (4%)

Interpretation of leverage.

DFL	ज़्यादा	DOL	ज़्यादा
Debt.	ज़्यादा	fixed cost	ज़्यादा
Int.	ज़्यादा	Rent / Salary	ज़्यादा
Risk	ज़्यादा	Risk	ज़्यादा
Benefit	ज़्यादा	Profit	ज़्यादा
Profit	ज़्यादा		

Let's understand DOL, DFL, DCL with the help of following example

	FY23	FY24	change
Sale	20,000	24,000	20%
(-) Variable cost (30%)	(6,000)	(7,200)	20%
contribution	14,000	16,800	20%
(-) fixed cost	(4,000)	(4,000)	0%
EBIT	10,000	12,800	28%
(-) Interest	(5,000)	(5,000)	0%
EBT	5,000	7,800	56%

Answer :

$$DOL_{(F_1)} = \frac{\text{Contribution}}{EBIT} = \frac{14,000}{10,000} = 1.4$$

$$DOL_{(F_2)} = \frac{\% \text{ change in EBIT}}{\% \text{ change in Sales}} = \frac{28\%}{20\%} = 1.4$$

$$DFL_{(F_1)} = \frac{EBIT}{EBT} = \frac{10,000}{5,000} = 2$$

$$DFL_{(F_2)} = \frac{\% \text{ change in EBT}}{\% \text{ change in EBIT}} = \frac{56\%}{28\%} = 2$$

$$DCL = DOL \times DFL = 1.4 \times 2 = 2.8$$

$$DCL_{(F_1)} = \frac{\text{Contri}}{\cancel{EBIT}} \times \frac{\cancel{EBIT}}{EBT}$$

$$DFL_{(F_2)} = \frac{\cancel{\% \text{ change in EBIT}}}{\% \text{ change in Sales}} \times \frac{\% \text{ change in EBT}}{\cancel{\% \text{ change in EBIT}}}$$

$DCL\ (F_1) = \frac{Contri}{EBT}$ $\qquad$ $DCL\ (F_2) = \frac{\%\ change\ in\ EBT}{\%\ change\ in\ Sales}$

$= \frac{14,000}{5,000}$ $\qquad$ $= \frac{56\%}{20\%}$

$= 2.8$ $\qquad$ $= 2.8$

QUESTION

Date :	N.B. Pg. No	Stars :	Illustration 1

Q.1 A Company produces and sells 10,000 shirts. The selling price per shirt is ₹ 500. Variable cost is ₹ 200 per shirt and fixed operating cost is ₹ 25,00,000.

(a) CALCULATE operating leverage.

(b) If sales are up by 10%, then COMPUTE the impact on EBIT ?

Point To Be Noted :

$DOL = \frac{\%\ change\ in\ EBIT}{\%\ change\ in\ Sales}$

Particulars	Amt.
Sale	50,00,000
(-) Variable cost	(20,00,000)
contribution	30,00,000
(-) fixed cost	(25,00,000)
EBIT	5,00,000

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

$= \frac{30,00,000}{5,00,000}$

$= 6$

b) DOL = $\frac{\%\text{ change in EBIT}}{\%\text{ change in Sale}}$

6 = $\frac{\%\text{ change in EBIT}}{10\%}$

% change in EBIT = 60%

∴, new EBIT = 5,00,000 + 60%(5,00,000)
= 8,00,000

Date :	N.B. Pg. No	Stars :	Illustration 2

Q.2 CALCULATE the operating leverage for each of the four firms A, B, C and D from the following price and cost data :

	Firms			
	A	B	C	D
Sale Price/unit	20	32	50	70
Variable cost/unit	6	16	20	50
Fixed Operating cost	60,000	40,000	1,00,000	nil

What calculations 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.

Point To Be Noted :

DOL = $\frac{\text{Contri}}{\text{EBIT}}$

Particulars	A	B	C	D
Sales	1,00,000	1,60,000	2,50,000	3,50,000
(-) variable cost	(30,000)	(80,000)	(1,00,000)	(2,50,000)
contribution	70,000	80,000	1,50,000	1,00,000
(-) fixed cost	(60,000)	(40,000)	(1,00,000)	(nil)
EBIT	10,000	40,000	50,000	1,00,000
DOL = $\frac{\text{Contri}}{\text{EBIT}}$	$\frac{70,000}{10,000}$	$\frac{80,000}{40,000}$	$\frac{1,50,000}{50,000}$	$\frac{1,00,000}{1,00,000}$
	7	2	3	1

Q.3 A firm's details are as under:

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

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

Consider tax @ 50 %. CALCULATE:

(a) Operating Leverage

(b) Financial Leverage

(c) Combined Leverage

(d) Return on Investment

(e) If the sales increases by ₹ 6,00,000; what will the new EBIT?

Point To Be Noted :

ROI = PAT / Shareholder's fund

Particulars	Amt.
Sale	24,00,000
(-) Variable cost	(12,00,000)
contribution	12,00,000
(-) fixed cost	(10,00,000)
EBIT	2,00,000
(-) Interest. (10,00,000 x 10%)	(1,00,000)
EBT	1,00,000
(-) Tax @ 50%.	(50,000)
PAT	50,000

a) $DOL = \frac{Contri}{EBIT} = \frac{12,00,000}{2,00,000} = 6$

b) $DFL = \frac{EBIT}{EBT} = \frac{2,00,000}{1,00,000} = 2$

c) DCL = DOL × DFL

= 6 × 2

= 12

d) ROI = $\frac{\text{PAT}}{\text{Shareholders fund}}$

= $\frac{50,000}{10,00,000} \times 100$

= 5%

c) DOL (F2) = $\frac{\%\text{ change in EBIT}}{\%\text{ change in Sale}}$

6 = $\frac{\%\text{ change in EBIT}}{25\%}$

∴, % change in EBIT = 150%

new EBIT = old EBIT + 150% (old EBIT)

new EBIT = 2,00,000 + 150% (2,00,000)

new EBIT = 5,00,000

Q.4 The following information is related to Yizi Company Ltd. for the year ended 31st March, 2021:

Equity share capital (of ₹ 10 each)	50 lakhs
12% Bonds of ₹ 1,000 each	37 lakhs
Sales	84 lakh

Financial leverage	1.49
Profit-volume Ratio	27.55%
Income Tax Applicable	40%

You are required to CALCULATE:

(i) Operating Leverage; (ii) Combined leverage; and

(iii) Earnings per share.

Show calculations up-to two decimal points.

Point To Be Noted: Other interest - Balancing figure

No. of shares = $\frac{50,00,000}{10}$ = 5,00,000

Interest = 37 debtors × 12 % = 4,44,000

Sale	84,00,000
(-) variable cost	(60,85,800)
Contribution	23,14,200
(-) fixed cost	6,96,000
EBIT	16,18,200
(-) Interest	(4,44,000)
(-) Other Int. *	(88,160)*
Balancing figure EBT	10,86,040 ⊙ ~~11,74,200~~
(-) Tax @ 40%	4,34,416
PAT	6,51,624
(÷) no. of shares	5,00,000
EPS	1.30

$\frac{EBIT}{EBT} = 1.49$

$\frac{16,18,200}{EBT} = 1.49$

∴, EBT = 10,86,040

i) DOL = $\frac{Contri}{EBIT} = \frac{23,14,200}{16,18,200} = 1.43$

ii) DFL = $\frac{EBIT}{EBT} = \frac{16,18,200}{10,86,040} = 1.49$

iii) DCL = 1.49 × 1.43

= 2.13

Q.5 Following are the selected financial information of A Ltd. and B Ltd. for the year ended March 31st, 2021:

	A Ltd	B Ltd
Variable Cost Ratio	60%	50%
Interest	20,000	1,00,000
Operating Leverage	5	2
Financial Leverage	3	2
Tax Rate	30%	30%

You are required to FIND out:

(i) EBIT (ii) Sales

(iii) Fixed Cost (iv) Identify the company which is better placed with reasons based on leverages.

Point To Be Noted:

$$DFL = \frac{EBIT}{EBIT - Interest}$$

Working note :- find out EBIT

A

$$DFL = \frac{EBIT}{EBT}$$

$$3 = \frac{EBIT}{EBIT - Interest}$$

$$3 = \frac{EBIT}{EBIT - 20,000}$$

$\therefore$ EBIT = 30,000

B

$$DFL = \frac{EBIT}{EBT}$$

$$2 = \frac{EBIT}{EBIT - Interest}$$

$$2 = \frac{EBIT}{EBIT - 1,00,000}$$

EBIT = 2,00,000

Working note - find out contribution and sales

A

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

$$5 = \frac{Contri}{30,000}$$

$\therefore$

Contribution = 30,000

B

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

$$2 = \frac{Contri}{2,00,000}$$

Contribution = 4,00,000

Sales (100%)	375000 ✓	Sales (100%)	8,00,000 ✓
(-) V. cost (60%)	(2,25,000)	(-) V. cost (50%)	(4,00,000)
contri (40%)	1,50,000	contri (50%)	4,00,000
(-) fixed cost	(120,000)	(-) fixed cost	(2,00,000)
EBIT	30,000	EBIT	2,00,000

Considering DOL and DFL, B Ltd is better placed.

Date :	N.B. Pg. No	Stars :	Practical Q1

Q.6 From the following information extracted from the books of accounts of Imax Ltd., CALCULATE percentage change in earnings per share, if sales increase by 10% and Fixed Operating cost is ₹ 1,57,500.

Particulars	Amount in (₹)
EBIT (Earnings before Interest and Tax)	31,50,000
Earnings before Tax (EBT)	14,00,000

Point To Be Noted : read formulas

Conceptual Understanding

			change
Sale	10,000	14,000	40%
(-) variable cost @20%	2,000	2,800	40%
contri	8,000	11,200	40%
(-) fixed cost	3,000	3,000	0%
EBIT	5,000	8,200	64%
(-) Interest	2,000	2,000	0%
EBT	3,000	6,200	106%
(-) Tax @50%	1,500	3,100	
PAT	1,500	3,100	106%
÷ no. of shares	100	100	
EPS	15	31	106%

% change in EBT / PAT / EPS are same

→ hence, we can use EBT / PAT / EPS. In the formula DFL/DCL and answer will remain the same

1. DOL = $\frac{\%\text{ change in EBIT}}{\%\text{ change in Sales}}$ (F_2)

2. DFL = $\frac{\%\text{ change in EBT}}{\%\text{ change in EBIT}}$ (F_2)

3. DCL = $\frac{\%\text{ change in EPS}}{\%\text{ change in Sales}}$

Answer:

Particulars	Amt
Contribution	33,07,500
(-) fixed cost	1,57,500
EBIT	31,50,000
(-) Interest	17,50,000*
EBT	14,00,000

$$DOL = \frac{Contri}{EBIT} = \frac{33,07,500}{31,50,000} = 1.05$$

$$DFL = \frac{EBIT}{EBT} = \frac{31,50,000}{14,00,000} = 2.25$$

$$DCL = 2.25 \times 1.05$$
$$= 2.3625$$

$$DCL_{(F2)} = \frac{\%\text{ change in EPS}}{\%\text{ change in Sales}}$$

$$2.3625 = \frac{\%\text{ change in EPS}}{10\%}$$

$$\%\text{ change in EPS} = 23.625\%$$

Date :	N.B. Pg. No	Stars :	Practical Q2

Q.7 Consider the following information for Mega Ltd.:

Production level	2,500 units
Contribution per unit	₹ 150
Operating leverage	6
Combined leverage	24
Tax rate	30%

Required: COMPUTE its earnings after tax.

Point To Be Noted : Basic calculations

Particulars	Amt. (₹)
Contribution	3,75,000
(-) fixed cost	(3,12,500)
EBIT	62,500
(-) Interest	(46,875)
EBT	15,675
(-) Tax @30%	(4,687.5)
EAT	10,938

Working note 1 -

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

$$6 = \frac{3,75,000}{EBIT}$$

$$\therefore, EBIT = 62,500$$

Working note 2 -

$$DFL = \frac{EBIT}{EBT}$$

$$4 = \frac{62,500}{EBT}$$

$$\therefore, EBT = 15,625$$

Date :	N.B. Pg. No	Stars :	Practical Q4

Q.8 The capital structure of PS Ltd. for the year ended 31st March 2021 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 2020-21, 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:

(i) The degree of financial leverage at 1,20,000 units and 1,00,000 units.

(ii) The degree of operating leverage at 1,20,000 units and 1,00,000 units.

(iii) The percentage change in EPS.

Point To Be Noted : _____

_____

_____

Particulars	19-20	20-21
Sold Qty	1,20,000	1,00,000
Price / Unit	12	12
∴ Sale Value	14,40,000	12,00,000
(-) Variable cost p.u	8	8
∴ V. cost	9,60,000	8,00,000
contri	4,80,000	4,00,000
(-) fixed cost	2,00,000	2,00,000
EBIT	2,80,000	2,00,000
(-) Interest	1,00,000	1,00,000
EBT	1,80,000	1,00,000
(-) Tax @ 30 %	54,000	30,000
PAT	1,26,000	70,000
÷ no. of shares	10,000	10,000
∴ EPS	12.6	7
DOL $\frac{\text{Contri}}{\text{EBIT}}$	1.71	2
DFL $\frac{\text{EBIT}}{\text{EBT}}$	1.55	2

% Change in EPS

$$= \frac{12.6 - 7}{12.6} \times 100$$

$$= \frac{5.6}{12.6} \times 100 = 44.44\ \%\ \text{decreased}$$

Date :	N.B. Pg. No	Stars :	Practical Q5

Q.9 The Sale revenue of TM excellence Ltd. @ ₹ 20 Per unit of output is ₹ 20 lakhs and Contribution is ₹ 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 are 1 lakh. Applicable corporate Income Tax rate is 50% and the rate of interest on Debt Capital is 16% p.a. CALCULATE 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.

Particulars	Amt. (₹)
Sales	20,00,000
(-) variable cost	(10,00,000)
Contribution	10,00,000
(-) fixed cost	(6,00,000)
EBIT	4,00,000
(-) Interest	(1,50,000)
EBT	2,50,000
(-) Tax	(1,25,000)
PAT	1,25,000
(÷) no. of shares	1,00,000
EPS	1.25

Working notes:

1. $DOL = \frac{Contri}{EBIT}$

$2.5 = \frac{10,00,000}{EBIT}$

$EBIT = 4,00,000$

2. $DCL = \frac{\%\text{ change in EPS}}{\%\text{ change in Sales}}$

$= \frac{100\%}{25\%}$

$= 4$

$4 = DOL \times DFL$

$4 = 2.5 \times DFC$

$DFL = 1.6$

3. $DFL = \frac{EBIT}{EBT}$

$1.6 = \frac{4,00,000}{EBT}$

$EBT = 2,50,000$

4. $\text{Debt Capital} = \frac{\text{Int.}}{16\%} = \frac{1,50,000}{16\%}$

$= 937500$

Date :	N.B. Pg. No	Stars :	Practical Q10

Q.10 The following details of a company for the year ended 31st March, 2021 are given below:

Operating Leverage	2:1
Combined Leverage	2.5:1
Fixed Cost (excl Interest)	₹ 3.4 lakhs
Sales ₹ 50 lakhs	
8% Debentures of ₹100 each	₹ 30.25 lakhs
Equity Share capital of ₹10 each	₹ 34 lakhs
Income Tax Rate	30%

CALCULATE:

(i) Financial Leverage

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

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

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

Point To Be Noted :

P/V ratio = $\frac{\text{Contri}}{\text{Sales}}$ Total assets = D + E

Working note 1. $\Delta CL = \Delta OL \times \Delta FL$

$2 = 2.5 \times \Delta FL$

$\Delta FL = 1.25$

2. $\Delta FL = \frac{EBIT}{EBT}$

$1.25 = \frac{EBIT}{EBIT - Interest}$

$1.25 = \frac{EBIT}{EBIT - 2,42,000}$

$EBIT = 12,10,000$

3. Income Statement.

Particulars	Amt. (₹)	Amt. (₹)
Sales	50,00,000	18,77,419 (100%)
(-) variable cost	(34,50,000)	(12,95,419) (69%)
Contribution	15,50,000	5,82,000 (31%)
(-) fixed cost	(3,40,000)	(3,40,000)
EBIT	12,10,000	2,42,000
(-) Interest	(2,42,000)	(2,42,000)
EBT	9,68,000	0
(-) Tax @30%.	(2,90,400)	
PAT	6,77,600	
(÷) no. of shares	3,40,000	
EPS	1.99	

4. P/V ratio = $\frac{\text{Contri}}{\text{Sales}} = \frac{15,50,000}{50,00,000} = 31\%$

5. Asset T/O Ratio :-

Total Assets = D + E

= 30,25,000 + 34,00,000

= 64,25,000

Industry T/O ratio = 1.5

∴, Industry would have made the sale of

= 64,25,000 × 1.5

= 96,37,500

Our sale = 50,00,000

∴, Our TO ratio is lower than Industry.

⇒ Alternatively, students can solve by considering DOL first. In that case, answer may vary. Kindly check the ICAI modernk Answer.

Date :	N.B. Pg. No	Stars :	Practical Q12

Q.12 You are given the following information of 5 firms of the same industry:

Name of the firm	Chg in Revenue	Change in Operating Income	Chg in EPS
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 for all firms:

(i) Degree of operating leverage and

(ii) Degree of combined leverage.

Point To Be Noted : _____

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Particulars	DOL	DCL
M	$\frac{26\%}{28\%} = 0.92$	$\frac{32\%}{28\%} = 1.14$
N	$\frac{34\%}{27\%} = 1.26$	$\frac{26\%}{27\%} = 0.96$
P	$\frac{38\%}{25\%} = 1.52$	$\frac{23\%}{25\%} = 0.92$
Q	$\frac{43\%}{23\%} = 1.87$	$\frac{27\%}{23\%} = 1.17$
R	$\frac{40\%}{25\%} = 1.6$	$\frac{28\%}{25\%} = 1.12$

Date :	N.B. Pg. No	Stars :	Practical Q8

Q.13 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 (ROI 20%)	10,000	5,000
	20,000	20,000

Point To Be Noted : _____

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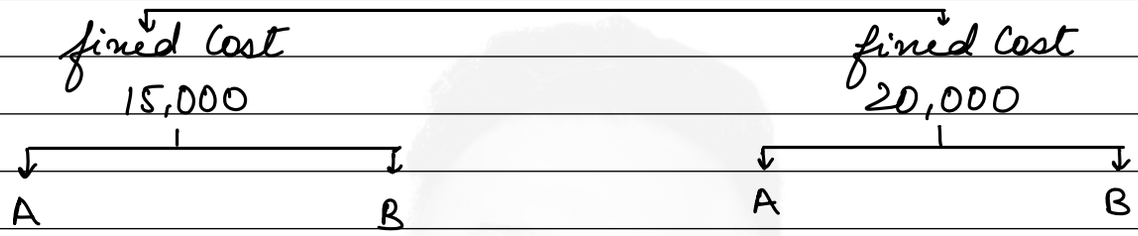
PLAN



Particulars	fixed Cost 15000		fixed Cost 20,000	
	A	B	A	B
Sales	90,000	90,000	90,000	90,000
(-) Variable Cost	45,000	45,000	45,000	45,000
Contribution	45,000	45,000	45,000	45,000
(-) fixed cost	15,000	15,000	20,000	20,000
EBIT	30,000	30,000	25,000	25,000
(-) Interest	2,000	1,000	2,000	1,000
EBT	28000	29,000	23,000	24,000
DOL = Contri / EBT	1.5	1.5	1.8	1.8
DFL = EBIT / EBT	1.07	1.03	1.09	1.04
DCL = DOL x DFL	1.605	1.545	1.962	1.872

Date :	N.B. Pg. No	Stars :	Practical Q7 (similar)

Q.15 A Company had the following Balance Sheet as on March 31, 2017.

Liabilities and Equity	Amount (₹)	Assets	Amount (₹)
Equity Share Capital of ₹10 each	10,00,000	Fixed Assets	30,00,000
Reserves and Surplus	2,00,000	Current Assets	18,00,000
15% Debentures	28,00,000		
Current Liabilities	8,00,000		
	48,00,000		48,00,000

The additional information given is a sunder:

Fixed cost per annum (excluding Interest) - ₹ 28,00,000 Variable Operating Cost Ratio –60%

Total Assets Turnover Ratio – 2.5IncomeTaxRate–30%

Calculate the following and comment :

(i) Earnings per share

(ii) Combined Leverage.

Point To Be Noted : Sales = Assets × Asset turnover ratio

Working note 1. Sales = Assets × 2.5
= 48,00,000 × 2.5
= 1,20,00,000

2. Income Statement

Particulars	Amt. (₹)
Sales	1,20,00,000
(–) variable cost	(72,00,000)
Contribution	48,00,000
(–) fixed cost	(28,00,000)
EBIT	20,00,000
(–) Interest	(4,20,000)
EBT	15,80,000
(–) Tax @ 30 %	(4,74,000)
PAT	11,06,000
(÷) no. of shares.	1,00,000
EPS	11.06
DCL conti/EBT	3.04

Date :	N.B. Pg. No	Stars :	Additional Question

Q.16 Z Limited is considering the installation of a new project costing ₹ 80,00,000. Expected annual sales revenue from the project is ₹ 90,00,000 and its variable costs are 60 percent of sales. Expected annual fixed cost other than interest is ₹ 10,00,000. Corporate tax rate is 30 percent. The company wants to arrange the funds through issuing 4,00,000 equity shares of ₹ 10 each and 12 percent debentures of ₹ 40,00,000.

You are required to:

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

ii) Determine the likely level of EBIT, if EPS is ₹ 4, or ₹ 2, or 0.

Point To Be Noted : _____

Particulars	Amt.	EPS = 4	EPS = 2	EPS = 0
Sales	90,00,000			
(-) V. cost @60%	(54,00,000)			
Contribution	36,00,000			
(-) fixed cost	(10,00,000)			
EBIT	26,00,000	27,65,714	16,22,857	4,80,000
(-) Interest	(4,80,000)	(4,80,000)	(4,80,000)	(4,80,000)
EBT	21,20,000	22,85,714	11,42,857	0
(-) Tax @30%	(6,36,000)	(6,85,714)	(3,42,857)	0
PAT	14,84,000	16,00,000	8,00,000	0
(÷) no. of shares	4,00,000	4,00,000	4,00,000	4,00,000
EPS	3.71	4	2	0
DOL Contri / EBIT	1.38			
DFL EBIT / EBT	1.23			
DCL DOL x DFL	1.6974			

Q.20 Following is the Balance Sheet of Soni Ltd. as on 31st March, 2018 :

Liabilities	Amount in
Share holder's Fund	25,00,000
Equity Share Capital(10each)	5,00,000
Reserve and Surplus	50,00,000
Non-Current Liabilities (12 Debentures)	20,00,000
Current Liabilities	1,00,00,000
Total	Amount
Assets	60,00,000
Non-Current Assets Current Assets	40,00,000
Total	1,00,00,000

Additional Information:

(i) Variable Cost is 60% of Sales.

(i) Fixed Cost p.a. excluding interest ₹ 20,00,000.

(ii) Total Asset Turnover Ratio is 5 times.

(iii) Income Tax Rate 25% You are required to:

(1) Prepare Income Statement

(2) Calculate the following and comment:

(a) Operating Leverage

(b) Financial Leverage

(c) Combined Leverage

Point To Be Noted : _____

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_____

Working note : 1. Sales = Assets × 5

= 1,00,00,000 × 5

= 5,00,00,000

2. Income Statement

Particulars	Amt. (₹)
Sales	5,00,00,000
(-) variable cost @60%	(3,00,00,000)
Contribution	2,00,00,000
(-) fixed cost	(20,00,000)
EBIT	1,80,00,000
(-) Interest	(6,00,000)
EBT	1,74,00,000
(-) Tax @25%	43,50,000
PAT	1,30,50,000

a) DOL = $\frac{\text{Contri}}{\text{EBIT}} = \frac{2,00,00,000}{1,80,00,000} = 1.11$

b) DFL = $\frac{\text{EBIT}}{\text{EBT}} = \frac{1,80,00,000}{1,74,00,000} = 1.03$

c) DCL = DFL x DOL
= 1.03 x 1.11
= 1.1433

Q.23 A company had the following balance sheet as on 31st March, 2021 :

Liabilities	Rs in Crores	Assets	Rs. in Crore s
Equity Share Capital (75 lakhs Shares of Rs.10 each)	7.50	Building	12.50
Reserves and Surplus	1.50	Machinery	6.25
15% Debentures	15.00	Current Assets	
Current Liabilities	6.00	Stock	3.00
		Debtors	3.25
		Bank Balance	5.00
	30.00		30.00

The additional information given is as under:

Fixed cost per annum (excluding Rs.6 crores interest)

Variable operating cost ratio 60%

Total assets turnover ratio 2.5

Income-tax rate 40%

Calculate the following and comment:

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

Working note : 1. Sales = Assets x 2.5
= 30,00,00,000 x 2.5
= 75,00,00,000

2. Income statement

Particulars	Amt. (₹)
Sales	75,00,00,000
(-) variable cost @60%	(45,00,00,000)

Contribution	30,00,00,000
(-) fixed cost	(6,00,00,000)
EBIT	24,00,00,000
(-) Interest	(2,25,00,000)
EBT	21,75,00,000
(-) Tax @40%.	(8,70,00,000)
PAT	13,05,00,000
(÷) no. of shares	75,00,000
EPS	17.4

$$DOL = \frac{Contri}{EBIT} = \frac{30,00,00,000}{24,00,00,000} = 1.25$$

$$DFL = \frac{EBIT}{EBT} = \frac{24,00,00,000}{21,75,00,000} = 1.10$$

$$DCL = DFL \times DCL$$
$$= 1.10 \times 1.25$$
$$= 1.375$$

Q.25 The balance sheet of Gitashree Ltd. is given Below :

Liabilities	₹
Shareholders fund	
Equity share capital of ₹ 10 each ₹ 1,80,000	
Retained earnings ₹ 60, 000	2,40,000
Non current liabilities 10% debt	2,40,000
Current liabilities	1,20,000
	6,00,000
Assets	
Fixed assets	4,50,000
Current assets	1,50,000
	6,00,000

The company's total assets turnover ratio is 4. Its fixed operating cost is ₹ 2,00,000 and its variable operating cost ratio is 60%. The income tax rate is 30%.

Calculate :

i) (a) Degree of Operating leverage
(b) Degree of financial leverage
(c) Degree of combined leverage

(ii) Find out EBIT if EPS is (a) ₹ 1 (b) ₹ 2 and (c) ₹ 0.

Working note :- Sales = Assets × 4

= 6,00,000 × 4

= 24,00,000

Income Statement

Particulars	Amt.	EPS = 1	EPS = 2	EPS = 0
Sales	24,00,000			
(-) Variable Cost @ 60%	14,40,000			
Contribution	9,60,000			
(-) fixed cost	(2,00,000)			
EBIT	7,60,000	49,714	75,429	24,000
(-) Interest	(24,000)	(24,000)	(24,000)	24,000
EBT	7,36,000	25,714	51,429	0
(-) Tax @ 30%	(2,20,800)	(7,714)	(15,429)	0
PAT	5,15,200	18,000	36,000	0
(÷) no. of shares	18,000	18,000	18,000	18,000
EPS	28.62	1	2	0
DOL = Contri / EBIT	1.263			
DFL = EBIT / EBT	1.033			
DCL = DFL × DOL	1.304			

Date :	N.B. Pg. No	Stars :	May 2019, Marks 10

Q.21 The capital structure of the Shiva Ltd. consists of equity share capital of ₹ 20,00,000 (Share of ₹ 100 per value) and ₹ 20,00,000 of 10% Debentures, sales increased by 20% from 2,00,000 units to 2,40,000 units, the selling price is ₹ 10 per unit; variable costs amount to₹ 6 per unit and fixed expenses amount to ₹ 4,00,000. The income tax rate is assumed to be 50%.

You are required to calculate the following:

The percentage increase in earnings per share;

Financial leverage at 2,00,000 units and 2,40,000 units

Operating leverage at 2,00,000 units and 2,40,000 units.

Comment on the behaviour of operating and Financial leverages in relation to increase in production from 2,00,000 units to 2,40,000 units.

Point To Be Noted : _____

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Particulars	Amt (₹)	Amt (₹)
Sales Qty	2,00,000	2,40,000
SP pu.	10	10
Sales Value	20,00,000	24,00,000
V. cost pu.	6	6
(-) variable cost	(12,00,000)	(14,40,000)
contribution	8,00,000	9,60,000
(-) fixed cost	(4,00,000)	(4,00,000)
EBIT	4,00,000	5,60,000
(-) Interest	(2,00,000)	(2,00,000)
EBT	2,00,000	3,60,000
(-) Tax @ 50%	(1,00,000)	(1,80,000)
PAT	1,00,000	1,80,000
(÷) no. of shares	20,000	20,000
EPS	5	9
DFL = EBIT/EBT	2	1.5556
DOL = Contri/EBIT	2	1.7143

Date :	N.B. Pg. No	Stars :	Nov. 2020, Marks 10

Q.22 The following data is available for Stone Ltd. :

Sales	5,00,000
(-) Variable cost @ 40%	2,00,000
Contribution	3,00,000
(-) Fixed cost	2,00,000
EBIT	1,00,000
(-) Interest	25,000
Profit before tax	75,000

Using the concept of leverage, find out

(i) The percentage change in taxable income if EBIT increases by 10%.

(ii) The percentage change in EBIT if sales increase by 10%.

(iii) The percentage change in taxable income if sales increase by 10%. Also verify the results in each of the above case.

Working notes :- 1. $DFL = \frac{EBIT}{EBT} = \frac{1,00,000}{75,000}$

$= 1.333$

$DFL = \frac{\%\text{ change in EBT}}{\%\text{ change in EBIT}}$

$1.3333 = \frac{\%\text{ change in EBT}}{10\%}$

$\%\text{ change in EBT} = 13.333\%$

2. $DOL = \frac{Contri}{EBIT} = \frac{3,00,000}{1,00,000} = 3$

$DOL = \frac{\%\text{ change in EBIT}}{\%\text{ change in Sale}}$

$3 = \frac{\%\text{ change in EBIT}}{10\%}$

$\%\text{ change in EBIT} = 30\%$

Particulars	Amt (₹)	Sales ↑ 10%
Sales	5,00,000	5,50,000
(-) variable cost	2,00,000	2,20,000
Contribution	3,00,000	3,30,000
(-) fixed cost	2,00,000	2,00,000
EBIT	1,00,000	1,30,000

↳ 30% increase

$$DCL = \frac{Contri}{EBIT} = \frac{3,00,000}{75,000} = 4$$

$$DCL = \frac{\% \text{ change in EBT}}{\% \text{ change in Sales}}$$

$$4 = \frac{\% \text{ change in EBT}}{10\%}$$

$\therefore$ % change in EBT = 40%

Date :	N.B. Pg. No	Stars :	Jan 2021, 10 Marks

Q.26 The information related to XYZ company Ltd. for the year ended 31st March 2020 are as follows :

Equity share Capital of ₹ 100 each	₹ 50 Lakhs
12% Bonds of ₹ 1000 each	₹ 30 Lakhs
Sales	₹ 84 Lakhs
Fixed Cost (Excluding Interest)	₹ 7.5 Lakhs
Financial Leverage	1.39
Profit Volume Ration	25%
Market Tax Rate Applicable	₹ 200
Income Tax Rate Applicable	30 %

Your are required to compute the following :

(i) Operating Leverages
(ii) Combined Leverage
(iii) Earning per share
(iv) Earning Yield

Point To Be Noted : Earning yield = $\frac{EPS}{MPS}$

* Other interest bal. figure

Particulars	Amt. (₹)
Sales	84,00,000
(-) variable cost	63,00,000
Contribution	21,00,000
(-) fixed cost	7,50,000
EBIT	13,50,000
(-) Interest	3,60,000
(-) Other Interest	18,777
EBT	9,71,223
(-) Tax @ 30%	2,91,367
PAT	6,79,856
(÷) no. of shares	50,000
EPS	13.5971
DOL Contri / EBIT	1.56
DCL DFL × DOL	2.1684

$DFL = \frac{EBIT}{EBT}$

$1.39 = \frac{13,50,000}{EBT}$

EBT = 9,71,233

Earning Yeild $= \frac{EPS}{MPS} = \frac{13.5971}{200} = 6.7986\%$

However, Student might get different answer if 3,60,000 interest is considered ignoring DFL. Even that answer is acceptable.

Date :	N.B. Pg. No	Stars :	Nov. 2022, Marks 10

Q.28 The following information is available for SS Ltd.

Profit volume (PV) ratio	30 %
Operating leverage	2.00
Financial leverage	1.50
Loan	₹ 1,25,000
Post tax interest rate	5.6%
Tax rate	30%
Market price per share (MPS)	₹ 140
Price Earnings Ratio (PER)	10

You are required to :

(i) Prepare the Profit Loss statement of SS Ltd. and

(ii) Find out the number of Equity shares

Point To Be Noted :

Revise pre tax interest calculation

PE ratio = MPS / EPS

DON'T FORGET

Working note : 1) $DFL = \frac{EBIT}{EBT}$

$1.5 = \frac{EBIT}{EBIT - Interest}$

$1.5 = \frac{EBIT}{EBIT - 10,000}$ ***

$\therefore$ EBIT = 30,000

*** Interest Calculation

8 %	?	100 % Income
	5.6 %	(-) 30 % Tax
		70 % Post tax

* Pre tax interest rate (?)

$\Rightarrow \frac{5.6}{70} \times 100 = 8\ \%$

$\therefore$ Interest = 1,25,000 x 8 %

= 10,000

2) $DOL = \frac{Contri}{EBIT}$

$2 = \frac{Contri}{30,000}$

$\therefore$ Contribution = 60,000

3) Income Statement

Particulars	Amt. (₹)	
Sales	2,00,000	100%
(–) variable cost	(1,40,000)	
contribution	60,000	30%
(–) fixed cost	(30,000)	
EBIT	30,000	
(–) Interest	(10,000)	
EBT	20,000	
(–) Tax @ 30%	(6000)	
PAT	14,000	

★ $P/E\ ratio = \frac{MPS}{EPS}$

$10 = \frac{140}{EPS}$

$EPS = 14$

$no.\ of\ shares = \frac{14,000}{14}$ $\left(\frac{PAT}{EPS}\right)$ = 1,000 shares

Date :	N.B. Pg. No	Stars :	May 2018

Q.30 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

Point To Be Noted : _____

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Particulars	fixed cost 15000		fixed cost 20,000	
	A	B	A	B
Sales	90,000	90,000	90,000	90,000
(-) Variable Cost	45,000	45,000	45,000	45,000
Contribution	45,000	45,000	45,000	45,000
(-) fixed cost	15,000	15,000	20,000	20,000
EBIT	30,000	30,000	25,000	25,000
(-) Interest	2,000	1,000	2,000	1,000
EBT	28000	29,000	23,000	24,000
DOL	1.5	1.5	1.8	1.8
DFL	1.07	1.30	1.08	1.04
DCL	1.60	1.55	1.95	1.87

Q.31 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:

(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?

Point To Be Noted :

ROI = EBIT / Equity + Debt

* We use EBIT above, as it shows pure profits

Particulars	Amt (₹)	
Sales	75,00,000	22,84,091
(-) variable cost @56%	(42,00,000)	(12,79,091)
Contribution	33,00,000	10,05,000
(-) fixed cost	(6,00,000)	(6,00,000)
EBIT	27,00,000	4,05,000
(-) Interest	(4,05,000)	(4,05,000)
EBT	22,95,000	0

i) $ROI = \frac{EBIT}{Equity + Debt} = \frac{27,00,000}{55,00,000 + 45,00,000} = 27\%$

ii) The company's ROI is 27% and financial leverage is 9%. ∴, company is having favourable financial leverage.

iii) Industry TO ratio = 3

∴, Industry would have = (45,00,000 + 5500000) x3

made sale of = 3,00,00,000

Our sale = 75,00,000

Thus, our capital T/O ratio is less.

$$DOL = \frac{Contri}{EBIT} = \frac{33,00,000}{27,00,000} = 1.222$$

$$DFC = \frac{EBIT}{EBT} = \frac{27,00,000}{22,95,000} = 1.1764$$

$$DCL = DFL \times DOL$$
$$= 1.1764 \times 1.2222$$
$$= 1.4379$$

$$DOL = \frac{\%\ change\ in\ EBIT}{\%\ change\ in\ Sales}$$

$$1.222 = \frac{\%\ change\ in\ EBIT}{10\%}$$

$$\%\ change\ in\ EBIT = 12.222\%$$

Date :	N.B. Pg. No	Stars :	May 2019

Q.32 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.

Point To Be Noted : _____

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Working note 1. Sales

Sales = Assets x 2.5

= 400 Cr x 2.5

= 1,000 Cr.

Particulars	Amt. (₹) (in Crores.)
Sales	1000
(-) variable cost	(650)
Contribution	350
(-) fixed cost	(80)
EBIT	270
(-) Interest	(30)
EBT	240
(-) Tax @ 40%	(96)
PAT	144
(÷) no. of shares	10
EPS	14.4
DOL = Contri / EBIT	1.2963
DFL = EBIT / EBT	1.125
DCL = DFL x DOL	1.4583

Q.33 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:

(i) CALCULATE the degree of operating leverage for each of these firms. Comment also.

(ii) Use the operating leverage to EXPLAIN why these firms have different beta.

ii) Particulars	DOL
A Ltd.	$\frac{22\%}{35\%} = 0.63$
B Ltd.	$\frac{35\%}{24\%} = 1.46$
C Ltd.	$\frac{26\%}{29\%} = 0.90$
D Ltd.	$\frac{30\%}{32\%} = 0.94$

It is level specific

iii) High DOL leads to high beta.
∴, When DOL is 0.63 (least) at that time beta is 1 (minimum) and when DOL is 1.46 (high) at that time beta is 1.65 (maximum)

Working note in content of Q.26

ITC

Earning yield = $\frac{10}{220} \times 100$

= 4.5%

RIL

Earning yield = $\frac{60}{2500} \times 100$

= 2.4%

Q.11 Betatronics Ltd. has the following balance sheet and income statement information:

Balance Sheet as on March 31st 2022

Liabilities	₹	Assets	₹
Equity share (₹ 10/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 31st 2022

Particulars	₹
Sales	3,40,000
Operating expenses (including ₹ 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,

COMPUTE the earnings per share at the new sales level?

Point To Be Noted : _____

_____

_____

Particulars	Basic	↑ by 20%	↓ by 20%
Sales	3,40,000	4,08,000	2,72,000
(-) variable cost	(60,000)	(72,000)	(48,000)
Contribution	2,80,000	3,36,000	2,24,000
(-) fixed Cost	(60,000)	(60,000)	(60,000)
EBIT	2,20,000	2,76,000	1,64,000
(-) Interest	(60,000)	(60,000)	(60,000)
EBT	1,60,000	2,16,000	1,04,000
(-) Tax	(56,000)	(75,600)	(36,400)
PAT	104000	1,40,400	67,600
i) DOL	1.27	1.21	1.36
ii) DFL	1.37	1.27	1.57
iii) DCL	1.7399	1.5367	2.1352
iv) EPS	1.3	1.755	0.845

Q.17 From the following details of X Ltd., prepare the Income Statement for the year ended 31st December, 2017:

Financial Leverage	2
Interest	₹ 2,000
Operating Leverage	3
Variable cost as a percentage of sales	75%
Income tax rate	30%

Income Statement

Particulars	Amt (₹)	
Sales	48,000	100%
(-) Variable cost	(36,000)	75%
Contribution	12,000	25%
(-) fixed cost	(8,000)	
EBIT	4,000	
(-) Interest	(2,000)	
EBT	2,000	
(-) Tax @30%	(600)	
PAT	1,400	

Working note :

$$DFL = \frac{EBIT}{EBT} = \frac{EBIT}{EBIT - Interest}$$

$$2 = \frac{EBIT}{EBIT - 2,000}$$

$$2EBIT - 4,000 = EBIT$$

$$\therefore, EBIT = 4,000$$

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

$$3 = \frac{Contri}{4,000} \quad \therefore, Contri = 12,000$$

Date :	N.B. Pg. No	Stars :	Practical Q9

Q.14 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/unit	₹ 40
Variable Cost/unit	₹ 20
Fixed cost	₹ 1,00,000

The Capital Structure of the Company as on 31st March 2022 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%.

Particulars	Base	Option 1	Option 2	Option 3
Sales unit	1,00,000	1,50,000	1,50,000	1,50,000
SP p.u.	40	40	40	40
Sales value	40,00,000	60,00,000	60,00,000	60,00,000
variable cost p.u	20	18	18	18
(-) variable cost	20,00,000	27,00,000	27,00,000	27,00,000
Contribution	20,00,000	33,00,000	33,00,000	33,00,000
(-) fixed cost	(10,00,000)	(15,00,000)	(15,00,000)	(15,00,000)
EBIT	10,00,000	18,00,000	18,00,000	18,00,000
(-) Interest	(70,000)	(70,000)	(70,000+30,000)	(70,000+60,000)
EBT	9,30,000	17,30,000	17,00,000	16,70,000
(-) Tax @ 40%	(3,72,000)	(6,92,000)	(6,80,000)	(6,68,000)
PAT	5,58,000	10,38,000	10,20,000	10,02,000
(÷) no. of shares	1,00,000	1,00,000+1,00,000	1,00,000+50,000	1,00,000+0
EPS	5.58	5.19	6.68	10.02

Since, Option 3 is giving the highest EPS it is the best option.

Date :	N.B. Pg. No	Stars :	May 2018, Marks 10

Q.19 The following data have been extracted from the books of LM Ltd: Sales –₹100 lakhs
Interest Payable per annum - ₹ 10 lakhs
Operating leverage - 1.2
Combined leverage - 2.16
You are required to calculate:
(a) The financial leverage, (b) Fixed cost and (c) P/V ratio

Point To Be Noted : _____

Income Statement

Particulars	Amt. (₹)
Sales	1,00,00,000
(–) variable cost	(73,00,000)
Contribution	27,00,000
(–) fixed cost	(4,50,000)
EBIT	22,50,000
(-) Interest	(10,00,000)
EBT	12,50,000

1. $DFL = \frac{EBIT}{EBT} = \frac{EBIT}{EBIT - Interest}$

$1.8 = \frac{EBIT}{EBIT - 10,00,000}$

$\therefore$ EBIT = 22,50,000

2. $DCL = DOL \times DFL$
$2.16 = 1.2 \times DFL$
$\therefore DFL = 1.8$

3. $DOL = \frac{Contri}{EBIT}$
$1.2 = \frac{Contri}{22,50,000}$

∴, Contri
= 27,00,000

4. P/V ratio
= $\frac{\text{Contri}}{\text{Sales}} \times 100$
= $\frac{27,00,000}{1,00,00,000} \times 100 = 27\%$

Date :	N.B. Pg. No	Stars :	Dec. 2021, Marks 10

Q.24 Information of A Ltd. is given below:

Earnings after tax: 5% on sales

Income tax rate: 50%

Degree of Operating Leverage: 4 times

10% Debenture in capital structure: ₹ 3 lakhs

Variable costs: ₹ 6 lakhs

Required:

(i) From the given data complete following statement:

Sales	XXX
Less: Variable costs	₹ 6,00,000
Contribution	XXX
Less: Fixed costs	XXX
EBIT	XXX
Less: Interest expenses	XXX
EBT	XXX
Less: Income tax	XXX
EAT	XXX

(ii) Calculate Financial Leverage and Combined Leverage.

(iii) Calculate the percentage change in earning per share, if sales increased by 5%

Point To Be Noted : _____

_____

_____

Working note 1:- DOL = $\frac{\text{Contri}}{\text{EBIT}}$ x = Sales

$4 = \frac{x - 6,00,000}{0.1x + 30,000}$

$0.4x + 1,20,000 = x - 6,00,000$

$0.6x = 7,20,000$

$\therefore, x = 12,00,000$

Income Statement

Particulars	Amt (₹)	
Sales	x	12,00,000
(-) V. cost	6,00,000	(6,00,000)
contri	$x - 6,00,000$	6,00,000
(-) fixed cost		(4,50,000)
EBIT	$0.1x + 30,000$	1,50,000
(-) Interest	30,000	(30,000)
EBT	$0.1x$	1,20,000
(-) Tax @ 50%		(60,000)
EAT	$0.05x$	60,000

$$DFL = \frac{EBIT}{EBT} = \frac{1,50,000}{1,20,000} = 1.25$$

$$DCL = DFC \times DOL$$
$$= 1.25 \times 4$$
$$= 5$$

$$DCL = \frac{\% \text{ change in EPS}}{\% \text{ change in Sales}}$$

$$5 = \frac{\% \text{ change in EPS}}{5\%}$$

$\therefore$ % change in EPS : 25%

Date :	N.B. Pg. No	Stars :	May 2022, Marks 10

Q.27 Details of a company for the year ended 31st March 2022 are given below :

Sales	₹ 86 Lakhs
Profit Volume (P/V) Ratio	35%
Fixed cost excluding interests expenses	₹ 10 Lakhs
10 % Debt	₹ 55 Lakhs
Equity share capital of ₹ 10 each	₹ 75 Lakhs
Income Tax rate	40 %

Required :

(i) Determine company's Returen on capital Employed (Per-tax) and EPS.

(ii) Does the company have favourable financial leverage ?

(iii) Calculate operating and combined leverages of the company

(iv) Calculate percentage change in EBIT, if sales increases by 10%

(v) At what level of sales the earning before tax (EBT) of company will be equal to zero ?

Point To Be Noted : Revise return of Capital Employed Pre tax and post tax

Particulars	Amt (₹)	
Sales	86,00,000	44,28,571
(-) Variable Cost	(55,90,000)	(28,78,571)
Contribution @35%	30,10,000	15,50,000
(-) fixed Cost	(10,00,000)	(10,00,000)
EBIT	20,10,000	5,50,000
(-) Interest	(5,50,000)	(5,50,000)
EBT	14,60,000	0
(-) Tax @40%	(5,84,000)	
EAT	8,76,000	

$$DOL = \frac{Contri}{EBIT} = 1.49$$

$$DFL = \frac{EBIT}{EBT} = 1.37$$

$$DCL = DFL \times DOL$$
$$= 2.04$$

Interest = 5,50,000
EBIT = 20,10,000

⇒ EBIT is much higher than Interest.
Hence, financial leverage is favourable.

$$DOL = \frac{\% \text{ change in EBIT}}{\% \text{ change in Sales}}$$

$$1.49 = \frac{\% \text{ change in EBIT}}{10\%}$$

∴ % change in EBIT = 14.9

ROCE

Pre Tax — Post Tax

$$\frac{\text{Interest} + PAT}{D+E} \qquad \frac{\text{Interest} + PAT}{D+E}$$

$$= \frac{EBIT}{D+E}$$

$$= \frac{20,10,000}{1,30,00,000} \times 100$$

$$= 15.46\%$$

DFL

Only Int. → DFL = EBIT / EBT

Int + PD → Preference Dividend → DFL = EBIT / EBIT − Int. − PD/(1 − tax)

EBIT	10,000
(−) Int.	(2,000)
EBT	8,000
(−) Tax @ 50%	(4,000)
EAT	4,000
(−) PD	(4,000)
Distributable profit	0

* for interest we require pre tax funds that's why 2000 = 2000

for PD we require post tax funds that's why

2000 = 2000 / 1 − tax

= 2000 / 0.5

= 4000

Q.29 Following information is given for X Ltd. :

Total contribution (₹)	4,25,000
Operating leverage	3.125
15% Preference shares (₹ 100 each)	1,000
Number of equity shares	2,500
Tax rate	50%

Calculate EPS of X Ltd, if 40% decreases in sales will results EPS to zero

Point To Be Noted :

$$DFL = \frac{EBIT}{EBIT - Int. - PD/(1-tax)}$$

Working note 1-

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

$$3.125 = \frac{4,25,000}{EBIT} \Rightarrow EBIT = 1,36,000$$

2. $DCL = \frac{\%\text{ change in Contri}}{\%\text{ change in Sales}}$

$= \frac{100\%}{40\%} = 2.5$

3. $DCL = DFL \times DOL$

$2.5 = DFL \times 3.125$

$DFL = 0.8$

* 4. $0.8 = \frac{EBIT}{EBIT - Interest - \frac{PD}{1-tax}}$

$0.8 = \frac{1,36,000}{1,36,000 - Int. - \frac{15,000}{1-0.5}}$

$0.8 = \frac{1,36,000}{1,36,000 - Int. - \frac{15,000}{30,000}}$

$\therefore$ Interest = - 64,000

Income Statement:

Contribution	4,25,000
(-) fixed Cost	(2,89,000)
EBIT	1,36,000
(-) Interest	(-64,000)
EBT	2,00,000
(-) Tax @50%	(1,00,000)
PAT	1,00,000
(-) PD	(15,000)
DP	85,000
(÷) no. of shares	2500
EPS	34

Date :	N.B. Pg. No	Stars :	Nov 2022

Q.40 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 plAnswer :

(ii) ASCERTAIN financial leverage in each plan and comment.

Point To Be Noted : $DFL\ (P_D) = \dfrac{EBIT}{\left[(EBIT - Int.) - \left(\dfrac{DP}{1-tax}\right)\right]}$

Particulars	Plan I	Plan II	Plan III	Plan IV
EBIT	52,00,000	52,00,000	52,00,000	52,00,000
(-) Int. 12%	-	3,12,000	-	-
(-) Int. 9%	-	-	3,51,000	-
EBT	52,00,000	48,88,000	48,49,000	52,00,000
(-) 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
(-) pref. dividend	-	-	-	2,34,000
a) net earnings	31,20,000	29,32,800	29,09,400	28,86,000
b) no. of shares	20,80,000	18,20,000	16,90,000	16,90,000
c) EPS (a/b)	1.5	1.61	1.72	1.71
DFL	1.00	1.06	1.07	1.08*

DFL (in case of preference dividends)

$$= \frac{EBIT}{(EBIT - Int.) - \left(\frac{DP}{(1-t)}\right)}$$

$$= \frac{52,00,000}{(52,00,000 - 0) - \left(\frac{2,34,000}{1-0.4}\right)} = 1.08$$

Self Assessment Questions

Date :	N.B. Pg. No	Stars :	May 2018

Q.30 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

Point To Be Noted : _____

_____

_____

Answer :

(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	(45,000)	(45,000)
Contribution (C)	45,000	45,000
Less: Fixed Cost (FC)	15,000	20,000
EBIT	30,000	25,000
Operating Leverage $\left(\frac{C}{EBIT}\right)$	$\frac{45,000}{30,000}$	$\frac{45,000}{25,000}$
	= 1.5	= 1.8

(ii) Financial Leverages:

	A (₹)	B (₹)
situation :		
EBIT	30,000	30,000
Less: Interest on debt	(2,000)	(1,000)
EBT	28,000	29,000
Financial Leverage $\left(\frac{EBIT}{EBT}\right)$	$\frac{30,000}{28,000}$	$\frac{30,000}{29,000}$
Situation-II :		
EBIT	25,000	25,000
Less: Interest on debt	(2,000)	(1,000)
EBT	23,000	24,000
Financial Leverage $\left(\frac{EBIT}{EBT}\right)$	$\frac{25,000}{23,000}$	$\frac{25,000}{24,000}$
	= 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	$1.8 \times 1.09 = 1.96$	$1.8 \times 1.04 = 1.87$

Date :	N.B. Pg. No	Stars :	May 2020

Q.34 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:

(i) Operating Leverage;

(ii) Combined leverage; and

(iii) Earnings per share.

Show calculations up-to two decimal points.

Point To Be Noted : _____

_____

_____

Answer : :

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:

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

(ii) Combined Leverage:

$$\text{Combined Leverage} = \text{Operating Leverage} \times \text{Financial Leverage}$$

$$= 1.43 \times 1.49 = 2.13$$

Or,

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

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

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

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

Accordingly, other fixed interest

= ₹ 16,18,200 – ₹ 10,86,040 – ₹ 4,44,000 = ₹ 88,160

(iii) Earnings per share (EPS):

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

Date :	N.B. Pg. No	Stars :	Nov. 2020

Q.35 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:

(a) The degree of financial leverage at 1,20,000 units and 1,00,000 units.

(b) The degree of operating leverage at 1,20,000 units and 1,00,000 units.

(c) The percentage change in EPS.

Point To Be Noted : _____

_____

_____

Answer : :

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)

Sales in units	1,20,000	1,00,000
	(₹)	(₹)
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 = $\frac{EBIT}{EBT}$	$= \frac{₹\ 2,80,000}{₹\ 1,80,000} = 1.56$	$= \frac{₹2,00,000}{₹1,00,000} = 2$
(ii) Operating leverage = $\frac{Contribution}{EBIT}$	$= \frac{₹\ 4,80,000}{₹\ 2,80,000} = 1.71$	$= \frac{₹4,00,000}{₹2,00,000} = 2$
(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	$= \frac{5.6}{12.6} \times 100 = 44.44\%$	

Date :	N.B. Pg. No	Stars :	May 2021

Q.36 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:

(i) The percentage change in taxable income if sales increase by 15%.

(ii) The percentage change in EBIT if sales decrease by 10%.

(iii) The percentage change in taxable income if EBIT increase by 15%.

Point To Be Noted : _____

_____

_____

Answer : :

Workings:

1. Contribution = Sales × P/V ratio

= ₹ 15,00,000 × 70% = ₹ 10,50,000

2. Operating Leverage = $\frac{\text{Contribution}}{\text{Earnings before interest and tax (EBIT)}}$

Or, $1.4 = \frac{₹\ 10,50,000}{EBIT}$

$EBIT = ₹\ 7,50,000$

3. $\text{Financial leverage} = \frac{EBIT}{EBT}$

Or, $1.25 = \frac{₹\ 7,50,000}{EBT}$

$EBT = ₹\ 6,00,000$

4. $\text{Fixed Cost} = \text{Contribution} - EBIT$

$= ₹\ 10,50,000 - ₹\ 7,50,000 = ₹\ 3,00,000$

5. $\text{Interest} = EBIT - EBT$

$= ₹\ 7,50,000 - ₹\ 6,00,000 = ₹\ 1,50,000$

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

Or, $\text{Combined Leverage} = \text{Operating Leverage} \times \text{Financial Leverage}$

$= 1.4 \times 1.25 = \mathbf{1.75 \text{ times}}$

So, if sales is increased by 15% then taxable income (EBT) will be increased by 1.75 × 15% = 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

Increase in Earnings before tax (EBT) = ₹ 7,57,500 - ₹ 6,00,000 = ₹ 1,57,500

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

(ii) Degree of Operating Leverage (Given) = 1.4 times

So, if sales is decreased by 10% then EBIT will be decreased by 1.4 × 10% = 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

Decrease in Earnings before interest and tax (EBIT)= ₹ 7,50,000 – ₹ 6,45,000 = ₹ 1,05,000

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

(iii) Degree of Financial Leverage (Given) = 1.25 times

So, if EBIT increases by 15% then Taxable Income (EBT) will be increased by 1.25 × 15% = 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.

Date :	N.B. Pg. No	Stars :	May 2023

Q.37 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

Point To Be Noted : _____

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Answer : :

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, $\text{EBIT}_A = \frac{₹\ 1,00,000 \times 3}{3 - 1}$

$\mathbf{EBIT_A = ₹\ 150000}$

For B $\text{EBIT}_B = \frac{4,00,000 \times 5}{5 - 1}$

$\mathbf{EBIT_B = ₹\ 500000}$

For C $\text{EBIT}_C = \frac{₹6,00,000 \times 2.5}{2.5 - 1}$

$\mathbf{EBIT_C = 10,00,000}$

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

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

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

$$\textbf{Contribution}_A = \textbf{₹ 6,00,000}$$

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

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

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

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

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

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

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

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

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

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

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

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

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

$$\text{Sales} = \frac{\text{Contribution}}{\text{1- VCR}}$$

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

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

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

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.

Date :	N.B. Pg. No	Stars :	Nov 2021

Q.38 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%.

Point To Be Noted : _____

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Answer : :

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

Particulars	Existing	Alternative Schemes		
		(i)	(ii)	(iii)
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.

Date :	N.B. Pg. No	Stars :	May 2022

Q.39 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.

Point To Be Noted : _____

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Answer : :

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

Particulars	Company P (₹)	Company Q (₹)
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 = $0.20 \times 1.25 = 0.25$

(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 = $4 \times 75\% = 3$

(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

Date :	N.B. Pg. No	Stars :	Nov 2022

Q.40 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 plAnswer :

(ii) ASCERTAIN financial leverage in each plan and comment.

Point To Be Noted : _____

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Answer : :

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

Sources of Capital	Plan I	Plan II	Plan III	Plan IV
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 $\left(\frac{EBIT}{EBT}\right)$	1.00	1.06	1.07	1.08*

* Financial Leverage in the case of Preference dividend $= \left(\frac{EBIT}{(EBIT - Interest) - \left(\frac{Dp}{(1-t)}\right)}\right)$

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