CA Intermediate

Financial Management

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CA Inter – Financial Management

Important Questions

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Chapter 3
Financial Analysis and Planning- Ratio Analysis

Important Questions

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Question 1

PYQ July 21

Masco Limited has furnished the following ratios and information relating to the year ended 31st March 2021:

Sales	Rs 75,00,000
Return on net worth	25%
Rate of income tax	50%
Share capital to reserves	6:4
Current ratio	2.5
Net profit to sales (After Income Tax)	6.50%
Inventory turnover (based on cost of goods sold)	12
Cost of goods sold	Rs 22,50,000
Interest on debentures	Rs 75,000
Receivables (includes debtors Rs 1,25,000)	Rs 2,00,000
Payables	Rs 2,50,000
Bank Overdraft	Rs 1,50,000

You are required to:

Calculate the operating expenses for the year ended 31st March, 2021.

Prepare a balance sheet as on 31st March in the following format:

Liabilities	Rs	Assets	Rs
Share Capital		Fixed Assets	
Reserves and Surplus		Current Assets	
15% Debentures		Stock	
Payables		Receivables	
Bank Term Loan		Cash	

Solution 1

a) Calculation of Operating Expenses for the year ended 31st March, 2021

Particulars		(Rs)
Net Profit [@ 6.5% of Sales]		4,87,500
Add: Income Tax (@ 50%)		4,87,500
Profit Before Tax (PBT)		9,75,000
Add: Debenture Interest		75,000
Profit before interest and tax (PBIT)		10,50,000
Sales		75,00,000
Less: Cost of goods sold	22,50,000	
PBIT	10,50,000	33,00,000
Operating Expenses		**42,00,000**

b) Balance Sheet as on 31st March, 2021

Liabilities	(Rs)	Assets	(Rs)
Share Capital	11,70,000	Fixed Assets	18,50,000
Reserve and Surplus	7,80,000	Current Assets	
15% Debentures	5,00,000	Stock	1,87,500
Payables	2,50,000	Receivables	2,00,000
Bank Overdraft (or Bank Term Loan)	1,50,000	Cash	6,12,500
	28,50,000		**28,50,000**

i. **Calculation of Share Capital and Reserves**

The return on net worth is 25%. Therefore, the profit after tax of Rs 4,87,500 should be equivalent to 25% of the net worth.

$$\text{Net worth} \times \frac{25}{100} = \text{Rs } 4,87,500$$

$$\text{Therefore, Net worth} = \frac{\text{Rs } 4,87,500 \times 100}{25} = \text{Rs } 19,50,000$$

The ratio of share capital to reserves is 6:4

Share Capital = 19,50,000 x 6/10 = Rs 11,70,000

Reserves = 19,50,000 x 4/10 = Rs 7,80,000

ii. Calculation of Debentures

Interest on Debentures @ 15% (as given in the balance sheet format)

= Rs 75,000

Therefore, Debentures = Rs. 5,00,000

iii. Calculation of Current Assets

Current Ratio = 2.5 , Payables = Rs 2,50,000 , Bank overdraft = Rs 1,50,000

Total Current Liabilities = Rs 2,50,000 + Rs 1,50,000 = Rs 4,00,000

Therefore, Current Assets = 2.5 x Current Liabilities

= 2.5 x 4,00,000 = Rs 10,00,000

iv. Calculation of Fixed Assets

Particulars	(Rs)
Share capital	11,70,000
Reserves	7,80,000
Debentures	5,00,000
Payables	2,50,000
Bank Overdraft	1,50,000
Total Liabilities	**28,50,000**
Less: Current Assets	10,00,000
Fixed Assets	**18,50,000**

v. Calculation of Composition of Current Assets

Inventory Turnover = 12

$$\frac{\text{Cost of goods sold}}{\text{Closing stock}} = 12$$

$$\text{Closing stock} = \frac{\text{Rs } 22,50,000}{12} = \text{Closing stock} = \text{Rs } 1,87,500$$

Particulars	(Rs)
Stock	1,87,500
Receivables	2,00,000
Cash (Balancing Figure)	6,12,500
Total Current assets	10,00,000

Question 2

RTP May 22, MTP Oct 18, PYQ Nov 23

FM Ltd. is in a competitive market where every company offers credit. To maintain the competition, FM Ltd. sold all its goods on credit and simultaneously received the goods on credit. The company provides the following information relating to current financial year:

Debtors Velocity	3 months
Creditors Velocity	2 months
Stock Turnover Ratio (on Cost of Goods Sold)	1.5
Fixed Assets turnover Ratio (on Cost of Goods Sold)	4
Gross Profit Ratio	25%
Bills Receivables	Rs. 75,000
Bills Payables	Rs. 30,000
Gross Profit	Rs. 12,00,000

FM Ltd. has the tendency of maintaining extra stock of Rs. 30,000 at the end of the period than that at the beginning.

DETERMINE:

i. Sales and cost of goods sold

ii. Sundry Debtors

iii. Closing Stock

iv. Sundry Creditors

v. Fixed Assets

Solution 2

i. Determination of Sales and Cost of goods sold:

$$\text{Gross Profit Ratio} = \frac{\text{Gross profit}}{\text{Sales}} \times 100, \text{ or } \frac{25}{100} \quad \frac{\text{Rs. 12,00,000}}{\text{Sales}}$$

$$\text{Or, Sales} = \frac{\text{Rs. 12,00,000}}{25} = \text{Rs. 48,00,000}$$

Cost of Goods Sold = Sales – Gross Profit

= Rs. 48,00,000 - Rs. 12,00,000 = Rs. 36,00,000

ii. Determination of Sundry Debtors

Debtors' velocity is 3 months or Debtors' collection period is 3 months,

$$\text{So, Debtors' turnover ratio} = \frac{12 \text{ months}}{3 \text{ months}} = 4$$

$$\text{Debtors' turnover ratio} = \frac{\text{Credit Sales}}{\text{Average Accounts Receivable}}$$

$$= \frac{\text{Rs. 48,00,000}}{\text{Bills Receivable + Sundry Debtors}} = 4$$

Or, Sundry Debtors + Bills receivable = Rs. 12,00,000

Sundry Debtors = Rs. 12,00,000 – Rs. 75,000 = Rs. 11,25,000

iii. Determination of Closing Stock

$$\text{Stock Turnover Ratio} = \frac{\text{Cost Of Goods Sold}}{\text{Average Stock}} = \frac{\text{Rs. 36,00,000}}{\text{Average Stock}} = 1.5$$

$$\frac{\text{Opening Stock + Closing Stock}}{2}, \text{Or } \frac{\text{Opening Stock + (Opening Stock + Rs. 30,000)}}{2}$$

= Rs. 24,00,000

Or 2 Opening Stock + Rs. 30,000= Rs.48,00,000

Or 2 Opening Stock = Rs.47,70,000

Or, Opening Stock = Rs. 23,85,000

So, Closing Stock = Rs. 23,85,000 + Rs. 30,000 = Rs. 24,15,000

iv. Determination of Sundry Creditors:

Creditors' velocity of 2 months or credit payment period is 2 months.

$$\text{So, Creditors' turnover ratio} = \frac{\text{12 months}}{\text{2 months}} = 6$$

$$\text{Creditors turnover ratio} = \frac{\text{Credit Purchases *}}{\text{Average Accounts Payables}}, \text{Or}$$

$$\frac{\text{Rs. 36,30,000}}{\text{Sundry Creditors + Bills Payables}} = 6$$

So, Sundry Creditors + Bills Payable = Rs. 6,05,000

Or, Sundry Creditors + Rs. 30,000 = Rs. 6,05,000

Or, Sundry Creditors = Rs. 5,75,000

v. Determination Of Fixed Assets

$$\text{Fixed Assets Turnover Ratio} = \frac{\text{Cost of Goods Sold}}{\text{Fixed Assets}} = 4$$

$$\text{Or, } \frac{\text{Rs. 36,00,000}}{\text{Fixed Assets}} = 4, \text{ Or, Fixed Asset = Rs. 9,00,000}$$

Workings:

*Calculation of Credit Purchases:

Cost of goods sold = Opening stock + Purchases – Closing stock

Rs. 36,00,000 = Rs. 23,85,000 + Purchases – Rs. 24,15,000

Purchases (credit) = Rs. 36,30,000

Alternatively, Calculation of credit purchase also can be done as below:

Or Credit Purchases = Cost of goods sold + Difference in Opening Stock

Or Credit Purchases = 36,00,000 + 30,000 = Rs. 36,30,000

Question 3

RTP Nov 21, PYQ Nov 19

Following information has been gathered from the books of Cram Ltd. for the year ended 31st March 2021, the equity shares of which is trading in the stock market at Rs. 28:

Particulars	(Rs. in crores)
Equity Share Capital (Face value @ Rs. 20)	20,00,000
10% Preference Share capital	4,00,000
Reserves & Surplus	16,00,000
12.5% Debentures	12,00,000
Profit before Interest and Tax for the year	8,00,000

CALCULATE the following when company falls within 25% tax bracket:

i. Return on Capital Employed

ii. Earnings Per share

iii. P/E Ratio

Solution 3

i. Return on Capital Employed (ROCE)

$$\text{ROCE (Pre-tax)} = \frac{\text{Profit before interest and taxes(PBIT)}}{\text{Capital Employed}} \times 100$$

$$= \frac{\text{Rs. 8,00,000}}{\text{Rs. 52,00,000}} \times 100 = 15.38\% \text{ (approx.)}$$

$$\text{ROCE (Post-tax)} = \frac{\text{PBIT}(1-t)}{\text{Capital Employed}} \times 100 = \frac{\text{Rs. 8,00,000}(1-0.25)}{\text{Rs. 52,00,000}} \times 100$$

$$= 11.54\% \text{ (approx.)}$$

ii. $$\text{Earnings Per share (EPS)} = \frac{\text{Profit available to equity shareholders}}{\text{Number of equity sharesoutstanding}}$$

$$= \frac{\text{Rs. 4,47,500}}{\text{1,00,000}} = \text{Rs. 4.475}$$

iii. $$\text{P/E Ratio} = \frac{\text{Market Price per Share(MPS)}}{\text{Earning per Share(EPS)}} = \frac{\text{Rs. 28}}{\text{Rs. 4.475}} = 6.26 \text{ times (approx.)}$$

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a. Income Statement

Particulars	Amount (Rs.)
Profit before Interest and Tax (PBIT)	8,00,000
Interest on Debentures (12.5% of Rs. 12,00,000)	(1,50,000)
Profit before Tax (PBT)	6,50,000
Tax @ 25%	(1,62,500)
Profit after Tax (PAT)	4,87,500
Preference Dividend (10% of Rs. 4,00,000)	(40,000)
Profit available to Equity shareholders	4,47,500

b. Calculation of Capital Employed

= Equity Shareholder's Fund + Preference share Capital + Debentures

= (Rs. 20,00,000 + Rs. 16,00,000) + Rs. 4,00,000 + Rs. 12,00,000 = Rs. 52,00,000

Question 4

PYQ Nov 22

The following figures are related to the trading activities of M Ltd.

Total assets	₹ 10,00,000
Debt to total assets	50%
Interest cost	10% per year
Direct Cost	10 times of the interest cost
Operating Exp.	₹ 1,00,000

The goods are sold to customers at a margin of 50% on the direct cost

Tax Rate is 30%

You are required to calculate

(i) Net profit margin

(ii) Net operating profit margin

(iii) Return on assets

(iv) Return on owner's equity

Since before tax or after tax is not mentioned. It is safer to calculate NP Margin in both ways before & after tax.

Solution 4

(i) Computation of Net Profit Margin

Debt = (10,00,000 x 50%) = ₹ 5,00,000

Interest cost = 5,00,000 x $\frac{10}{100}$ = ₹ 50,000

Direct cost = 50,000 x 10 = ₹ 5,00,000

Sales = 5,00,000 x 150% = ₹ 7,50,000

Gross profit = 7,50,000 – 5,00,000	=	2,50,000
Less: Operating expenses	=	1,00,000
EBIT	=	1,50,000
Less: Interest	=	50,000
EBIT	=	1,00,000
Less : Tax @ 30%	=	30,000
PAT	=	70,000
Net Profit Margin	=	$\left(\frac{70,000}{7,50,000}\right) \times 100 = 9.33\ \%$

(ii) Net Operating Profit margin

Net operating profit margin = $\frac{\text{EBIT}}{\text{Sales}} \times 100$

$= \frac{1,50,000}{7,50,000} \times 100$

$= 20\ \%$

(iii) Return on Assets

Return on Assets (Before Tax) = $\frac{\text{EBIT}}{\text{Assets}} \times 100$

Return on Assets (Before Tax) = $\frac{1,50,000}{10,00,000} \times 100 = 15\%$

OR

Return on Assets (After Tax) = $\frac{1,50,000\ (1 - 0.3)}{10,00,000} \times 100 = 10.5\%$

(iv) Return on Owner's Equity

Return = $\frac{\text{PAT}}{\text{Owner's Equity}} \times 100$

Return on Assets = $\frac{70,000}{5,00,000} \times 100 = 14\%$

Question 5

PYQ Jan 25

The equity share capital of Sky Pack Ltd. as on 31st March, 2024 was Rs. 2,00,000. The relevant ratios of the company are as follows:

Current debt to Total debt	0.35
Total debt to Owner's equity	0.65
Fixed assets to Owner's equity	0.55
Total assets turnover	2.5 times
Inventory turnover	10 times

You are required to prepare the Balance Sheet of Sky Pack Ltd. as on 31stMarch, 2024.

Solution 5

Sky Pack Ltd Balance Sheet

Liabilities	Rs.	Assets	Rs.
Equity share capital	2,00,000	Fixed assets	1,10,000
Current debt	45,500	Cash (balancing figure)	1,37,500
Long term debt	84,500	Inventory	82,500
	3,30,000		3,30,000

Working Notes

1. Total debt = 0.65 x Equity share capital

   = 0.65 x Rs. 2,00,000 = Rs. 1,30,000

   Current debt to total debt = 0.35.

   Current debt = 0.35 × Rs. 1,30,000 = Rs.45,500

   Long term debt = Rs.1,30,000 - Rs.45,500= Rs. 84,500

2. Fixed assets = 0.55 × Equity share Capital

   = 0.55 × Rs. 2,00,000 = Rs. 1,10,000

3. Total assets to turnover = 2.5 Times : Inventory turnover = 10 Times

Hence, Inventory /Total assets = 2.5/10=1/4, Total assets = Rs. 3,30,000

Therefore Inventory = Rs. 3,30,000/4 = Rs. 82,500

CA Intermediate
Financial Management

Chapter 4
Cost of Capital

Important Questions

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Question 1 — **WACC**

ICAI SM, RTP May 18, Nov 23, PYQ Nov 19, Jul 21, Nov 23

Navya Limited wishes to raise additional capital of Rs.10 lakhs for meeting its modernization plan. It has Rs. 3,00,000 in the form of retained earnings available for investments purposes.

The following are the further details

Debt/ equity mix	40%/60%
Cost of debt (before tax)	
Upto Rs. 1,80,000	10%
Beyond Rs. 1,80,000	16%
Earnings per share	Rs. 4
Dividend pay out	Rs. 2
Expected growth rate in dividend	10%
Current market price per share	Rs. 44
Tax rate	50%

Required

i. To DETERMINE the pattern for raising the additional finance

ii. To CALCULATE the post-tax average cost of additional debt.

iii. To CALCULATE the cost of retained earnings and cost of equity, and

iv. To DETERMINE the overall weighted average cost of capital (after tax)

Solution 1

i. **Pattern of Raising Additional Finance**

Equity = 10,00,000 × 60/100 = Rs. 6,00,000

Debt = 10,00,000 × 40/100 = Rs. 4,00,000

Capital structure after Raising Additional Finance

Sources of fund	Amount (Rs.)
Shareholder's funds	
Equity capital (6,00,000 – 3,00,000)	3,00,000
Retained earnings	3,00,000
Debt at 10% p.a.	1,80,000
Debt at 16% p.a. (4,00,000 -1,80,000)	2,20,000
Total funds	10,00,000

ii. **Post-tax Average Cost of Additional Debt**

Kd = I(1 – t), where 'Kd' is cost of debt, 'I' is interest and 't' is tax rate.

On Rs. 1,80,000 = 10% (1 - 0.5) = 5% or 0.05

On Rs. 2,20,000 = 16% (1 – 0.5) = 8% or 0.08

Average Cost of Debt (Post tax) i.e.

$$Kd = \frac{(1,80,000 \times 0.05) + (2,20,000 \times 0.08)}{4,00,000} \times 100 = 6.65\%$$

iii. **Cost of Retained Earnings and Cost of Equity applying Dividend Growth Model**

$$Ke = \frac{D_1}{P_0} + g \text{ or } \frac{D_0 (1 + g)}{P_0} + g$$

$$\text{Then, } Ke = \frac{2(1.1)}{44} + 0.10 = \frac{2.2}{44} + 0.10 = 0.15 \text{ or } 15\%$$

iv. **Overall Weighted Average Cost of Capital (WACC) (After Tax)**

Particulars	Amount (Rs.)	Weights	Cost of Capital	WACC
Equity (including retained earnings)	6,00,000	0.60	15%	9.00
Debt	4,00,000	0.40	6.65%	2.66
Total	10,00,000	1.00		11.66

Question 2

PYQ May 22

A company issues:

- 15% convertible debentures of Rs. 100 each at par with a maturity period of 6 years. On maturity, each debenture will be converted into 2 equity shares of the company. The risk - free rate of return is 10%, market risk premium is 18% and beta of the company is 1.25. The company has paid dividend of Rs. 12.76 per share. Five year ago, it paid dividend of Rs. 10 per share. Flotation cost is 5% of issue amount.
- 5% preference shares of Rs. 100 each at premium of 10%. These shares are redeemable after 10 years at par. Flotation cost is 6% of issue amount.

Assuming corporate tax rate is 40%.

i. Calculate the cost of convertible debentures using the approximation method.

ii. Use YTM method to calculate cost of preference shares.

Year	1	2	3	4	5	6	7	8	9	10
PVIF 0.03, t	0.971	0.943	0.915	0.888	0.863	0.837	0.813	0.789	0.766	0.744
PVIF 0.05, t	0.952	0.907	0.864	0.823	0.784	0.746	0.711	0.677	0.645	0.614
PVIFA 0.03, t	0.971	1.913	2.829	3.717	4.580	5.417	6.230	7.020	7.786	8.530
PVIFA 0.05, t	0.952	1.859	2.723	3.546	4.329	5.076	5.786	6.463	7.108	7.722

Interest rate	1%	2%	3%	4%	5%	6%	7%	8%	9%
FVIF i, 5	1.051	1.104	1.159	1.217	1.276	1.338	1.403	1.469	1.539
FVIF i, 6	1.062	1.126	1.194	1.265	1.340	1.419	1.501	1.587	1.677
FVIF i, 7	1.072	1.149	1.230	1.316	1.407	1.504	1.606	1.714	1.828

Solution 2

Calculation of Cost of Convertible Debentures:

i. Given that,

R_F = 10%, $R_m - R_f$ = 18%, B = 1.25, D_0 = 12.76, D-5 = 10, Flotation Cost = 5%

Using CAPM, $K_e = R_f + \beta (R_m - R_f)$

$= 10\% + 1.25 (18\%) = 32.50\%$

Calculation of growth rate in dividend

$12.76 = 10 (1+g)$

$1.276 = (1+g)$

$(1+5\%) = 1.276$ ..... from FV Table, g = 5%

$$\text{Price of share after 6 years} = \frac{D_7}{K_e - g} = \frac{12.76(1.05)^7}{0.325-0.05}$$

$$P_6 = \frac{12.76 \times 1.407}{0.275} = 65.28$$

Redemption Value of Debenture (RV) = 65.28 × 2 = 130.56 (RV)

NP = 95 , n = 6

$$K_d = \frac{I(1-t) + \frac{(RV - NP)}{n}}{\frac{(RV + NP)}{2}} \times 100 \Rightarrow \frac{15(1-0.4) + \frac{(130.56-95)}{6}}{\frac{(130.56+95)}{2}} \times 100$$

$$\Rightarrow \frac{9+5.93}{112.78} \times 100 \Rightarrow K_d = 13.24\%$$

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ii. Calculation of Cost of Preference Shares:

Net Proceeds = 100 (1.1) - 6% of 100 (1.1)

= 110 - 6.60 = 103.40 , Redemption Value = 100

Year	Cash Flows (Rs.)	PVF @ 3%	PV (Rs.)	PVF @ 5%	PV (Rs.)
0	103.40	1	103.40	1	103.40
1-10	-5	8.530	-42.65	7.722	-38.61
10	-100	0.744	-74.40	0.614	-61.40
			-13.65		3.39

$$\frac{5\% - 3\%}{[3.39 - (-13.65)]} \times 13.65 \Rightarrow 3\% + \frac{2\%}{17.04} \times 13.65$$

K_p = 4.6021%

Question 3

PYQ Nov 22

MR Ltd. is having the following capital structure, which is considered to be optimum as on 31.03.2022.

Equity share capital (50,000 shares)	Rs 8,00,000
12% Pref. share capital	Rs 50,000
15% Debentures	Rs 1,50,000
	Rs 10,00,000

EPS of company was Rs 2.50 in 2021 & expected growth in equity dividend is 10% per year. Next year's dividend per share (DPS) is 50% of EPS of year 2021. Current market price per share (MPS) is Rs 25.00.

15% new debentures will be issued. Company's debentures are currently selling at Rs 96 per deb.

The new 12% Pref. share can be sold at a net price of Rs 91.50 (face value Rs 100 each).

The applicable tax rate is 30%.

You are required to calculate

(a) After tax cost of

(i) New debt,

(ii) New pref. share capital and

(iii) Equity shares assuming that new equity shares come from retained earnings

(b) Marginal cost of capital,

(c) How much can be spent for capital investment before sale of new equity shares assuming that retained earnings for next year investment is 50% of 2021?

Solution 3

(i) After tax cost of new Debt:

$$K_d = \frac{I(1-t)}{P_1} = \frac{15(1-0.3)}{96} = 0.1094 \text{ (or) } \mathbf{10.94\%}$$

(ii) After tax cost of New Preference share capital:

$K_p = \frac{PD}{P_o} = \frac{12}{91.50} = 0.1311$ (or) **13.11%**

(iii) After tax cost of Equity shares:

$K_e = \left(\frac{D_1}{P_o}\right) + g = \left[\frac{2.50 \times 50\%}{25}\right] + 0.10 = 0.15$ (or) **15%**

(b) Marginal Cost of Capital

Type of capital	Proportions	Specific cost	Product
Equity Shares	0.80	0.15	0.12
Preference Shares	0.05	0.1311	0.0066
Debentures	0.15	0.1094	0.0164
Marginal cost of capital			**0.1430 or 14.3%**

(c) Amount that can be spend for capital investment

Retained earnings = 50% of EPS x No. of outstanding Equity shares

= 1.25 × 50,000

= ₹ **62,500**

Proportion of equity (Retained earnings here) capital is 80% of total capital.

Therefore, ₹ 62,500 is 80% of total capital

Amount of Capital Investment = $\frac{62,500}{0.80}$ = ₹ **78,125**

Question 4

PYQ May 23

Capital structure of D Ltd. as on 31st March, 2023 is given below:

Particulars	Rs.
Equity share capital (Rs. 10 each)	30,00,000
8% Preference share capital (Rs. 100 each) 12% Debentures (Rs. 100 each)	10,00,000 10,00,000

- Current market price of equity share is Rs. 80 per share. The company has paid dividend of
- Rs. 14.07 per share. Seven years ago, it paid dividend of Rs. 10 per share. Expected dividend is Rs. 16 per share.
- 8% Preference shares are redeemable at 6% premium after five years. Current market price per preference share is Rs. 104.
- 12% debentures are redeemable at 20% premium after 10 years. Flotation cost is Rs. 5 per debenture.
- The company is in 40% tax bracket.
- In order to finance an expansion plan, the company intends to borrow 15% Long-term loan of Rs. 30,00,000 from bank. This financial decision is expected to increase dividend on equity

- Current market price of equity share is Rs. 80 per share. The company has paid dividend of
- Rs. 14.07 per share. Seven years ago, it paid dividend of Rs. 10 per share. Expected dividend is Rs. 16 per share.
- 8% Preference shares are redeemable at 6% premium after five years. Current market price per preference share is Rs. 104.
- 12% debentures are redeemable at 20% premium after 10 years. Flotation cost is Rs. 5 per debenture.
- The company is in 40% tax bracket.
- In order to finance an expansion plan, the company intends to borrow 15% Long-term loan of Rs. 30,00,000 from bank. This financial decision is expected to increase dividend on equity share from Rs. 16 per share to Rs. 18 per share. However, the market price of equity share is expected to decline from Rs. 80 to Rs. 72 per share, because investors' required rate of return is based on current market conditions.

Required:

i. Determine the existing Weighted Average Cost of Capital (WACC) taking book value weights.

ii. Compute Weighted Average Cost of Capital (WACC) after the expansion plan taking book value weights.

Interest Rate	1%	2%	3%	4%	5%	6%	7%
FVIF $_{i,5}$	1.051	1.104	1.159	1.217	1.276	1.338	1.403
FVIF $_{i,6}$	1.062	1.126	1.194	1.265	1.340	1.419	1.501
FVIF $_{i,7}$	1.072	1.149	1.230	1.316	1.407	1.504	1.606

Solution 4

(i) (a) Growth rate in Dividends

14.07 = 10 x FVIF (i,7 years) FVIF (i,7 years) = 1.407

FVIF (5%, 7 years) = 1.407

i = 5%

Growth rate in dividend= 5%

(b) Cost of Equity

$$Ke = \frac{Di}{Po} + g$$

$$Ke = \frac{16}{80} + 0.05$$

Ke = 25%

(c) Cost of Preference Shares

$$Kp = \frac{PD + \frac{(RV-NP)}{n}}{\frac{(RV+NP)}{2}}$$

$$Kp = \frac{8 + \frac{(106-104)}{2}}{\frac{(106+104)}{2}}$$

Kp = 8.4/105 Kp = 8%

(d) Cost of Debt

$$Kd = \frac{I(1-t) \frac{(RV-NP)}{n}}{\frac{(RV+NP)}{2}}$$

$$Kd = \frac{12(1-0.4) \frac{(120-95)}{10}}{\frac{(120+95)}{2}}$$

Kd = (7.2+2.5)/107.5 = 9.02% Kd = 9.02%

Calculation of existing Weighted Average Cost of Capital (WACC)

Capital	Amount (Rs)	Weights	Cost	WACC
Equity Share Capital	30,00,000	0.6	25%	15.00%
Preference Share Capital	10,00,000	0.2	8%	1.60%
Debenture	10,00,000	0.2	9.02%	1.80%
	50,00,000	1		**18.40%**

(ii) Cost of Long Term Debt = 15% (1-0.4) = 9%

$$\text{Revised Ke} = \frac{18}{72} + 0.05 = 30\%$$

Calculation of WACC after expansion taking book value weights

Capital	Amount	Weights	Cost	W.C
Equity Share Capital	30,00,000	0.3750	30%	11.25%
Preference Share Capital	10,00,000	0.1250	8%	1.00%
Debenture	10,00,000	0.1250	9.02%	1.13%
Long Term Debt	30,00,000	0.3750	9.00%	3.38%
	80,00,000	1.0000		**16.76%**

Question 5

MTP Mar 24

Ram Ltd evaluates all its capital projects using discounting rate of 16%. Its capital structure consists of equity share capital, retained earnings, bank term loan and debentures redeemable at par. Rate of interest on bank term loan is 1.4 times that of debenture. Remaining tenure of debenture and bank loan is 4 years and 6 years respectively. Book value of equity share capital, retained earnings and bank loan is Rs. 20,00,000,

Rs. 30,00,000 and Rs. 20,00,000 respectively. Debentures which are having book value of Rs. 30,00,000 are currently trading at Rs. 98 per debenture. The ongoing PE multiple for the shares of the company stands at 4.

You are required to:

I. CALCULATE the rate of interest on bank loan and

II. CALCULATE the rate of interest on debentures

Tax rate applicable is 30%.

Solution 5

Working Note:

Let the rate of Interest on debenture be x

$\therefore$ Rate of Interest on loan = 1.4x

$$\therefore \text{Kd on debentures} = \frac{\text{Int}(1-t) + \frac{RV - NP}{n}}{\frac{RV - NP}{2}}$$

$$= \frac{100x(1-0.30) + \frac{100 - 98}{4}}{\frac{100 + 98}{2}}$$

$$= \frac{70x + 0.5}{99}$$

$\therefore$ Kd on bank loan = 1.4 x (1 – 0.30) = 0.98x

$$Ke = \frac{EPS}{MPS} = \frac{1}{MPS/EPS} = \frac{1}{PE} = \frac{1}{4} = 0.25$$

Ke = 0.25

Computation of WACC

Capital	Amount	Weights	Cost	Product
Equity	20,00,000	0.2	0.25	0.05
Reserves	30,00,000	0.3	0.25	0.075
Debentures	30,00,000	0.3	(70x+0.5)/99	(21x+0.15)/99
Bank Loan	20,00,000	0.2	0.98x	0.196x
	1,00,00,000	1		$0.125+0.196x+\frac{21X+0.15}{99}$

WACC = 16%

$$0.125+0.196x+\frac{21x+21X+0.15}{99}\ 0.15 = 0.16$$

$\therefore$ 12.375+19.404x+21x+0.15 = (0.16)(99)

$\therefore$ 40.404x = 15.84 – 12.525

$\therefore$ 40.404x = 3.315

$$x = \frac{3.315}{40.404}$$

$\therefore$ x = 8.20%

I. Rate of interest on debenture = x = 8.20%

II. Rate of interest on Bank loan = 1.4x = (1.4)(8.20%) = 11.48%.

Question 6

PYQ May 24

The capital structure of Shine Ltd. as on 31.03.2024 is as under:

Particulars	Amount (Rs.)
Equity share capital off 10 each	45,00,000
15% Preference share capital of f 100 each	36,00,000
Retained earnings	32,00,000
13% Convertible Debenture off 100 each	67,00,000
11% Term Loan	20,00,000
Total	2,00,00,000

Additional information:

A) Company issued 13% Convertible Debentures of Rs. 100 each on 01.04.2023 with a maturity period of 6 years. At maturity, the debenture holders will have an option to convert the debentures into equity shares of the company in the ratio of 1 : 4 (4 shares for each debenture).

B) The market price of the equity share is Rs. 25 each as on 31.03.2024 and the growth rate of the share is 6% per annum.

Preference stock, redeemable after eight years, is currently selling at Rs. 150 per share.

(C) The prevailing default-risk free interest rate on 10-year GOI treasury bonds is 6%. The average market risk premium is 8% and the Beta of the company is 1.54.

Corporate tax rate is 25% and rate of personal income tax is 20%.

Solution 6

You are required to calculate the cost of:
(i) Equity Share Capital
(ii) Preference Share Capital
(iii) Convertible Debenture
(iv) Retained Earnings
(v) Term Loan

(i) Cost of Equity Share capital

As per CAPM Model Ke = Rf + ß (Rm – Rf)

Rf = 6%

B = 1.54

Rm-Rf = 8%

Ke = 6% + 1.54(8%) = **18.32%**

(ii) Cost of Preference Share capital

n = 8

Net Proceeds (NP) = 150

Redemption Value (RV) = 100

Preference Dividend (PD) = 15

$$Kp = \frac{PD + \frac{(RV - NP)}{n}}{\frac{(RV + NP)}{2}} \qquad Kp = \frac{15 + \frac{(100 - 150)}{8}}{\frac{(100 + 150)}{2}}$$

Kp = 7%

Alternatively, if we take NP as 100 and RV as 100, then solution can be done in the following way: Cost of Preference Share capital

n = 8

Net Proceeds (NP) = 100

Redemption Value (RV) = 150

Preference Dividend (PD) = 15

$$Kp = \frac{PD + \frac{(RV - NP)}{n}}{\frac{(RV + NP)}{2}}$$

$$Kp = \frac{15 + \frac{(150 - 100)}{8}}{\frac{(150 + 100)}{2}} \qquad Kp = 7\%$$

(iii) Cost of convertible debenture

Cash Redemption Value (RV) = 100

Share Redemption Value (RV):

Value of share after 5 years = 25 x (1.06)5 = 33.46

Share Redemption Value (RV) = 33.46 X 4=133.82

Therefore, investor will choose share redemption.

Redemption Value (RV) = 133.82

Net Proceeds (NP) = 100

n = 5

Interest (I) = 13

Tax (t) = 25%

$$Kp = \frac{I(1-t) + \frac{(RV - NP)}{n}}{\frac{(RV + NP)}{2}} \qquad Kp = \frac{13(1-0.25) + \frac{(133.82 - 100)}{5}}{\frac{(133.82 + 100)}{2}}$$

Kd = 14.13%

(iv) Cost of Retained Earnings

Kr = Ke (1-tp)= 18.32 % x (1-0.20) = 14.66%

We can also take cost of equity as cost of retained earnings,

Accordingly, Kr = Ke = 18.32%

(v) Cost of Term Loan

= 11% x (1-0.25) = 8.25%

CA Intermediate
Financial Management

Chapter 5
Capital Structure

Important Questions

by CA Mohnish Vora (MVSIR)

Question 1 — Arbitrage (Value of Levered > Value of Unlevered)

ICAI SM, MTP Oct 21, Apr 22

Following data is available in respect of two companies having same business risk:

Capital employed = Rs. 2,00,000, EBIT = Rs. 30,000 and Ke = 12.5%

Sources	Levered Company (Rs.)	Unlevered Company (Rs.)
Debt (@10%)	1,00,000	Nil
Equity	1,00,000	2,00,000

An investor is holding 15% shares in levered company. CALCULATE the increase in annual earnings of investor if he switches his holding from Levered to Unlevered company.

Solution 1

1. Valuation of firms

Particulars	Levered Firm(Rs.)	Unlevered Firm(Rs.)
EBIT	30,000	30,000
Less: Interest on debt (10% × Rs. 1,00,000)	10,000	Nil
Earnings available to Equity shareholders	20,000	30,000
Ke	12.5%	12.5%
Value of Equity (S) (Earnings available to Equity shareholders/Ke)	1,60,000	2,40,000
Debt (D)	1,00,000	Nil
Value of Firm (V) = S + D	2,60,000	2,40,000

Value of Levered company is more than that of unlevered company. Therefore, investor will sell his shares in levered company and buy shares in unlevered company. To maintain the level of risk he will borrow proportionate amount and invest that amount also in shares of unlevered company.

2. Investment & Borrowings

Particulars	(Rs.)
Sell shares in Levered company (Rs. 1,60,000 x 15%)	24,000
Borrow money (Rs. 1,00,000 x 15%)	15,000
Buy shares in Unlevered company	39,000

3. Change in Return

Particulars	(Rs.)
Income from shares in Unlevered company (Rs. 39,000 x 12.5%)	4,875
Less: Interest on loan (Rs. 15,000 x 10%)	1,500
Net Income from unlevered firm	3,375
Less: Income from Levered firm (Rs. 24000 x 12.5%)	3,000
Incremental Income due to arbitrage	375

Question 2 — **Arbitrage (Value of Unlevered > Value of Levered)**

ICAI SM

Following data is available in respect of two companies having same business risk:

Capital employed = Rs 2,00,000, EBIT = Rs 30,000

Sources	Levered Company (Rs)	Unlevered Company (Rs)
Debt (@10%)	1,00,000	Nil
Equity	1,00,000	2,00,000
Ke	20 %	12.50 %

An investor is holding 15% shares in Unlevered company. CALCULATE the increase in annual earnings of investor if he switches his holding from Unlevered to Levered Company.

Solution 2

1. Valuation of firms

Particulars	Levered Firm (Rs)	Unlevered Firm (Rs)
EBIT	30,000	30,000
Less: interest (1,50,000 x 10%)	10,000	Nil
Earnings available to Equity Shareholder (NI)	20,000	30,000
Ke	20%	12.50%
Value of Equity (NI / Ke)	1,00,000	2,40,000
Value of Debt	1,00,000	Nil
Value of Firm	2,00,000	2,40,000

As per MM Approach (without tax), value of cos. of same risk class should have been equal.

However, in above case, Value of Unlevered company is more than that of Levered company.

Thus, arbitrage opportunity exists and investor will sell his shares in unlevered company and buy shares in levered company. Market value of Debt and Equity of Levered company are in the ratio of Rs 1,00,000 : Rs 1,00,000 i.e. 1:1. To maintain the level of risk he will lend proportionate amount (50%) and invest balance amount (50%) in shares of Levered company.

2. Investment & Borrowings

Sell shares in Unlevered co. (Rs 2,40,000 x 15%) → Amt available from sale	36,000
Lend money (Rs 36,000 x 50%)	18,000
Buy shares in Levered company (Rs 36,000 x 50%)	18,000
Total amount used	**36,000**

3. Change in Return

Income from shares in Levered company (18,000 x 20%)	3,600
Add: Interest on Money lent (18,000 x 10%)	1,800
Total Income after arbitrage	**5,400**
Less: Income from Unlevered firm (36,000 x 12.50%) → Before arbitrage	4,500
Incremental Income due to arbitrage	**900**

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Question 3 — MM Approach

ICAI SM, RTP May 22, PYQ Nov 18

The following data relates to two companies belonging to the same risk class

Particulars	Bee Ltd.	Cee Ltd
12% Debt	Rs. 27,00,000	-
Equity Capitalization Rate	-	18
Expected Net Operating Income	Rs. 9,00,000	Rs. 9,00,000

You are required to:

a. DETERMINE the total market value, Equity capitalization rate and weighted average cost of capital for each company assuming no taxes as per M.M. Approach.

b. DETERMINE the total market value, Equity capitalization rate and weighted average cost of capital for each company assuming 40% taxes as per M.M. Approach.

Solution 3

a. Assuming no tax as per MM Approach.

Calculation of Value of Firms 'Bee Ltd.' and 'Cee Ltd' according to MM Hypothesis

Market Value of 'Cee Ltd' [Unlevered(u)]

Total Value of Unlevered Firm (Vu) = [NOI/ke] = 9,00,000/0.18 = Rs. 50,00,000

Ke of Unlevered Firm (given) = 0.18

Ko of Unlevered Firm (Same as above = ke as there is no debt) = 0.18

Market Value of 'Bee Ltd' [Levered Firm (I)]

Total Value of Levered Firm (VL) = Vu + (Debt× Nil)

= Rs. 50,00,000 + (27,00,000 × nil)

= Rs. 50,00,000

Computation of Equity Capitalization Rate and Weighted Average Cost of Capital (WACC)

Particulars	Bee Ltd.
Net Operating Income (NOI)	9,00,000
Less: Interest on Debt (I)	3,24,000
Earnings of Equity Shareholders (NI)	5,76,000
Overall Capitalization Rate (ko)	0.18
Total Value of Firm (V = NOI/ko)	50,00,000
Less: Market Value of Debt	27,00,000
Market Value of Equity (S)	23,00,000
Equity Capitalization Rate [ke = NI /S]	0.2504
Weighted Average Cost of Capital (ko)* ko = (ke×S/V) + (kd×D/V)	0.18

***Computation of WACC Bee Ltd**

Component of Capital	Amount	Weight	Cost of Capital	WACC
Equity Debt	23,00,000 27,00,000	0.46 0.54	0.2504 0.12*	0.1152 0.0648
Total	50,00,000			0.18

*Kd = 12% (since there is no tax), WACC = 18%

b. Assuming 40% taxes as per MM Approach

Calculation of Value of Firms 'Bee Ltd.' and 'Cee Ltd' according to MM Hypothesis

Market Value of 'Cee Ltd' [Unlevered(u)]

Total Value of unlevered Firm (Vu) = [NOI (1 - t)/ke] = 9,00,000 (1 – 0.40)] / 0.18

= Rs. 30,00,000

Ke of unlevered Firm (given) = 0.18

Ko of unlevered Firm (Same as above = ke as there is no debt) = 0.18

Market Value of 'Bee Ltd' [Levered Firm (I)]

Total Value of Levered Firm (VL) = Vu + (Debt× Tax)

= Rs. 30,00,000 + (27,00,000 × 0.4)

= Rs. 40,80,000

Computation of Weighted Average Cost of Capital (WACC) of 'Cee Ltd.'

= 18% (i.e. Ke = Ko)

Computation of Equity Capitalization Rate and

Weighted Average Cost of Capital (WACC) of Bee Ltd

Particulars	Bee Ltd.
Net Operating Income (NOI)	9,00,000
Less: Interest on Debt (I)	3,24,000
Earnings Before Tax (EBT)	5,76,000
Less: Tax @ 40%	2,30,400
Earnings for equity shareholders (NI)	3,45,600
Total Value of Firm (V) as calculated above	40,80,000
Less: Market Value of Debt	27,00,000
Market Value of Equity (S)	13,80,000
Equity Capitalization Rate [ke = NI/S]	0.2504
Weighted Average Cost of Capital (ko)* ko = (ke×S/V) + (kd×D/V)	13.23

***Computation of WACC Bee Ltd.**

Component of Capital	Amount	Weight	Cost of Capital	WACC
Equity	13,80,000	0.338	0.2504	0.0846
Debt	27,00,000	0.662	0.072*	0.0477
Total	50,00,000			0.18

*Kd= 12% (1- 0.4) = 12% × 0.6 = 7.2%

WACC = 13.23%

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Question 4 — **EBIT-EPS-MPS Analysis**

RTP May 19, Nov 22, Nov 23

Akash Limited provides you the following information:

	(Rs.)
Profit (EBIT)	2,80,000
Less: Interest on Debenture @ 10%	(40,000)
EBT	2,40,000
Less Income Tax @ 50%	(1,20,000)
	1,20,000
No. of Equity Shares (Rs. 10 each)	30,000
Earnings per share (EPS)	4
Price /EPS (PE) Ratio	10

The company has reserves and surplus of Rs. 7,00,000 and required Rs. 4,00,000 further for modernisation. Return on Capital Employed (ROCE) is constant. Debt (Debt/ Debt + Equity) Ratio higher than 40% will bring the P/E Ratio down to 8 and increase the interest rate on additional debts to 12%. You are required to ASCERTAIN the probable price of the share.

i. If the additional capital are raised as debt; and

ii. If the amount is raised by issuing equity shares at ruling market price.

Solution 4

Particulars	Plan-I	Plan-II
	If Rs. 4,00,000 is raised as debt (Rs.)	If Rs. 4,00,000 is raised by issuing equity shares (Rs.)
Earnings Before Interest and Tax (EBIT) {20% of new capital i.e. 20% of (Rs.14,00,000 + Rs.4,00,000)} (Refer working note1)	3,60,000	3,60,000
Less: Interest on old debentures (10% of Rs.4,00,000)	(40,000)	(40,000)
Less: Interest on new debt (12% of Rs.4,00,000)	(48,000)	--

Particulars	Plan-I	Plan-II
	If Rs. 4,00,000 is raised as debt (Rs.)	If Rs. 4,00,000 is raised by issuing equity shares (Rs.)
Earnings Before Tax (EBT)	2,72,000	3,20,000
Less: Tax @ 50%	(1,36,000)	(1,60,000)
Earnings for equity shareholders (EAT)	1,36,000	1,60,000
No. of Equity Shares (refer working note 2)	30,000	40,000
Earnings per Share (EPS)	Rs. 4.53	Rs. 4.00
Price/ Earnings (P/E) Ratio (refer working note 3)	8	10
Probable Price Per Share (PE Ratio × EPS)	Rs. 36.24	Rs. 40

1. Calculation of existing Return of Capital Employed (ROCE):

	(Rs.)
Equity Share capital (30,000 shares × Rs.10)	3,00,000
10% Debentures (Rs.40,000 x (100/10))	4,00,000
Reserves and Surplus	7,00,000
Total Capital Employed	14,00,000
Earnings before interest and tax (EBIT) (given)	2,80,000
ROCE = (Rs.2,80,000/Rs.14,00,000) x 100	20%

2. Number of Equity Shares to be issued in Plan-II:

$$\frac{\text{Rs.4,00,000}}{\text{Rs.40}} = 10{,}000 \text{ shares}$$

Thus, after the issue total number of shares = 30,000+ 10,000 = 40,000 shares

3. Debt/Equity Ratio if Rs. 4,00,000 is raised as debt:

$$\frac{\text{Rs.8,00,000}}{\text{Rs.18,00,000}} \times 100 = 44.44\%$$

As the debt equity ratio is more than 40% the P/E ratio will be brought down to 8 in Plan-I

Question 5 MM Approach

RTP Nov 18, MTP May 20, PYQ May 18

Rounak Ltd. is an all equity financed company with a market value of Rs. 25,00,000 and cost of equity (Ke) 21%. The company wants to buyback equity shares worth Rs. 5,00,000 by issuing and raising 15% perpetual debt of the same amount. Rate of tax may be taken as 30%. After the capital restructuring and applying MM Model (with taxes), you are required to COMPUTE:

i. Market value of J Ltd.

ii. Cost of Equity (Ke)

iii. Weighted average cost of capital (using market weights) and comment on it.

Solution 5

Value of a company (V) = Value of equity (S) + Value of debt (D)

$$\text{Rs. } 25,00,000 = \frac{\text{Net Income(NI)}}{\text{Ke}} + \text{Rs. } 5,00,000$$

Or, Net Income (NI) = 0.21 (Rs. 25,00,000 - Rs. 5,00,000)

Market Value of Equity = Rs. 25,00,000

Ke = 21%

$$\frac{\text{Net income (NI) for equityholders}}{\text{Ke}} = \text{Market Value of Equity}$$

$$\frac{\text{Net income (NI) for equityholders}}{0.21} = \text{Rs. } 25,00,000$$

Net income for equity holders = Rs. 5,25,000

EBIT = 5,25,000/0.7 = Rs. 7,50,000

	All Equity	Debt and Equity
	Rs.	Rs.
EBIT	7,50,000	7,50,000
Interest to debt-holders	-	(75,000)
EBT	7,50,000	6,75,000
Taxes (30%)	(2,25,000)	(2,02,500)
Income available to equity shareholders	5,25,000	4,72,500
Income to debt holders plus income available to shareholders	5,25,000	5,47,500

Present value of tax-shield benefits = Rs. 5,00,000 × 0.30 = Rs. 1,50,000

i. Value of Restructured firm

= Rs. 25,00,000 + Rs. 1,50,000 = Rs. 26,50,000

ii. Cost of Equity (Ke)

Total Value = Rs. 26,50,000

Less: Value of Debt = Rs. 5,00,000

Value of Equity = Rs. 21,50,000

iii. WACC (on market value weight)

$$Ke = \frac{4,72,500}{21,50,000} = 0.219 = 21.98\%$$

Cost of Debt (after tax) = 15% (1- 0.3) = 0.15 (0.70) = 0.105 = 10.5%

Components of Costs	Amount (Rs.)	Cost of Capital (%)	Weight	WACC (%)
Equity	21,50,000	21.98	0.81	17.80
Debt	5,00,000	10.50	0.19	2.00
	26,50,000			19.80

Comment: At present the company is all equity financed. So, Ke = Ko i.e. 21%. However, after restructuring, the Ko would be reduced to 19.80% and Ke would increase from 21% to 21.98%.

Question 6 — Traditional Approach & MM Approach

RTP May 21, MTP Nov 22

Zordon Ltd. has net operating income of Rs. 5,00,000 and total capitalization of Rs. 50,00,000 during the current year. The company is contemplating to introduce debt financing in capital structure and has various options for the same. The following information is available at different levels of debt value:

Debt value (Rs.)0	Interest rate (%)	Equity capitalization rate (%)
0	-	10.00
5,00,000	6.0	10.50
10,00,000	6.0	11.00
15,00,000	6.2	11.30
20,00,000	7.0	12.40
25,00,000	7.5	13.50
30,00,000	8.0	16.00

Assuming no tax and that the firm always maintains books at book values, you are REQUIRED to calculate:

i. Amount of debt to be employed by firm as per traditional approach.

ii. Equity capitalization rate, if MM approach is followed.

Solution 6

a. Amount of debt to be employed by firm as per traditional approach

Calculation of Equity, Wd and We

Total Capital (Rs.)	Debt (Rs.)	Wd	Equity value (Rs.)	We
(a)	(b)	(b)/(a)	(c) = (a) - (b)	(c)/(a)
50,00,000	0	-	50,00,000	1.0
50,00,000	5,00,000	0.1	45,00,000	0.9
50,00,000	10,00,000	0.2	40,00,000	0.8
50,00,000	15,00,000	0.3	35,00,000	0.7
50,00,000	20,00,000	0.4	30,00,000	0.6
50,00,000	25,00,000	0.5	25,00,000	0.5
50,00,000	30,00,000	0.6	20,00,000	0.4

Statement of Weighted Average Cost of Capital (WACC)

Ke	We	Kd	Wd	Ke We	KdWd	Ko
(1)	(2)	(3)	(4)	(5) = (1) x (2)	(6) = (3) x (4)	(7) = (5) + (6)
0.100	1.0	-	-	0.100	-	0.100
0.105	0.9	0.060	0.1	0.095	0.006	0.101
0.110	0.8	0.060	0.2	0.088	0.012	0.100
0.113	0.7	0.062	0.3	0.079	0.019	0.098
0.124	0.6	0.070	0.4	0.074	0.028	0.102
0.135	0.5	0.075	0.5	0.068	0.038	0.106
0.160	0.4	0.080	0.6	0.064	0.048	0.112

So, amount of Debt to be employed = Rs. 15,00,000 as WACC is minimum at this level of debt i.e. 9.8%.

b. As per MM approach, cost of the capital (Ko) remains constant and cost of equity increases linearly with debt.

$$\text{Value of a firm} = \frac{\text{Net Operating Income (NOI)}}{K_o}$$

$$\text{Rs. } 50,00,000 = \frac{\text{Rs. } 5,00,000}{K_o}, \quad K_o = \frac{\text{Rs. } 5,00,000}{\text{Rs. } 50,00,000} = 10\%$$

Statement of Equity Capitalization rate (ke) under MM approach

Debt (Rs.)	Equity (Rs.)	Debt/ Equity	Ko	Kd	Ko - Kd	Ke = Ko + (Ko - Kd) Debt/Equity
(1)	(2)	(3) = (1)/(2)	(4)	(5)	(6) = (4)-(5)	(7) = (4) + (6) x (3)
0	50,00,000	0	0.10	-	0.100	0.100
5,00,000	45,00,000	0.11	0.10	0.060	0.040	0.104
10,00,000	40,00,000	0.25	0.10	0.060	0.040	0.110
15,00,000	35,00,000	0.43	0.10	0.062	0.038	0.116
20,00,000	30,00,000	0.67	0.10	0.070	0.030	0.120
25,00,000	25,00,000	1.00	0.10	0.075	0.025	0.125
30,00,000	20,00,000	1.50	0.10	0.080	0.020	0.130

Question 7 — EBIT-EPS-MPS Analysis

PYQ May 18

Sun Ltd. is considering two financing plans.

Details of which are as under:

i. Fund's requirement – Rs. 100 Lakhs

ii. Financial Plan

Plan	Equity	Debt
I	100%	
II	25%	75%

iii. Cost of debt – 12% p.a., iv. Tax Rate – 30%

iv. Equity Share Rs. 10 each, issued at a premium of Rs. 15 per share

v. Expected Earnings before Interest and Taxes (EBIT) Rs. 40 Lakhs

You are required to compute:

i. EPS in each of the plan

ii. The Financial Break Even Point

iii. Indifference point between Plan I and II

Solution 7

i. Computation of Earnings Per Share (EPS)

Plans	I (Rs.)	II (Rs.)
Earnings before interest & tax (EBIT)	40,00,000	40,00,000
Less: Interest charges (12% of Rs.75 lakh)	--	(9,00,000)
Earnings before tax (EBT)	40,00,000	31,00,000
Less: Tax @ 30%	(12,00,000)	(9,30,000)
Earnings after tax (EAT)	28,00,000	21,70,000
No. of equity shares (@ Rs.10+Rs.15)	4,00,000	1,00,000
E.P.S (Rs.)	7.00	21.70

ii. Computation of Financial Break-even Points

Plan 'I' = 0 – Under this plan there is no interest payment, hence the financial breakeven point will be zero.

Plan 'II' = Rs. 9,00,000 - Under this plan there is an interest payment of Rs.9,00,000, hence the financial break -even point will be Rs.9 lakhs

iii. Computation of Indifference Point between Plan I and Plan II:

Indifference point is a point where EBIT of Plan-I and Plan-II are equal. This can be calculated by applying the following formula:

$\{(EBIT - I1)(1- T)\} / E1 = \{(EBIT - I2)(1- T)\} / E2$

So

$$\frac{EBIT(1- 0.3)}{4,00,000 \text{ shares}} = \frac{(EBIT - 9,00,000)(1- 0.3)}{1,00,000 \text{ shares}}$$

Or, $2.8\ EBIT - 25,20,000 = 0.7EBIT$, Or, $2.1EBIT = 25,20,000$

$EBIT = 12,00,000$

Question 8

MTP Mar 25

Perfact Limited is considering a total investment of Rs. 27 lakhs. You are required to CALCULATE the level of earnings before interest and tax (EBIT) at which the EPS indifference point between the following financing alternatives will occur:

(i) Equity share capital of Rs. 18,00,000 and 14% debentures of Rs. 9,00,000.

Or

(ii) Equity share capital of Rs. 15,00,000, 16% preference share capital of Rs. 5,00,000 and 14% debentures of Rs. 7,00,000.

Assume the corporate tax rate is at 25% and par value of equity share is Rs. 10 in each case. Also CALCULATE the Financial Break-Even Point (FBEP) for both the plans.

Solution 8

At Indifference Point, EPS of Plan (i) = EPS of Plan (ii)

Part 1 = $\frac{(EBIT - I1)(1 - T)}{E1}$ = $\frac{(EBIT - 1{,}26{,}000)(1 - 0.25)}{1{,}80{,}000}$

part 2 = $\frac{(EBIT - I2)(1 - T) - PD}{E2}$ = $\frac{(EBIT - 98{,}000)(1 - 0.25) - 80{,}000}{1{,}50{,}000}$

0.75 EBIT = 4,48,500

EBIT = Indifference point = 5,98,000

A) Financial BEP = Int + (Pref Div / 1-t)

Plan (i) = 1,26,000 + 0

FBEP for Plan (i) = 1,26,000

Plan (ii) = 98,000 + {80,000/ (1 - 0.25)}

FBEP for Plan (ii) = 2,04,666

Question 9

MTP Mar 24

Capital structure (in market-value terms) of AN Ltd is given below:

COMPANY	DEBT	EQUITY
AN Ltd.	50%	50%

The borrowing rate for the company is 10% in a no-tax world and capital markets are assumed to be perfect.

Required:

If Mr. R, owns 8% of the equity shares of AN Ltd., DETERMINE his return if the Company has net operating income of Rs. 10,00,000 and the overall capitalization rate of the company (Ko) is 20%.

CALCULATE the implied required rate of return on equity of AN Ltd.

Solution 9

Particulars	(Rs. In lakhs)
Net profit	54
Less: Preference dividend	24
Earnings for equity shareholders	30
Earnings per share	30?2 = Rs. 15

Value of AN Ltd. = $\frac{NOI}{Ke} = \frac{Rs.\ 10,00,000}{20\%}$ = Rs. 50,00,000

(i) Return on Shares of Mr. R on AN Ltd.

Particulars	Amount (Rs.)
Value of the company	50,00,000
Market value of debt (50% x Rs. 50,00,000)	25,00,000
Market value of shares (50% x Rs. 50,00,000)	**25,00,000**
Particulars	**Amount (Rs.)**
Net operating income	10,00,000
Interest on debt (10% × Rs. 25,00,000)	2,50,000
Earnings available to shareholders	**7,50,000**
Return on 8% shares (8% × Rs. 7,50,000)	**60,000**

(ii) Implied required rate of return on equity of AN Ltd. = $\frac{Rs.\ 7,50,000}{Rs.\ 25,00,000}$

= 30%

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CA Intermediate
Financial Management

Chapter 6
Leverage Analysis

Important Questions

by CA Mohnish Vora (MVSIR)

Question 1

RTP May 20, MTP Nov 22, PYQ Jan 21, MTP Oct 22

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

Particulars	
Equity share capital (of Rs. 10 each), Market Price = Rs. 20	Rs. 50 lakhs
12% Bonds of Rs. 1,000 each	Rs. 37 lakhs
Sales	Rs. 84 lakhs
Fixed cost (excluding interest)	Rs. 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.

iv. Earning Yield

Show calculations up-to two decimal points.

Solution 1

Computation of Profits after Tax (PAT)

Particulars	Amount (Rs.)
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% x Rs.37 lakhs)	(4,44,000)
Less: Other fixed Interest (balancing figure)	(88,160)
EBT (Earnings before tax)	10,86,040*
Less: Tax @ 40%	4,34,416
PAT (Profit after tax)	6,51,624

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

ii. Combined Leverage = Operating Leverage × Financial Leverage = 1.43 x 1.49 = 2.13

Or,

Combined Leverage = $\frac{\text{Contribution}}{\text{EBIT}} \times \frac{\text{EBIT}}{\text{EBT}} = \frac{\text{Contribution}}{\text{EBT}} = \frac{\text{Rs. 23,14,200}}{\text{Rs. 10,86,040}}$

= 2.13

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

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

Accordingly, other fixed interest

= Rs. 16,18,200 - Rs. 10,86,040 - Rs. 4,44,000 = Rs. 88,160

iii. Earnings per share (EPS) = $\frac{\text{PAT}}{\text{No. of shares outstanding}} = \frac{\text{Rs. 6,51,624}}{\text{5,00,000 equity shares}}$

= Rs. 1.30

iv. Earning Yield = $\frac{\text{EPS}}{\text{Market Price}} \times 100 = \frac{\text{Rs. 1.30}}{\text{Rs. 20}} \times 100 = 6.5\%$

Question 2

PYQ Dec 21

Information of A Ltd. is given below:

- Earnings after tax: 5% on sales
- Income tax rate: 50%
- Degree of Operating Leverage: 4 times
- 10% Debt in capital structure: Rs 3 lakhs
- Variable costs: Rs 6 lakhs

Required:

i) From given data complete following statement:

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

ii) Also calculate DFL & DCL

iii) Also calculate the percentage change in earning per share, if sales increased by 5%.

Solution 2

Earning after tax (EAT)is 5% of sales

Income tax is 50% , So, EBT is 10% of Sales

Since Interest Expenses is Rs 30,000

EBIT = 10% of Sales + Rs30,000 ..... (Equation i)

Now Degree of operating leverage = 4

So, $\frac{\text{Contribution}}{\text{EBIT}}$ = 4

Or, Contribution = 4 EBIT , Or, Sales – Variable Cost = 4 EBIT

Or, Sales – Rs 6,00,000 = 4 EBIT …… (Equation ii)

Replacing the value of EBIT of equation (i) in Equation (ii)

We get, Sales – Rs 6,00,000 = 4 (10% of Sales + Rs 30,000)

Or, Sales – Rs 6,00,000 = 40% of Sales + Rs 1,20,000

Or, 60% of Sales = Rs 7,20,000

So, Sales = $\frac{\text{Rs } 7,20,000}{60\%}$ = **Rs 12,00,000**

Contribution = Sales – Variable Cost = Rs 12,00,000 – Rs 6,00,000 =Rs 6,00,000

EBIT = $\frac{\text{Rs } 6,00,000}{4}$ = **Rs 1,50,000**

Fixed Cost = Contribution – EBIT = Rs 6,00,000 – Rs 1,50,000 = Rs 4,50,000

EBT = EBIT – Interest = Rs 1,50,000 – Rs 30,000 = **Rs 1,20,000**

EAT = 50% of Rs 1,20,000 = Rs 60,000

Income Statement

Particulars	(Rs)
Sales	**12,00,000**
Less: Variable cost	6,00,000
Contribution	6,00,000
Less: Fixed cost	4,50,000
EBIT	**1,50,000**
Less: Interest	30,000
EBT	**1,20,000**
Less: Tax (50%)	60,000
EAT	60,000

ii. **Financial Leverage**= $\frac{\text{EBIT}}{\text{EBT}}$ = $\frac{1,50,000}{1,20,000}$ = 1.25 times

Combined Leverage = Operating Leverage × Financial Leverage= 4x1.25 = **5 times** Or,

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

Combined Leverage = $\frac{\text{Contribution}}{\text{EBT}}$ = $\frac{\text{Rs } 6,00,000}{\text{Rs } 1,20,000}$ =5 **times**

iii. **Percentage Change in Earnings per share**

Combined Leverage = $\frac{\%\text{ Change in EPS}}{\%\text{ change in Sales}}$ = 5 = $\frac{\%\text{ Change in EPS}}{5\%}$

Therefore,% Change in EPS = **25%**

Hence, if sales increased by **5 %**, EPS will be increased by **25 %.**

Question 3

PYQ Nov 22

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:

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

(2) Find out the number of equity shares.

Solution 3

(1) Preparation of Profit – Loss Statement

Working Notes:

1. Post tax interest	5.60%
Tax rate	30%

Pre tax interest rate = (5.6/70) x 100 = 8%

Loan amount	₹ 1,25,000
Interest amount = 1,25,000 x 8%	₹ 10,000

$$\text{Financial Leverage (FL)} = \frac{\text{EBIT}}{\text{EBT}} = \frac{\text{EBIT}}{\text{EBIT – Interest}} = \frac{\text{EBIT}}{\text{EBIT – 10,000}}$$

$$1.5 = \frac{\text{EBIT}}{\text{EBIT – 10,000}}$$

1.5 EBIT - 15000 = EBIT

1.5 EBIT – EBIT = 15,000

0.5 EBIT = 15,000

EBIT = ₹ 30,000

EBT = EBIT – Interest = 30,000 – 10,000 = ₹ 20,000

$$\text{2. Operating Leverage (OL)} = \frac{\text{Contribution}}{\text{EBIT}}$$

$$2 = \frac{\text{Contribution}}{30,000}, \quad \text{Contribution} = ₹\ 60,000$$

3. **Fixed cost** = Contribution – Profit

= 60,000 – 30,000 = **₹ 30,000**

4. Sales = $\frac{\text{Contribution}}{\text{PV Ratio}}$

= $\frac{60,000}{30\%}$ = **₹ 2,00,000**

If PV ratio is 30%, then the variable cost is 70% on sales.

Variable cost = 2,00,000 x 70% = **₹ 1,40,000**

Profit – Loss Statement

Particulars	₹
Sales	2,00,000
Less; Variable Cost	1,40,000
Contribution	60,000
Less; Fixed Cost	30,000
EBIT	30,000
Less; Interest	10,000
EBT	20,000
Less; Tax @ 30%	6,000
EAT	**14,000**

(2) Calculation of no. of Equity shares

Market Price per Share (MPS) = ₹ 140 , Price Earnings Ratio (PER) = 10

WKT, EPS = $\frac{\text{MPS}}{\text{PER}}$ = $\frac{140}{10}$ = **₹ 14**

Total earnings (EAT) = ₹ 14,000 , No. of Equity Shares = 14,000 / 14 = **1000**

Question 4

PYQ May 24

Alpha Limited has provided following information:

Equity Share Capital	*25,000 Shares @ Rs. 100 per Share*
15% Debentures	*10,000 Debentures@ Rs. 750/- per Debenture*
Sales	*50 Lakhs units@ Rs. 20 per unit*
Variable Cost	*Rs. 12.50 per unit*
Fixed Costs	*Rs. 175.00 Lakhs*

Due to recent policy changes and entry of foreign competitors in the sector, Alpha Limited expects the sales may decline by 15-20%, However, selling price and other costs will remain the same. Corporate Taxes will continue@20%.

You are required to calculate the decrease in Earnings per share, Degree of Operating Leverage and Financial Leverage separately if sales are declined by (i) 15%; and (ii) 20%;

Solution 4

Income Statement with required calculations

Particulars	(Rs.) Existing	(Rs.) Sales declined by 15%	(Rs.) Sales declined by 20%
Sales in units	50,00,000	42,50,000	40,00,000
Sales price per unit	20	20	20
Variable Cost per unit	(12.50)	(12.50)	(12.50)
Contribution per unit	7.5	7.5	7.5
Contribution	3,75,00,000	3,18,75,000	3,00,00,000
Fixed expenses	(1,75,00,000)	(1,75,00,000)	(1,75,00,000)
EBIT	2,00,00,000	1,43,75,000	1,25,00,000
Debenture Interest	(11,25,000)	(11,25,000)	(11,25,000)
EBT	1,88,75,000	1,32,50,000	1,13,75,000
Tax @ 20%	(37,75,000)	(26,50,000)	(22,75,000)
Profit after tax (PAT)	1,51,00,000	1,06,00,000	91,00,000
No. of shares	25,000	25,000	25,000
Earnings per share (EPS) = PAT / No. of shares	Rs.1,51,00,000 / 25,000 = Rs.604	Rs.1,06,00,000 / 25,000 = Rs.424	Rs.91,00,000 / 25,000 = Rs.364
(i) Decrease in EPS		= Rs.180 **Or** % Decrease in EPS = 180/604 x 100 = **29.80%**	= Rs.240 **Or** % Decrease in EPS = 240/604 x 100 = **39.73%**
(ii) Operating leverage = Contribution / EBIT Or		= Rs.3,18,75,000 / Rs.1,43,75,000 = **2.22** **Or** 28.125/15 = **1.875**	= Rs.3,00,00,000 / Rs.1,25,00,000 = **2.40** **Or** 37.50/20 = **1.875**
Degree of Operating leverage = Percentage change in EBIT / Percentage change in sales		**1.875**	
(iii) Financial Leverage = EBIT / EBT Or Degree of Financial Leverage = Percentage change in EPS / Percentage change in EBIT		= Rs.1,43,75,000 / Rs.1,32,50,000 = **1.08** **Or** 29.80/28.125 = **1.06**	Rs.1,25,00,000 / Rs.1,13,75,000 = **1.10** **Or** 39.735/37.50 = **1.06**

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Question 5

PYQ Sep 24

Financial information for the year 2023-24 of two companies, N Limited and C Limited are as under:

Details	N Limited	C Limited
Equity share capital (Rs. 100 each)	Rs. 10,00,000	Rs. 8,00,000
Debt	Rs. 5,00,000@10%	Rs. 7,00,000@8%
Fixed Cost	3,00,000	3,36,000
Combined Leverage	8	4.5
Financial Leverage	2	1.5

You are required to calculate:

(i) Contribution forN Ltd. and C Ltd.

(ii) Margin of safety in% for N Ltd. and C. Ltd.

(iii) Sales ofC Ltd.

Solution 5

(i) Calculation of Contribution

N Limited	C Limited
Financial Leverage (FL) $= \frac{EBIT}{EBT}$ or $\frac{EBIT}{EBIT - Interest}$	
$2 = \frac{EBIT}{EBIT - 50,000}$	$1.5 = \frac{EBIT}{EBIT - 56,000}$
2 EBIT – 1,00,000 = EBIT	1.5 EBIT – 84,000 = EBIT
EBIT = Rs. 1,00,000	**EBIT = Rs. 1,68,000**
EBT = Rs. 50,000	EBT = Rs. 1,12,000
Combined Leverage (CL) $= \frac{Contribution}{EBT}$	
8 = Contribution / 50,000	4.5 = Contribution / 1,12,000
Contribution= Rs. 4,00,000	**Contribution= Rs. 5,04,000**

(ii) Calculation of Margin of safety (MOS) in %

$$MOS = \frac{Contribution - Fixed\ Cost}{Contribution} = \frac{EBIT}{Contribution}$$

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

Combined Leverages

CL = OL x FL

		Financial Plan	
		A (Rs.)	**B (Rs.)**
(a)	Situation 1	1.14 x 1.09 = 1.24	1.14 x 1.04 = 1.19
(b)	Situation 2	1.33 x 1.11 = 1.48	1.33 x 1.05 = 1.40
(c)	Situation 3	1.60 x 1.14 = 1.82	1.60 x 1.06 = 1.70

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

Question 6

MTP Dec 24

The following data relates to Beta Limited:

Sales	2,00,000
Less: Variable Expenses (30%)	60,000
Contribution	1,40,000
Fixed operating expenses	1,00,000
EBIT	40,000
Less: Interest	5,000
EBT	35,000

i. CALCULATE by what percentage will EBT increase if sales increases by 6 percent.

ii. CALCULATE by what percentage will EBIT increase if there is 10 per cent increase in sales?

iii. CALCULATE by what percentage EBT increase if EBIT increases by 6 per cent?

Solution 6

(i) Increase in taxable income if sales increase by 6%.

$$\text{Combined Leverage} = \frac{\text{Contribution}}{\text{EBT}} = \frac{\text{Rs. 1,40,000}}{\text{Rs. 35,000}} = 4$$

If the sales increases by 6%, EBT will increase by 24%. (4 × 6%)

(ii) Increase in EBIT if sales increase by 10%.

$$\text{Operating Leverage} = \frac{\text{Contribution}}{\text{Earnings before interest and tax}} = \frac{\text{Rs.1,40,000}}{\text{Rs. 40,000}} = 3.5$$

If sales increases by 10%, EBIT will increase by (3.5 X 10) 35%.

(iii) Increase in taxable income if EBIT increase by 6%.

$$\text{Financial Leverage} = \frac{\text{Earnings before interest and tax(EBIT)}}{\text{EBT}} = \frac{\text{Rs. 40,000}}{\text{Rs.35,000}} = 1.14$$

If EBIT increases by 6%, EBT will increase by 6.8%. (1.14 X 6%)

Question 7

MTP Mar 25

The following information is available for Punyakalash Limited

Margin of Safety	0.40
Financial Leverage	1.50
Debt	1,50,000
Tax Rate	25%
Earnings Yield	12%
Interest Rate (Post tax)	9%
MPS	125
PV Ratio	30%

PREPARE Income statement and find out the number of equity shares.

Solution 7

Income Statement Punyakalash Limited

Particulars	Amount (Rs.)
Sales **(WN 4)**	4,50,000
(-) VC	3,15,000
Contribution **(WN 4)**	1,35,000
(-) Fixed Cost	81,000
EBIT **(WN 3)**	54,000
(-) Interest **(WN 2)**	18,000
EBT	36,000
(-) Tax	9,000
EAT / Net profit available to equity shareholders	27,000

No of Equity shares = Net profit available to equity shareholders / EPS

= 27,000 / 15

= **1,800 shares**

WN 1 Calculation of EPS using Earnings yield ratio

Earnings yield ratio = EPS / MPS X 100

Therefore, EPS = 15

WN 2 Calculation of Interest cost

Interest rate (pre-tax) = Interest rate (Post tax) / 1 - t

Therefore, Int Rate (pre-tax) = 9 / 0.75 = 12%

Interest Cost = 1,50,000 X 12% = 18,000

WN 3 Calculation of EBIT using FL

FL = EBIT / EBIT - Int

1.5 = EBIT / EBIT - 18,000

Therefore EBIT = 54,000

WN 4 Calculation of Operating Leverage (OL), Contribution & Sales

OL = 1 / MOS = 1 / 0.4 = 2.5

OL = Contribution / EBIT

2.5 = Contribution / 54,000

Therefore Contribution = 1,35,000

Sales = Contribution / PV Ratio = 1,35,000 / 0.3 = 4,50,000

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Financial Management

Chapter 7
Investment Decisions

Important Questions

by CA Mohnish Vora (MVSIR)

mvsir.in

Question 1

Cello Limited is considering buying a new machine which would have a useful economic life of five years, a cost of Rs. 1,25,000 and a scrap value of Rs. 30,000, with 80 per cent of the cost being payable at the start of the project and 20 per cent at the end of the first year.

The machine would produce 50,000 units per annum of a new product with an estimated selling price of Rs. 3 per unit. Direct costs would be Rs. 1.75 per unit and annual fixed costs, including depreciation calculated on a straight- line basis, would be Rs. 40,000 per annum.

In the first year and the second year, special sales promotion expenditure, not included in the above costs, would be incurred, amounting to Rs. 10,000 and Rs. 15,000 respectively.

CALCULATE NPV of the project for investment appraisal, assuming that the company's cost of capital is 10 percent.

Solution 1

i) Calculation of Net C.I each year

Particulars	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
a) Contribution [50,000 x (3-1.75)]	62,500	62,500	62,500	62,500	62,500
b) Fixed cost (incl Depn)	40,000	40,000	40,000	40,000	40000
c) Depreciation [(1.25L - 30K)/5]	19,000	19,000	19,000	19,000	19,000
d) Sales Promo Exp	10,000	15,000	-	-	-
e) Net C.I. [a-b+c-d]	31,500	26,500	41,500	41,500	41,500

ii) calc of NPV

Yr	Particulars	CF	DF(10%)	DCF
0	80% Cost M/c [1.25L x 80%]	(1,00,000)	1	(1,00,000)
1	20% Cost of M/c	(25,000)	0.909	(22,725)
1	Net CI	31,500	0.909	28,634
2	"	26,500	0.826	21,889
3	"	41,500	0.751	31,167
4	"	41,500	0.683	28,345
5	"	41,500	0.621	25,772
5	Scrap Value	30,000	0.621	18,630
	NPV			31,712

NPV of the proj is 31,172.

Question 2

Following data has been available for a capital project:

Annual cash inflows	Rs. 1,00,000
Useful life	4 years
Salvage value	0
Internal rate of return	12%
Profitability index	1.064

You are required to CALCULATE the following for this project:

i. Cost of project

ii. Cost of capital

iii. Net Present Value

iv. Payback Period

PV factors at different rates are given below:

Discount factor	12%	11%	10%	9%
1 year	0.893	0.901	0.909	0.917
2 year	0.797	0.812	0.826	0.842
3 year	0.712	0.731	0.751	0.772
4 year	0.636	0.659	0.683	0.708

Solution 2

iv Calc of Cost of Project

At IRR,
Sum of PV of CI = Cost of Project
disc. @ IRR

⇒ Cost of Project = 1L × PVAF(12%, 4)

= 1L × 3.038

⇒ Cost of Project = ₹ 3,03,800

iiv Calc of Ko

$$P.I. = \frac{\text{Sum of PV of cf @ Ko}}{\text{Cost of Proj.}}$$

$$\Rightarrow 1.064 = \frac{1L \times PVAF(Ko, 4)}{3,03,800}$$

$$\Rightarrow 1L \times PVAF(Ko, 4) = 3,03,800 \times 1.064$$

$$\Rightarrow PVAF(Ko, 4) = 3.232$$

As per data given in Que,
PVAF(9%, 4) = 3.239.

∴ Ko = 9% (approx.)

iii) Calc of NPV

NPV = Sum of PV of CF @ Ko (-) Cost of Project

= [Cost of Proj x P.I.] (-) Cost of Project

= [3,03,800 x 1.064] (-) 3,03,800

= 3,23,243.20 (-) 3,03,800

= ₹ 19,443.20

iv) Calc of Payback Period

P.P. = Cost of Proj. / Annual C.I.

= 3,03,800 / 1L = 3.038 yr.

Question 3

Hindlever Company is considering a new product line to supplement its range of products. It is anticipated that the new product line will involve cash investments of Rs. 7,00,000 at time 0 and Rs. 10,00,000 in year 1.

After-tax cash inflows of Rs. 2,50,000 are expected in year 2, Rs. 3,00,000 in year 3, Rs. 3,50,000 in year 4 and Rs. 4,00,000 each year thereafter through year 10.

Although the product line might be viable even after year 10, company prefers to be conservative and end all calculations at that time.

a) If required rate of return is 15 %, COMPUTE net present value of the project. Is it acceptable?

b) ANALYSE what would be the case if the required rate of return were 10 per cent?

c) CALCULATE its internal rate of return.

d) COMPUTE the project's payback period.

Solution 3

iv) Calc of NPV @ 10% & 15%

Yr	Particulars	CF	DF(15%)	DCF	DF(10%)	DCF
0	C.O.	(7,00,000)				
1	C.O.	(10,00,000)				
2	CFAT	2,50,000				
3	CFAT	3,00,000				
4	CFAT	3,50,000				
5-10	CFAT	4,00,000	2.164		2.975	
	NPV			(1,17,800)		2,51,850

For your understanding

PVAF(15%,10) (-) PVAF(15%,4)

5.019 (-) 2.855 = 2.164

1 ÷ 1.15

= = = = = = = = = =

M+ M+ M+ M+ M+ M+

Not-advisable

iiy Calc of IRR

$$IRR = LR + \frac{NPV_{LR}}{NPV_{LR} - NPV_{HR}} (HR - LR)$$

$$= 10\% + \frac{251850}{251850 - (-117800)} (15\% - 10\%)$$

$$= 10\% + 3.41\%$$

$$= 13.41\%$$

iiiy Calc of Payback Period

Yr	Particulars	CF	Cumulative CF
~~0~~	~~C.O.~~	~~(7,00,000)~~	
~~1~~	~~C.O.~~	~~(10,00,000)~~	
2	CFAT	2,50,000	2.50L
3	CFAT	3,00,000	5.50L
4	CFAT	3,50,000	9L
5	CFAT	4,00,000	13L
6	CFAT	4,00,000	17L
7	CFAT	4,00,000	21L
8	CFAT	4,00,000	25L
9	CFAT	4,00,000	29L
10	CFAT	4,00,000	33L

(Jaha se inflow shuru hota hai waha se cumulative CF lete hai)

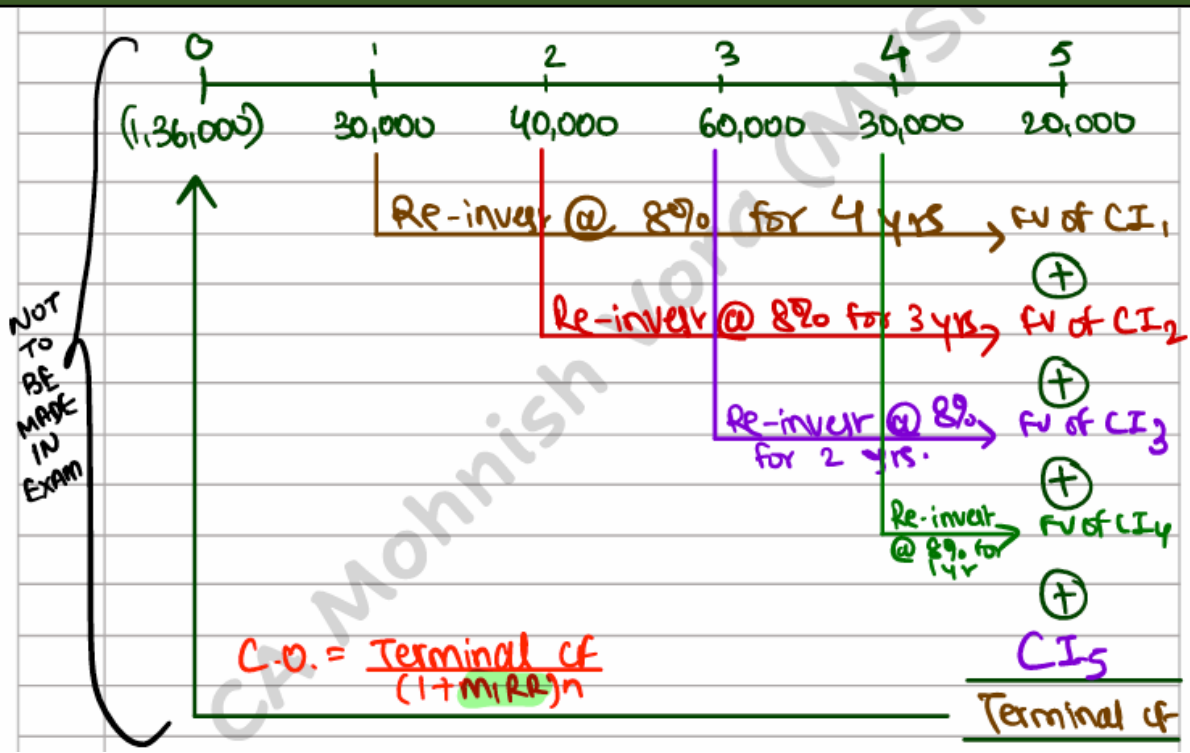
Payback Period is 6 yrs.

Question 4

An investment of Rs. 1,36,000 yields the following cash inflows (profits before depreciation but after tax). DETERMINE MIRR considering 8% as cost of capital.

Year	(Rs.)
1	30,000
2	40,000
3	60,000
4	30,000
5	20,000
	1,80,000

Solution 4



Question 5

Shiva Limited is planning its capital investment programme for next year. It has five projects all of which give a positive NPV at the company cut-off rate of 15 percent, the investment outflows and present values being as follows:

Project	Investment (Rs.)	NPV @ 15% (Rs.)
A	(50,000)	15,400
B	(40,000)	18,700
C	(25,000)	10,100
D	(30,000)	11,200
E	(35,000)	19,300

The company is limited to a capital spending of Rs. 1,20,000.

You are required to ILLUSTRATE the returns from a package of projects within the capital spending limit.

i. rojects are independent of each other and are divisible (i.e., part-project is possible).

ii. Also show which projects will be selected if projects are non-divisible.

Solution 5

i) If Projects are Divisible

a) Case of NPV per rupee invested

Project	Investment	NPV	NPV per ₹ invested	Ranking
(1)	(2)	(3)	(4) = (3) ÷ (2)	(5)
A	50,000	15,400	15400/50000 = 0.308	V
B	40,000	18,700	18700/40000 = 0.468	II
C	25,000	10,100	0.404	III
D	30,000	11,200	0.373	IV
E	35,000	19,300	0.551	I

b) Selection of Projects as per limited capital spending of ₹1.20L (assuming divisible projects)

(Amt in ₹)

Projects	NPV	Invt Reqd.	Balance Capital Left
E	19,300	35,000	1.20L - 35K = 85,000
B	18,700	40,000	85K - 40K = 45,000
C	10,100	25,000	45K - 25K = 20,000
D	7,460	20,000	0
Done mechanically	[20,000 × 0.373] or [11,200/30,000 × 20,000]		
Total	55,560	1,20,000	

iiy If Projects are Non-Divisible → [idhar NPV per ₹ nahi nikaalte]

a) Selection of Projects as per limited Capital spending of ₹1,20L (assuming non-divisible projects)

(Amt in ₹)

Projects	Invt Reqd.	NPV
E, B, C	1,00,000	48,100
E, B, D	1,05,000	49,200
A, B, D	1,20,000	45,300
A, C, E	1,10,000	44,800
A, B, C	1,15,000	44,200

AED, COA } ye bhi combination chahe toh likh sakte ho.

Since projects E, B & D are within our spending limit & have the highest NPV among all possible combinations, thus they should be selected if projects are non-divisible.

Question 6

HMR Ltd. is considering replacing manually operated old machine with fully automatic new machine.

The old machine had been fully depreciated for tax purpose but has a book value of Rs. 2,40,000 on 31st March 2021. The machine has begun causing problems with breakdowns and it cannot fetch more than Rs. 30,000 if sold in the market at present. It will have no realizable value after 10 years.

The company has been offered Rs. 1,00,000 for the old machine as a trade in on the new machine which has a price (before allowance for trade in) of Rs. 4,50,000. The expected life of new machine is 10 years with salvage value of Rs. 35,000.

Further, company follows straight line depreciation method but for tax purpose, written down value method depreciation @ 7.5% is allowed taking that this is the only machine in the block of assets.

Given below are the expected sales and costs from both old and new machine:

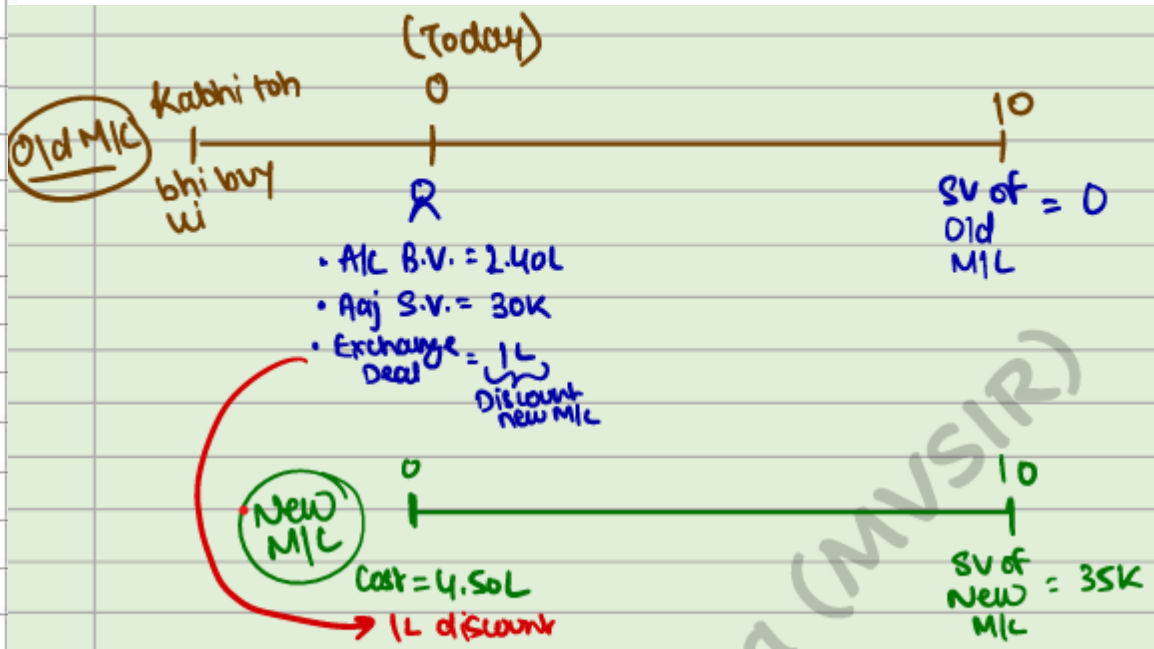
	Old machine (Rs.)	New machine (Rs.)
Sales	8,10,000	8,10,000
Material cost	1,80,000	1,26,250
Labor cost	1,35,000	1,10,000
Variable overhead	56,250	47,500
Fixed overhead	90,000	97,500
Depreciation	24,000	41,500
PBT	3,24,750	3,87,250
Tax @ 30%	97,425	1,16,175
PAT	2,27,325	2,71,075

From the above information, ANALYSE whether the old machine should be replaced or not if required rate of return is 10%? Ignore capital gain tax.

PV factors @ 10%:

Year	1	2	3	4	5	6	7	8	9	10
PVF	0.909	0.826	0.751	0.683	0.621	0.564	0.513	0.467	0.424	0.386

Solution 6



Soln :

(i) Calculation of Initial Cash Outflow (if old M/C is replaced)

Particulars	Amt (₹)
Cost of New M/C	4,50,000
(-) Allowance for Trade in of old M/C	(1,00,000)
Initial Cash Outflow	3,50,000

(ii) Calc of Incremental Base for Depreciation

(Ye toh nikalna hai jab Inc Tax mei WDV method follow hota hai)

iii) Calc of Incremental Base for Depreciation

(Ye tab nikalna hai jab Inc Tax mei WDV method follow karna hai)

Particulars	Amt (₹)
Base for Depn if New M/C is purch	3,50,000
(-) Base for Depn if Old M/C is continued	0
Incremental Base for Depn	3,50,000

iii) Calc of Incremental PBDT (as per Inc. Tax)

Particulars	Old M/C	New M/C
PBT as per Books	3,24,750	3,87,250
(+) Depn as per Book	24,000	41,500
PBDT	3,48,750	4,28,750

∴ Incr. PBDT = 428750 (-) 3,48,750

= ₹80,000

iv) Calc. of Incr. NPV

Yr	Incr. PBDT ①	Incr. Depn ②	Incr. PBT ③=①-②	Incr. PAT ④=③×0.70	Incr. CFAT ⑤=④+②	DF (10%) ⑥	Incr. DCF ⑦=⑤×⑥
1	80,000	26,250	53,750	37,625	63,875	0.909	58,062
2	80,000	24,281	55,719	39,003	63,284	0.826	52,273
3	80,000	22,460	57,540	40,278	62,738	0.751	47,116
4	80,000	20,776	59,224	41,457	62,233	0.683	42,505
5	80,000	19,217	60,783	42,548	61,765	0.621	38,356
6	80,000	17,776	62,224	43,557	61,333	0.564	34,592
7	80,000	16,443	63,557	44,490	60,933	0.513	31,259
8	80,000	15,210	64,790	45,353	60,563	0.467	28,283
9	80,000	14,069	65,931	46,152	60,221	0.424	25,534
10	80,000	13,014	66,986	46,890	59,904	0.386	23,123
					Sum of PV of Incr CFAT		3,81,103

Add: PV of Incr. S.V. [(35,000 - 0) × 0.386]	13,510
Total PV of Incr. CF	3,94,613
Less: Incr. Initial Cash outflow	(3,50,000)
Incr. NPV	44,613

Since, Incr. NPV is +ve, thus Co. should replace the old M/C & buy new M/C.

(Not part of Solution)

If CG is considered, then what will happen in Yr 10 CF.

New M/C SV	→ 35,000	→ C.I.	
Bal as per IT (3,50,000 - 189,946)	→ 1,60,504	→ No flow	
STCL	→ 1,25,504	→ No flow	
Tax saving on STCL @ 30%	→ 37,651	→ C.I.	

72,651 (-) 0 [Old M/C SV]

Incr. SV 72,651

I. PBDT
(-) I. Depn
I. PBT
(-) I. Tax
I. PAT
(+) I. Depn
I. CFAT

Incr. Base for Depn	3,50,000
1st Yr Depn @ 7.50%	(26,250)
WDV @ end of 1st Yr	3,23,750
2nd Yr Depn @ 7.50%	(24,281)
WDV @ end of 2nd Yr	2,99,469
3rd Yr Depn @ 7.50%	(22,460)
WDV @ end of 3rd Yr	2,77,009
4th Yr Depn @ 7.50%	(20,776)
WDV @ end of 5th Yr	2,56,233
⋮	⋮

Question 7

Xavly Ltd. has a machine which has been in operation for 3 years. The machine has a remaining estimated useful life of 5 years with no salvage value in the end. Its current market value is Rs. 2,00,000. Company is considering to purchase new model of machine to replace existing machine.

	Existing Machine	New Machine
Cost of machine	Rs. 3,30,000	Rs. 10,00,000
Estimated life	8 year	5 year
Salvage value	Nil	Rs. 40,000
Annual output	30,000 units	75,000 units
Selling price per unit	Rs. 15	Rs. 15
Annual operating hour	3,000	3,000
Material cost per unit	Rs. 4	Rs. 4
Labor cost per hour	Rs. 40	Rs. 70
Indirect cash cost per annum	Rs. 50,000	Rs. 65,000

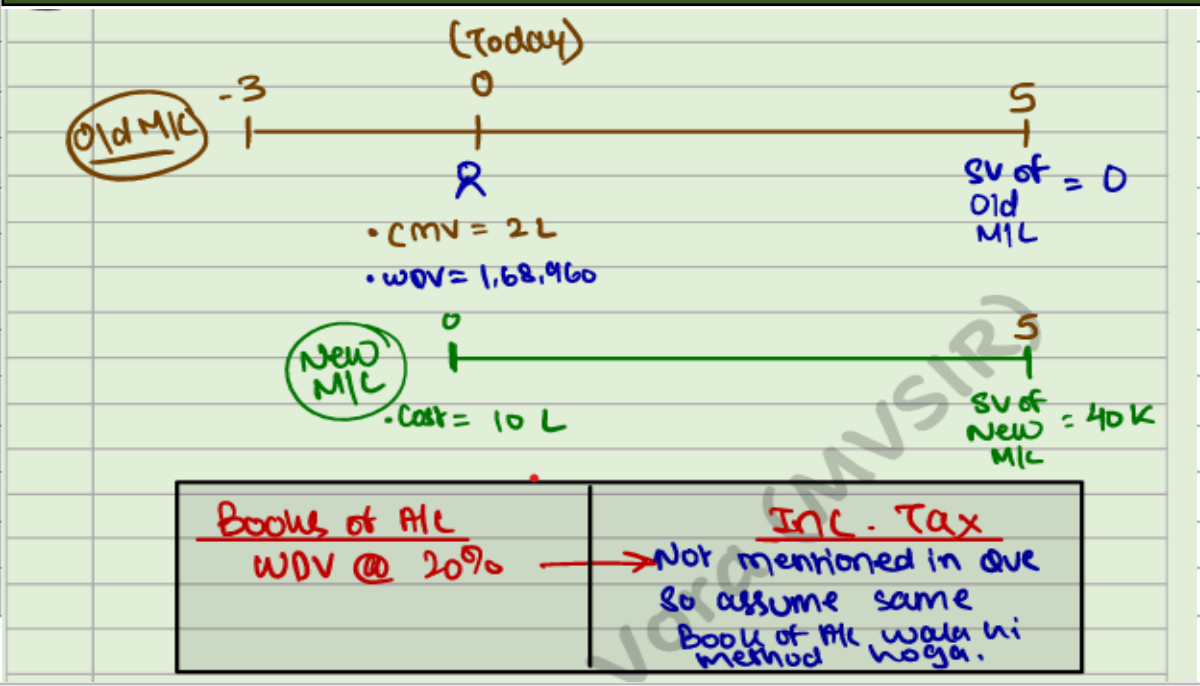
The company uses WDV of depreciation @ 20% and it has several other machines in the block of assets. Tax rate = 30 % and Xavly Ltd. does not make any investment, if it yields less than 12%.

ADVISE Xavly Ltd. whether the existing machine should be replaced or not

PV factors @12%

Year	1	2	3	4	5
PVF	0.893	0.797	0.712	0.636	0.567

Solution 7



iv) Calc. of Initial cash outflow

Particulars	Amt (₹)
Cost of new M/c	10,00,000
(-) Sale of old M/c	(2,00,000)
Initial cash outflow	8,00,000

iii) Calc. of Incr. Base for Depn

Particulars		Amt (₹)
WDV (Bal) of Existing M/c (Today)		
Cost of Existing M/c		3,30,000
Less: Depn charged in 3 yrs		
Depn for Yr 1 [3.30L x 20%] =	66,000	
Depn for Yr 2 [2.64L x 20%] =	52,800	
Depn for Yr 3 [2.112L x 20%]	42,240	(1,61,040)
WDV (Bal) of Existing M/c (Today)		1,68,960
Add: New M/c Purch.		10,00,000
Less: Sale of Existing M/c		(2,00,000)
Depr. Base after purchase of New M/c		9,68,960

∴ Incr. Base for Depn = Dep Base for New M/c (-) Dep Base for Ex. M/c

= 9,68,960 (-) 1,68,960

= ₹ 8,00,000

iii) Calc of Incr. PBDT (Amt in ₹)

Particulars	Old M/c	New M/c
Sales	4,50,000 (30,000 x 15)	11,25,000 (75,000 x 15)
Less: Expenses		
Material cost	1,20,000 (30,000 x 4)	3,00,000 (75,000 x 4)
Labour cost	1,20,000 (3,000 x 40)	2,10,000 (3,000 x 70)
Indirect cost	50,000	65,000
PBDT	1,60,000	5,50,000

Incr. PBDT = 5,50,000 - 1,60,000 = ₹ 3,90,000

Note: Iss que mei har saal ka CFAT same NAHI hoga, bcoz WDV method is to be followed for Depn.

RTP (Q43) wale que mei SLM method tha (as per I.T.) isliye har saal ka depn same → CFAT same.

Incr. Calc of Incr. NPV

Yr	Incr. PBDT ①	Incr. Depn ②	Incr. PBT ③=①-②	Incr. PAT ④=③×0.70	Incr. CFAT ⑤=④+②	DF (12%) ⑥	Incr. DCF ⑦=⑤×⑥
1	3,90,000	1,60,000	2,30,000	1,61,000	3,21,000	0.893	2,86,653
2	3,90,000	1,28,000	2,62,000	1,83,400	3,11,400	0.797	2,48,186
3	3,90,000	1,02,400	2,87,600	2,01,320	3,03,720	0.712	2,16,249
4	3,90,000	81,920	3,08,080	2,15,656	2,97,576	0.636	1,89,258
5	3,90,000	65,536	3,24,464	2,27,125	2,92,661	0.567	1,65,939
	Sum of DCF						11,06,285
	(+) PV of Incr. SV. [(40,000-0)×0.567]						22,680
	(-) Initial cost						(8,00,000)
	Incr. NPV						3,28,965

Since Incr. NPV is positive, Existing M/C should be replaced with new M/C

Incr. Base for Depn	=	8,00,000
Depn for 1st yr @20%	=	(1,60,000)
WDV @ end of 1st yr	=	6,40,000
Depn for 2nd yr @20%	=	(1,28,000)
WDV @ end of 2nd yr	=	5,12,000

Question 8

HMR Ltd. is considering replacing manually operated old machine with fully automatic new machine.

The old machine had been fully depreciated for tax purpose but has a book value of Rs. 2,40,000 on 31st March 2021. The machine has begun causing problems with breakdowns and it cannot fetch more than Rs. 30,000 if sold in the market at present. It will have no realizable value after 10 years.

The company has been offered Rs. 1,00,000 for the old machine as a trade in on the new machine which has a price (before allowance for trade in) of Rs. 4,50,000. The expected life of new machine is 10 years with salvage value of Rs. 35,000.

Further, company follows straight line depreciation method but for tax purpose, written down value method depreciation @ 7.5% is allowed taking that this is the only machine in the block of assets.

Given below are the expected sales and costs from both old and new machine:

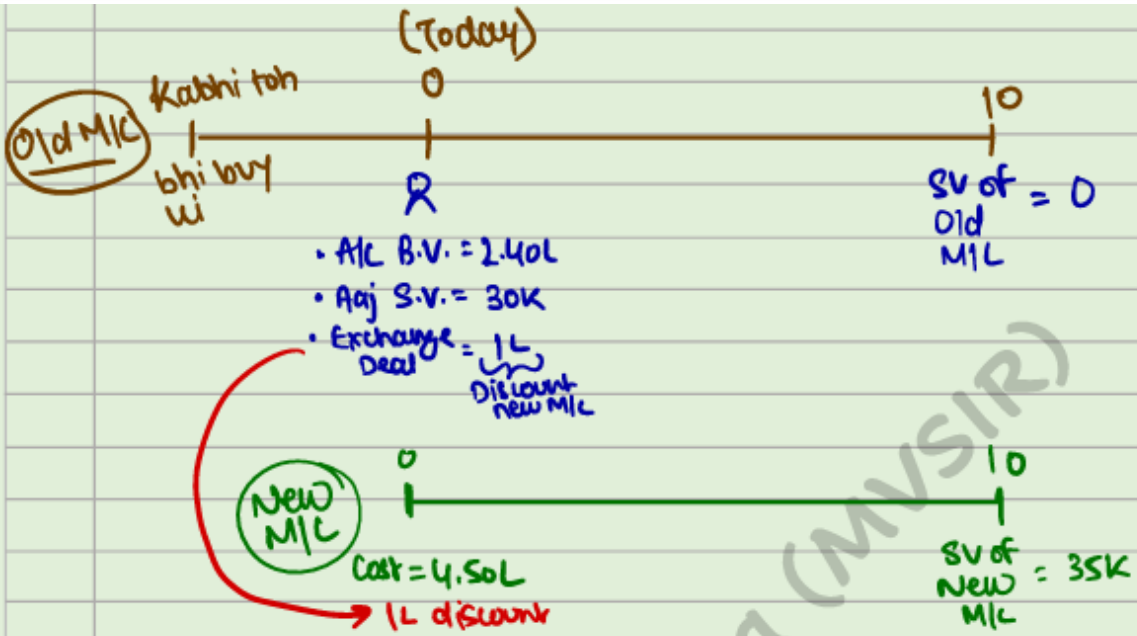
	Old machine (Rs.)	New machine (Rs.)
Sales	8,10,000	8,10,000
Material cost	1,80,000	1,26,250
Labor cost	1,35,000	1,10,000
Variable overhead	56,250	47,500
Fixed overhead	90,000	97,500
Depreciation	24,000	41,500
PBT	3,24,750	3,87,250
Tax @ 30%	97,425	1,16,175
PAT	2,27,325	2,71,075

From the above information, ANALYSE whether the old machine should be replaced or not if required rate of return is 10%? Ignore capital gain tax.

PV factors @ 10%:

Year	1	2	3	4	5	6	7	8	9	10
PVF	0.909	0.826	0.751	0.683	0.621	0.564	0.513	0.467	0.424	0.386

Solution 8



Soln :

i) Calculation of Initial Cash outflow (if old M/c is replaced)

Particulars	Amt (₹)
Cost of New M/c	4,50,000
(-) Allowance for Trade in of old M/c	(1,00,000)
Initial Cash outflow	3,50,000

ii) Calc of Incremental Base for Depreciation

(Ye tab nikalna hai jab Inc Tax mei WDV method follow hota hai)

iiy Calc of Incremental Base for Depreciation

(Ye tab nikalna hai jab Inc Tax mei WDV method follow hota hai)

Particulars	Amt (₹)
Base for Depn if New M/C is purch	3,50,000
(-) Base for Depn if old M/C is continued	0
Incremental Base for Depn	3,50,000

iiiy Calc of Incremental PBDT (as per Inc. Tax)

Particulars	Old M/C	New M/C
PBT as per Books	3,24,750	3,87,250
(+) Depn as per Book	24,000	41,500
PBDT	3,48,750	4,28,750

∴ Incr. PBDT = 428750 (-) 3,48,750

= ₹80,000

ivy Calc. of Incr. NPV

Yr	Incr. PBDT ①	Incr. Depn ②	Incr. PBT ③=①-②	Incr. PAT ④=③×0.70	Incr. CFAT ⑤=④+②	DF (10%) ⑥	Incr. DCF ⑦=⑤×⑥
1	80,000	26,250	53,750	37,625	63,875	0.909	58,062
2	80,000	24,281	55,719	39,003	63,284	0.826	52,273
3	80,000	22,460	57,540	40,278	62,738	0.751	47,116
4	80,000	20,776	59,224	41,457	62,233	0.683	42,505
5	80,000	19,217	60,783	42,548	61,765	0.621	38,356
6	80,000	17,776	62,224	43,557	61,333	0.564	34,592
7	80,000	16,443	63,557	44,490	60,933	0.513	31,259
8	80,000	15,210	64,790	45,353	60,563	0.467	28,283
9	80,000	14,069	65,931	46,152	60,221	0.424	25,534
10	80,000	13,014	66,986	46,890	59,904	0.386	23,123
					Sum of PV of Incr CFAT		3,81,103

Add: PV of Incr. S.V. [(35,000 - 0) × 0.386]	13,510
Total PV of Incr. CF	3,94,613
Less: Incr. Initial Cash outflow	(3,50,000)
Incr. NPV	44,613

Since, Incr. NPV is +ve, thus Co. should replace the old M/C & buy new M/C.

(Not part of Solution)

If CG is considered, then what will happen in Yr 10 CF.

New M/C SV	→	35,000	→ C.I.
Bal as per IT (3,50,000 - 189,946)	→	1,60,504	→ No flow
STCL	→	1,25,504	→ No flow
Tax saving on STCL @ 30%	→	37,651	→ C.I.

72,651 (-) 0 [Old M/C SV]

Incr. SV 72,651

I. PBDT
(-) I. Depn
I. PBT
(-) I. Tax
I. PAT
(+) I. Depn
I. CFAT

Incr. Base for Depn	3,50,000
1st Yr Depn @ 7.50%	(26,250)
WDV @ end of 1st Yr	3,23,750
2nd Yr Depn @ 7.50%	(24,281)
WDV @ end of 2nd Yr	2,99,469
3rd Yr Depn @ 7.50%	(22,460)
WDV @ end of 3rd Yr	2,77,009
4th Yr Depn @ 7.50%	(20,776)
WDV @ end of 5th Yr	2,56,233
⋮	⋮

Question 9

XYZ Ltd. is presently all equity financed. The directors of the company have been evaluating investment in a project which will require Rs. 270 lakhs capital expenditure on new machinery. They expect the capital investment to provide annual cash flows of Rs. 42 lakhs indefinitely which is net of all tax adjustments. The discount rate which it applies to such investment decisions is 14% net.

The directors of the company believe that the current capital structure fails to take advantage of tax benefits of debt and propose to finance the new project with undated perpetual debt secured on the company's assets. The company intends to issue sufficient debt to cover the cost of capital expenditure
and the after tax cost of issue. The current annual gross rate of interest required by the market on corporate undated debt of similar risk is 10%. The after tax costs of issue are expected to be Rs. 10 lakhs. Company's tax rate is 30%.

You are REQUIRED to:

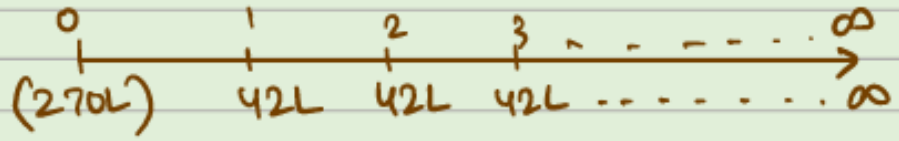
i. Calculate the adjusted present value of the investment,

ii. Calculate the adjusted discount rate and

iii. Explain the circumstances under which this adjusted discount rate may be used to evaluate future investments.

Solution 9

i) Calc of Adjusted P.V.



- Base Case PV = PV of C.I. (-) Initial Inv.
  = 42L / 14% (-) 270L
  = 300L (-) 270L = ₹ 30L

Normally jaise NPV nikalte hai vohi karna hai.

- PV of Tax shield on Int on Debt = PV of [Debt × Int Rate × Tax Rate]
  = PV of [(270L + 10L) × 10% × 30%]
  = PV of [8.40L]
  = 8.40L / 10% = ₹84L

[Alternatively, Debt × Tax Rate
= (270L + 10L) × 30% = 84L]

- Adjusted PV = Base Case PV + PV of Tax Shield on Int (-) Issue cost
  = 30L + 84L (-) 10L
  = ₹104L

iii) Calc of Adjusted Discounting Rate (ADR)

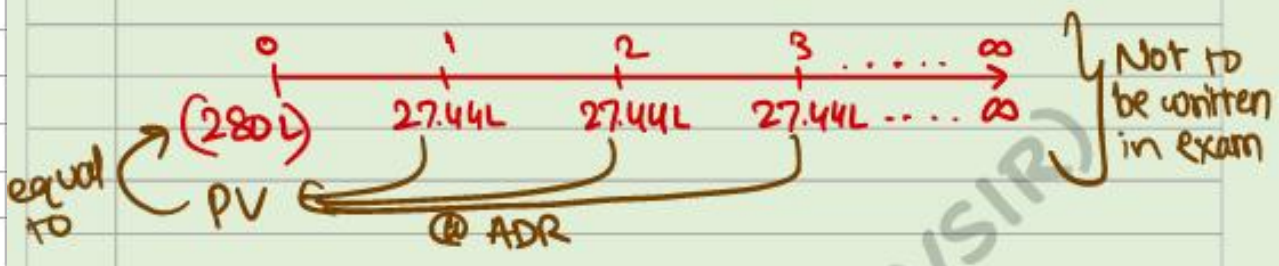
To calculate ADR, first we need to calculate "Annual Income" at which APV = 0.

Let that Annual Income be "X"

$$\left[\frac{X}{14\%} - 270L\right] + 84L\ (-)\ 10L = 0$$

$$\Rightarrow \frac{X}{14\%} = 196L$$

$$\Rightarrow X = ₹27.44 \text{ Lakhs.}$$



$$ADR = \frac{\text{Annual Income [to make APV = 0]}}{\text{Total funds raised as Debt}}$$

$$= \frac{27.44\,L}{280\,L} \times 100$$

$$= 9.80\%$$

Alternatively, you can calculate "ADR" using formula → [Do NOT use in exam] → only for verification

$$ADR = Ke \times [1 - (t \times \%\text{ of Debt financing})]$$

$$= 14\% \times [1 - (30\% \times 100\%)]$$

$$= 14\% \times [1 - 0.30]$$

$$= 9.80\%$$

(iii) Useable circumstances

This ADR may be used to evaluate future investments only if the business risk of the new venture is identical to the one being evaluated here and the project is to be financed by the same method on the same terms. The effect on the company's cost of capital of introducing debt into the capital structure cannot be ignored.

CA Intermediate
Financial Management

Chapter 8
Dividend Decisions

Important Questions

by CA Mohnish Vora (MVSIR)

mvsir.in

Question 1 — Gordon's Model

ICAI SM, RTP May 19, MTP Oct 19, Oct 20, Nov 22, Oct 22

The following figures are collected from the annual report of XYZ Ltd.:

Year	Cash flows (Rs.In lakhs)
Net Profit	Rs. 30 lakhs
Outstanding 12% preference shares	Rs. 100 lakhs
No. of equity shares	3 lakhs
Return on Investment	20%
Cost of capital i.e. (Ke)	16%

CALCULATE price per share using Gordon's Model when dividend pay-out is

(i) 25%; (ii) 50% and (iii) 100%.

Solution 1

Year	Rs. In lakhs
Net Profit	30
Less: Preference dividend	12
Earning for equity shareholders	18
Therefore earning per share	18/3 = Rs. 6.00

Price per share according to Gordon's Model is calculated as follows:

$$P_0 = \frac{E_1(1-b)}{ke - br}$$, Here, $E_1 = 6$, Ke = 16%

i. When dividend pay-out is 25%

$$P_0 = \frac{6 \times 0.25}{0.16-(0.75 \times 0.2)} = 150$$

ii. When dividend pay-out is 50%

$$P_0 = \frac{6 \times 0.5}{0.16 - (0.5 \times 0.2)} = 50$$

iii. When dividend pay-out is 100%

$$P_0 = \frac{6 \times 1}{0.16-(0 \times 0.2)} = \frac{6}{0.16} = 37.50$$

Question 2 — **Walter's Model**

PYQ Nov 19

Following figures and information were extracted from the company A Ltd.

Earnings of the company	Rs. 10,00,000
Dividend paid	Rs. 6,00,000
No. of shares outstanding	2,00,000
Price Earnings Ratio	10
Rate of return on investment	20%

You are required to calculate:

i. Current Market price of the share

ii. Capitalisation rate of its risk class

iii. What should be the optimum pay-out ratio?

iv. What should be the market price per share at optimal pay-out ratio? (use Walter's Model)

Solution 2

i. Current Market price of shares (applying Walter's Model)

- The EPS of the firm is Rs. 5 (i.e., Rs 10,00,000 / 2,00,000).
- Rate of return on Investment (r) = 20%.
- The Price Earnings (P/E) Ratio is given as 10, so capitalization rate (Ke), may be taken at the inverse of P/E Ratio. Therefore, Ke is 10% or .10 (i.e., 1/10).
- The firm is distributing total dividends of Rs. 6,00,000 among 2,00,000 shares, giving a dividend per share of Rs. 3.

The value of the share as per Walter's model may be found as follows: Walter's model is given by

$$P = \frac{D+(E-D)(r / K_e)}{K_e}$$

Where,

P = Market price per share.

E = Earnings per share = Rs. 5

D = Dividend per share = Rs. 3

R = Return earned on investment = 20 %

Ke = Cost of equity capital = 10% or .10

The value of the share as per Walter's model may be found as follows: Walter's model is given by

$$P = \frac{3+(5-3)(0.20/0.10)}{0.10} = \text{Rs. } 70$$

Current Market Price of shares can also be calculated as follows:

$$\text{Price Earnings (P/E) Ratio} = \frac{\text{Market Price of Share}}{\text{Earnings per Shares}}$$

$$\text{Or, } 10 = \frac{\text{Market Price of Share}}{\text{Rs. } 10,00,000 / 2,00,000}$$

$$\text{Or, } 10 = \frac{\text{Market Price of Share}}{\text{Rs. } 5}$$

Market Price of Share = Rs. 50

Question 3 — MM Model

RTP Nov 22

Ordinary shares of a listed company are currently trading at Rs. 10 per share with two lakh shares outstanding. The company anticipates that its earnings for next year will be Rs. 5,00,000. Existing cost of capital for equity shares is 15%. The company has certain investment proposals under discussion which will cause an additional 26,089 ordinary shares to be issued if no dividend is paid or an additional 47,619 ordinary shares to be issued if dividend is paid.

Applying the MM hypothesis on dividend decisions, CALCULATE the amount of investment and dividend that is under consideration by the company.

Solution 3

P_o = Rs. 10 n = 2,00,000, E = Rs. 5,00,000

Ke = 15%, Δn = 26,089, I = ?

$$P_o = \frac{P_1}{1+K_e} \Rightarrow 10 = \frac{P_1}{1.15} \Rightarrow P_1 = 11.5 \Rightarrow \Delta n = \frac{I-E+nD_1}{P_1}$$

$$\Rightarrow 26,089 = \frac{I-5,00,000}{11.5} \Rightarrow I = 8,00,024 \text{ .....Now, } P_o = \text{Rs. } 10, n = \text{Rs. } 2,00,000$$

E = Rs. 5,00,000, I = 8,00,024, Ke = 15%, Δn 47,619, D_1 = ?

$$P_o = \frac{P_1 + D_1}{1+K_e} \Rightarrow 10 = \frac{P_1 + D_1}{1.15} \Rightarrow P_1 + D_1 = 11.5 \; P_1 = 11.5 - D_1 \; \ldots\ldots\ldots\ldots\ldots\ldots 1$$

$$\Rightarrow \Delta n = \frac{I-E+nD_1}{P_1} \Rightarrow 47,619 = \frac{8,00,024 - 5,00,000 + 2,00,000D_1}{P_1}$$

47,619 P1 = 2,00,000 D1 + 3,00,024

From 1,

➡ 47619 (11.5 – D1) = 2,00,000 D1 + 3,00,024

➡ 5,47,618.5 – 47,619D1 = 2,00,000D1 + 3,00,024

➡ 2,47,594.5 = 2,00,000D1 + 47,619 D1 ➡ 2,47,594.5 = 2,47,619 D1

➡ D1 = 2,47,594.5/2,47,619 = 0.99 ➡ 1

➡ P1 = 11.5 – D1 ➡ P1 = 11.5 – 1 ➡ P1 = 10.5

➡ $n.Po = \frac{(2,00,000 + 47,619)(10.5) - 8,00,024 + 5,00,000}{1.15}$ ➡ n.P0 = Rs. 19,99,979 ➡ Rs. 20,00,000

Using direct calculation,

n.Po = 2,00,000 × 10 = Rs. 20,00,000

Question 4

RTP Sep 24

The following information is taken from Gamma Ltd.

Net Profit for the year	Rs. 30,00,000
12% Preference share capital	Rs. 1,00,00,000
Equity share capital (Share of Rs. 10 each)	Rs. 60,00,000
Internal rate of return on investment	22%
Cost of Equity Capital	18%
Retention Ratio	75%

CALCULATE the market price of the share using:

1. Gordon's Model
2. Walter's Model

Solution 4

Market price per share by-

Gordon's Model:

Present market price per share (Po)* = $\frac{D_o(1+g)}{K_e - g}$

OR, Present market price per share (Po) = $\frac{D_1}{K_e - g}$

Where,

Po = Present market price per share.

g = Growth rate (br) = 0.75 X 0.22 = 0.165

b = Retention ratio (i.e., % of earnings retained)

r = Internal rate of return (IRR)

E = Earnings per share

$$P_o = \frac{0.75\,(1+0.165)}{0.18-0.165} = \frac{0.874}{0.015} = \text{Rs. 58.27 approx.}$$

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(2) Walter's Model:

$$P = \frac{D+\frac{r}{K_e}(E-D)}{K_e}$$

$$= \frac{0.75+\frac{0.22}{0.18}(3-0.75)}{0.18} = \textbf{Rs. 19.44}$$

Workings:

1. Calculation of Earnings per share

Particulars	**Amount (Rs.)**
Net Profit for the year	30,00,000
Less: Preference dividend (12% of Rs. 1,00,00,000)	(12,00,000)
Earnings for equity shareholders	18,00,000
No. of equity shares (Rs. 60,00,000/Rs. 10)	6,00,000
Therefore, Earnings per share Earning for equity shareholders No. of equity shares	Rs. 18,00,000/6,00,000 = **Rs. 3.00**

2. Calculation of Dividend per share (D0)

Particulars	
Earnings per share	Rs. 3
Retention Ratio (b)	75%
Dividend pay-out ratio (1-b)	25%
Dividend per share (Earnings per share x Dividend pay-out ratio)	Rs. 3 x 0.25 = **Rs. 0.75**

Question 5

RTP Jan 25

The following information is supplied to you:

Particulars	**Amount (Rs.)**
Total Earnings	4,50,000
No of Equity Shares (of Rs. 100 each)	25,000 shares
Retention ratio	40%
MPS	198

Applying Walter's Model:

i. ANALYSE whether the company is following an optimal dividend policy.

ii. COMPUTE P/E ratio at which the dividend policy will have no effect on the value of the share. Also calculate the MPS at such P/E ratio

iii. Will your decision change if the P/E ratio is 4.5? ANALYSE.

Solution 5

(i) As per Walter,

If ROI > Ke, firm should retain everything and distribute nothing to maximize the share price. On the contrary, if ROI < Ke, firm should distribute everything and retain nothing to maximize the wealth of the equity owners.

ROI = Total Earnings / Equity Share capital

= 4,50,000 / 25,00,000

ROI = 18%

$Ke = \frac{1}{PE}$

P.E Ratio = MPS / EPS = 198 /18 = 11

Therefor Ke = 1/11 = 9.091%

Since ROI > Ke, optimal dividend policy of the firm should be to retain everything and distribute nothing. However, the firm has retained 40% and distributed 60%, hence it is not having an optimal dividend policy as per Walter's model.

(ii) When ROI = Ke, dividend policy of the company will have no effect on the value of the share as per Walter's model

Therefore, in that case, Ke should be equal to 18%

$P.E\ Ratio = \frac{1}{Ke} = \frac{1}{0.18}$

P.E Ratio = 5.56 times

MPS at the above P.E Ratio = 18 x 5.56 = Rs. 100.08

(iii) If P.E Ratio is 4.5,

$Ke = \frac{1}{4.5} = 22.22\%$

Since, ROI < Ke, optimal dividend policy of the firm should be to distribute everything and retain nothing, as the value of share would be maximum at that point thereby maximizing the wealth of the shareholder

Question 6

MTP Nov 24

Paras TMT Ltd. is a TMT manufacturing company with a face value of Rs. 10 per share.

The following information is given about the company:

- The company is expected to grow @ 10% p.a. for next four years then 5% for an indefinite period.
- Rate of return expected by the shareholders on their share investments is 15%.
- Company paid Rs. 4 as dividend per share for the current Financial Year.

FIND out the intrinsic value per share

Solution 6

As per Dividend discount model, the price of share is calculated as follows:

$$P = \frac{D1}{(1+Ke)^1} + \frac{D2}{(1+Ke)^2} + \frac{D3}{(1+Ke)^3} + \frac{D4}{(1+Ke)^4} + \frac{D5}{(1-Ke)} \times \frac{1}{(1+Ke)^4}$$

Where,

P = Price per share

Ke = Required rate of return on equity

g = Growth rate

Calculation PV of Dividends

Year	Dividend per share	PVF @ 15%	PV
1	4.4	0.870	3.828
2	4.84	0.756	3.660
3	5.324	0.658	3.503
4	5.856	0.572	3.350
Total			14.341

$$\text{PV of Terminal Value} = \frac{\text{Rs. } 5.856 \times 1.05}{(0.15 - 0.05)} \times \frac{1}{(1 + 0.15)^4} = 61.488 \times .572 = 35.171$$

Intrinsic value of share = PV of Dividends + PV of terminal value

= 14.341 + 35.171 = Rs. 49.512

Question 7

RTP May 25

Mr. A had gathered the following information for his analysis –

A. A Company pays regular dividend on quarterly basis and the last interim dividend declared for the quarter was Rs. 3 per share

B. Owing to a wide market reach & presence, company's t/o has seen an annual compounded growth of 25% (CAGR) in the last 5 years and the turnover is expected to grow at the same rate in the future as well. The company expects the following Rate of Return (ROI) against the probabilities of likely achievement mentioned along with in different situations.

Scenario	ROI	Probability
I	20%	0.30
II	15%	0.60
III	12%	0.50

A. The retention ratio over the last 5 years has been 40%, 65%, 50%, 45%, 30% respectively and company plans to retain based on the past average.

B. The current interest rate on GOI Treasury bond is at 4.5% and the beta of the company is 1.3 and a market return of 12.5%

You are required to CALCULATE the theoretical market price of the company's share for Mr. A's decision-making using Gordon's model and Walter's model.

Solution 7

Calculation of the theoretical price (intrinsic price) denoted by 'Po' using Gordon's formula

$$P_0 = \frac{D_1}{K_e - g}$$

So we need to calculate 3 variables i.e g, D1 & Ke

(A) g = Retention Ratio x ROI

$$\text{Retention ratio} = \frac{40 + 65 + 50 + 45 + 30}{5} = 0.46$$

Scenario	ROI	Probability	Expected ROI
I	20%	0.30	20 x 0.3 = 6
II	15%	0.60	15 x 0.6 = 9
III	12%	0.50	12 x 0.5 = 6
			Expected ROI = 21%

Therefore g = 0.46 x 21 = 9.66%

(B) D1 = Do + g

Do = Rs. 3 per quarter x 4

= Rs. 12 (Annually)

Therefore D1 = 12 + 9.66%

= Rs. 13.16

(C) Ke will be calculated using CAPM Model and as per CAPM

Ke = Rf + (Rm - Rf) x Beta

= 4.5 + (12.5 - 4.5) x 1.3

= 14.9%

$$P0 = \frac{13.16}{0.149 - 0.0966}$$

= **Rs. 251.15**

Calculation of the theoretical price (intrinsic price) denoted by 'Po' using Walter's formula

As per Walter $P = \frac{D + \frac{r}{Ke}(E - D)}{Ke}$

Where 'D' is constant, so no growth would be added

EPS = Dividend / (1 – Retention ratio)

= 12 / (1 – 0.46)

= Rs. 22.22

$P = \frac{12 + \frac{0.21}{0.149}(22.22 - 12)}{0.149}$

Po = Rs. 177.21

Question 8

MTP Mar 25

M Ltd. belongs to a risk class for which the capitalization rate is 12%. It has 40,000 outstanding shares and the current market price is Rs. 200. It expects a net profit of Rs. 5,00,000 for the year and the Board is considering dividend of Rs. 10 per share.

M Ltd. requires to raise Rs. 10,00,000 for an approved investment expenditure. ILLUSTRATE, how the MM approach affects the value of M Ltd. if dividends are paid or not paid.

Solution 8

Given,

Cost of Equity (ke)	12%
Number of shares in the beginning (n)	40,000
Current Market Price (Po)	Rs. 200
Net Profit €	Rs. 5,00,000
Expected Dividend (D1)	Rs. 10 per share
Investment (I)	**Rs. 10,00,000**

Situation 1 – When dividends are paid	Situation 2 – When dividends are not paid
(i) $P_0 = \frac{P1 + D1}{1 + Ke}$ $200 = \frac{P1 + 10}{1 + 0.12}$ $P_1 + 10 = 200 \times 1.12$ $P1 = 224 - 10 = 214$	(i) $P_0 = \frac{P1 + D1}{1 + Ke}$ $200 = \frac{P1 + 0}{1 + 0.12}$ $P1 + 0 = 200 \times 1.12$ $P1 = 224 - 0 = 224$
(ii) Calculation of funds required = Total Investment - (Net profit - Dividend) = 10,00,000 - (5,00,000 – 4,00,000) = 9,00,000	Calculation of funds required = Total Investment - (Net profit - Dividend) = 10,00,000 – (5,00,000 - 0) = 5,00,000
(iii) No. of shares required to be issued for balance fund No. of shares = $\frac{FundsRequired}{Price\ at\ end(P1)}$ $\Delta n = \frac{9,00,000}{214}$ = 4,205.61	(iii) No. of shares required to be issued for balance fund No. of shares = $\frac{FundsRequired}{Price\ at\ end(P1)}$ $\Delta n = \frac{5,00,000}{224}$ = 2,232.14
(iv) Calculation of value of firm $Vf = \frac{(n+\Delta n)P1 - I + E}{1 + Ke}$	(iv) Calculation of value of firm $Vf = \frac{(n+\Delta n)P1 - I + E}{1 + Ke}$
$= \frac{\left(40,000 + \frac{9,00,000}{214}\right) 214 - 10,00,000 + 5,00,000}{1 + 0.12}$ $= \frac{94,60,000 - 5,00,000}{1.12}$ = 80,00,000	$= \frac{\left(40,000 + \frac{9,00,000}{214}\right) 214 - 10,00,000 + 5,00,000}{1 + 0.12}$ $= \frac{94,60,000 - 5,00,000}{1.12}$ = 80,00,000

Question 9

PYQ Jan 25

Following information have been provided by LP Ltd.:

Profit before Tax	Rs. 40 Lakh
Tax Rate	30%
Equity Share Capital (Rs. 10)	Rs. 40 Lakh
Return on Investment	18%
Cost of Equity	15%
Dividend Payout Ratio	50%

You are required:

i. to determine the price of Equity Share of the company as per Walter's Model;

ii. to determine the Dividend Pay-out Ratio by applying Walter's Model assuming the price of equity share of the company is Rs. 48.

Solution 9

(i) Price per share as per Walter's Model

	Rs. in lakhs
Profit before tax	40
Less: tax @ 30%	12
Earning for equity shareholders	28
Earning per share	28/4 = Rs. 7

$$P = \frac{D+\frac{r}{K_e}(E-D)}{K_e}$$

Where,

P = Market Price of the share. E = Earnings per share. = Rs. 7

D = Dividend per share. = Rs. 3.5

Ke = Cost of equity/ rate of capitalization/ discount rate. = 15%

r = Internal rate of return/ return on investment = 18%

Applying the above formula, price per share

$$P = \frac{3.5+\frac{0.18}{0.15}(7-3.5)}{0.15}$$

$$\text{Or, } P = \frac{3.5+4.2}{0.15} = \text{Rs. } 51.33$$

ii) Let, the dividend per share be D to get share price of Rs. 48

$$P = \frac{D+\frac{r}{K_e}(E-D)}{Ke}$$

$$\text{Rs. } 48 = \frac{D+\frac{0.18}{0.15}(7-D)}{0.15}$$

$$7.2 = \frac{0.15D+1.26-0.18D}{0.15}$$

$$0.03D = 1.26-1.08$$

$$D = \text{Rs. } 6$$

$$\text{D/P ratio} = \frac{DPS}{EPS} \times 100 = \frac{6}{7} \times 100 = 85.714\%$$

CA Intermediate
Financial Management

Chapter 9
Management of Working Capital

Important Questions

(Questions which will cover all IMP concepts of the chapter)

By CA Mohnish Vora (MVSIR)

Official website for books of MVSIR- www.mvsir.in

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Chapter 9
Management of Working Capital

Unit 1- Introduction to Working Capital Management

Important Questions

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Question 1 **Unit 1 - Working Capital Requirement & Baumol's model**

ICAI SM, MTP Apr 22, PYQ Nov 20

The following annual figures relate to manufacturing entity

Sales at one month credit	84,00,000
Material consumption	60% of sales value
Wages (paid in a lag of 15 days)	12,00,000
Cash Manufacturing Expenses	3,00,000
Administrative Expenses	2,40,000
Creditors extend 3 months credit for payment.	
Cash manufacturing and administrative expenses are paid 1 months in arrear.	

- The company maintains stock of raw material equal to economic order quantity.
- The company incurs Rs. 100 as per ordering cost per order & cost of capital is 15% p.a.
- The optimum cash balance is determined using Baumol's model.
- The bank charges Rs. 10 for each cash withdrawal.
- Finished goods are held in stock for 1 month.
- The company maintains a bank balance of Rs.12,00,000 on an average.
- Creditors are paid through net banking and all other expenses are incurred in cash which is withdrawn from bank.

Assuming a 20% safety margin, you are required to ESTIMATE the amount of working capital that needs to be invested by the Company.

Solution 1

Preparation of Statement of Working Capital Requirement

	(Amount in Rs.)	(Amount in Rs.)
A. Current Assets		
Stock of Raw Material (W.N. 2)	81,975	
Stock of finished Goods $\left(\frac{\text{Rs. } 65,40,000}{12 \text{ months}} \times 1 \text{ month}\right)$	5,45,000	
Average Receivables (at Cost) $\left(\frac{\text{Rs. } 67,80,000}{12 \text{ months}} \times 1 \text{ month}\right)$	5,65,000	
Bank Balance	12,00,000	
Cash Balance (W.N. 3)	15,232	
Gross Working Capital		24,07,207
B. Current Liabilities		
Average Creditor for materials $\left(\frac{\text{Rs. } 50,40,000}{12 \text{ months}} \times 3 \text{ months}\right)$	12,60,000	
Outstanding Wages $\left(\frac{\text{Rs. } 12,00,000}{12 \text{ months}} \times 0.5 \text{ month}\right)$	50,000	
Outstanding Cash Manufacturing Expenses $\left(\frac{\text{Rs. } 3,00,000}{12 \text{ months}} \times 1 \text{ month}\right)$	25,000	
Outstanding administrative Expenses $\left(\frac{\text{Rs. } 2,40,000}{12 \text{ months}} \times 1 \text{ month}\right)$	20,000	
		13,55,000
Net Working Capital (A-B)		10,52,207
Add: Safety Margin @ 20%		2,10,441
Total Working Capital Requirement		**12,62,648**

Working Notes:

1. Computation of annual cash Cost of Production & Sales

Material Consumed (84,00,000 × 60%)	50,40,000
Wages	12,00,000
Manufacturing expenses	3,00,000
Cash Cost of production	**65,40,000**
(+) Administrative Expenses	2,40,000
Cash Cost of Sales	**67,80,000**

2. Computation of stock of Raw Material

$A = 50,40,000$, $B = 100$, $C = 0.15$

$$EOQ = \sqrt{\frac{2AB}{C}} = \sqrt{\frac{2 \times 50,40,000 \times 100}{0.15}} = \text{Rs. } 81,975$$

3. Calculation of Cash Balance

$A = 12,00,000+3,00,000+2,40,000$

$A = 17,40,000$, $B = 10$, $C = 0.15$

$$\text{Optimal Cash Balance} = \sqrt{\frac{2AB}{C}} = \sqrt{\frac{2 \times 17,40,000 \times 10}{0.15}} = \text{Rs. } 15,232$$

Question 2 **Unit 1 - Working Capital Requirement**

PYQ May 19

Bita Limited manufactures used in the steel industry. The following information regarding the company is given for your consideration:

a) Expected level of production 9000 units per annum.

b) Raw materials are expected to remain in store for an average of two months before issue to production.

c) Work-in-progress (50 percent complete as to conversion cost) will approximate to $\frac{1}{2}$ month's production.

d) Finished goods remain in warehouse on an average for one month.

e) Credit allowed by suppliers is one month.

f) Two month's credit is normally allowed to debtors.

g) A minimum cash balance of Rs. 67,500 is expected to be maintained.

h) Cash sales are 75 percent less than the credit sales.

i) Safety margin of 20 percent to cover unforeseen contingencies.

j) The production pattern is assumed to be even during the year.

k) The cost structure for Bita Limited's product is as follows:

	(Amount in Rs.)
Raw Materials	80 per unit
Direct Labour	20 per unit
Overheads (including depreciation Rs. 20)	80 per unit
Total Cost	180 per unit
Profit	20 per unit
Selling Price	200 per unit

You are required to estimate the working capital requirement of Bita limited.

Solution 2

Statement showing Estimate of Working Capital Requirement

	(Amount in Rs.)	(Amount in Rs.)
A. Current Assets		
(i) Inventories:		
Raw material inventory $\left(\frac{9{,}000\text{units} \times \text{Rs. } 80}{12 \text{ months}} \times 2 \text{ months}\right)$		1,20,000
Work in Progress:		
Raw material $\left(\frac{9{,}000\text{units} \times \text{Rs. } 80}{12 \text{ months}} \times 0.5 \text{ month}\right)$	30,000	
Wages $\left(\frac{9{,}000\text{units} \times \text{Rs. } 20}{12 \text{ months}} \times 0.5 \text{ month}\right) \times 50\ \%$	3,750	
Overheads $\left(\frac{9{,}000\text{units} \times \text{Rs. } 60}{12 \text{ months}} \times 0.5 \text{ month}\right) \times 50\ \%$ (Other than Depreciation)	11,250	45,000
Finished goods (inventory held for 1 months) $\left(\frac{9{,}000\text{units} \times \text{Rs. } 160}{12 \text{ months}} \times 1 \text{ month}\right)$		1,20,000
(ii) Debtors (for 2 months) $\left(\frac{9{,}000\text{units} \times \text{Rs. } 160}{12 \text{ months}} \times 2 \text{ months}\right) \times 80\%$ or $\left(\frac{11{,}52{,}000}{12 \text{ months}} \times 2 \text{ months}\right)$		1,92,000
(iii) Cash balance expected		67,500
Total Current assets		5,44,500

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Statement showing Estimate of Working Capital Requirement

	(Amount in Rs.)	(Amount in Rs.)
B. Current Liabilities		
(i) Creditors for Raw material (1 month) $\left(\frac{9{,}000\text{units} \times \text{Rs. } 80}{12 \text{ months}} \times 1 \text{ month}\right)$		60,000
Total current liabilities		60,000
Net working capital (A – B)		4,84,500
Add: Safety margin of 20 percent		96,900
Working capital Requirement		5,81,400

1. If Credit sales is x then cash sales is x-75% of x i.e. x/4.
   Or x+0.25x = Rs. 18,00,000
   Or x=Rs. 14,40,000
   So, credit Sales is Rs. 14,40,000

   Hence, Cash cost of credit sales $\left(\frac{\text{Rs. } 14{,}40{,}000}{12 \text{ months}} \times 4\right)$ = Rs. 11,52,000

2. It is assumed that safety margin of 20% is on net working capital
3. No information is given regarding lag in payment of wages, hence ignored assuming it is paid regularly.
4. Debtors/Receivables is calculated based on total cost.
   [If Debtors/Receivables is calculated based on sales, then debtors will be
   $\left(\frac{9{,}000\text{units} \times \text{Rs.}200}{12 \text{ months}} \times 1 \text{ month}\right) \times 80\%$ or
   $\left(\frac{14{,}40{,}000}{12 \text{ months}} \times 2 \text{ months}\right)$ = Rs. 2,40,000
   Then Total Current assets will be Rs. 5,92,500 and accordingly Net working capital and Working capital requirement will be Rs. 5,32,500aand Rs. 6,39,000 respectively].

Question 3 **Unit 1 - Working Capital Requirement**

PYQ May 18

Day Ltd., a newly formed company has applied to the Private Bank for the first time for financing it's Working Capital Requirements. The following informations are available about the projections for the current year:

Estimated Level of Activity	Completed Units of Production 31200 plus unit of work in progress 12000
Raw Material Cost	Rs. 40 per unit
Direct Wages Cost	Rs. 15 per unit
Overhead	Rs. 40 per unit (inclusive of Depreciation Rs.10 per unit)
Selling Price	Rs. 130 per unit
Raw Material in Stock Average	30 days consumption
Work in Progress Stock	Material 100% and Conversion Cost 50%
Finished Goods Stock	24000 Units
Credit Allowed by the supplier	30 days
Credit Allowed to Purchasers	60 days
Direct Wages (Lag in payment)	15 days
Expected Cash Balance	Rs. 2,00,000

Assume that production is carried on evenly throughout the year (360 days) and wages and overheads accrue similarly. All sales are on the credit basis.

You are required to calculate the Net Working Capital Requirement on Cash Cost Basis.

Solution 3

Calculation of Net Working Capital requirement

	(Amount in Rs.)	(Amount in Rs.)
A. Current Assets		
Inventories:		
Stock of Raw material (Refer to Working note (iii)	1,44,000	
Stock of Work in progress (Refer to Working note (ii)	7,50,000	
Stock of Finished goods (Refer to Working note (iv)	20,40,000	
Debtors for Sales (Refer to Working note (v)	1,02,000	
Cash	2,00,000	
Gross Working Capital	32,36,000	32,36,000

	(Amount in Rs.)	(Amount in Rs.)
B. Current Liabilities:		
Creditors for Purchases (Refer to Working note (vi)	1,56,000	
Creditors for wages (Refer to Working note (vii)	23,250	
	1,79,250	1,79,250
Net Working Capital (A - B)		**30,56,750**

Working Notes:

(i) Annual cost of production

	(Rs.)
Raw material requirements {(31,200 × Rs. 40) + (12,000 x Rs. 40)}	17,28,000
Direct wages {(31,200 ×Rs. 15) +(12,000 X Rs. 15 x 0.5)}	5,58,000
Overheads (exclusive of depreciation) {(31,200 × Rs. 30) + (12,000 x Rs. 30 x 0.5)}	11,16,000
Gross Factory Cost	34,02,000
Less: Closing W.I.P [12,000 (Rs. 40 + Rs. 7.5 + Rs.15)]	(7,50,000)
Cost of Goods Produced	26,52,000
Less: Closing Stock of Finished Goods (Rs. 26,52,000 × 24,000/31,200)	(20,40,000)
Total Cash Cost of Sales	**6,12,000**

(ii) Work in progress stock

	(Rs.)
Raw material requirements (12,000 units × Rs.40)	4,80,000
Direct wages (50% × 12,000 units × Rs. 15)	90,000
Overheads (50% × 12,000 units × Rs. 30)	1,80,000
	7,50,000

(iii) It is given that raw material in stock is average 30 days consumption. Since, the company is newly formed; the raw material requirement for production and work in progress will be issued and consumed during the year.

Hence, the raw material consumption for the year (360 days) is as follows:

	(Rs.)
For Finished goods (31,200 × Rs. 40)	12,48,000
For Work in progress (12,000 × Rs. 40)	4,80,000
	17,28,000

Raw material stock = $\frac{\text{Rs. 17,28,000}}{\text{360 days}}$ x 30 days = Rs. 1,44,000

(iv) Finished goods stock:

24,000 units @ Rs. (40+15+30) per unit = Rs.20,40,000

(v) Debtors for sale:

Rs. 6,12,000 x $\frac{\text{60 days}}{\text{360 days}}$ = Rs. 1,02,000

(vi) Creditors for raw material Purchases [Refer Working Note (iii)]:

	(Rs.)
Annual Material Consumed (Rs.12,48,000 + Rs.4,80,000)	17,28,000
Add: Closing stock of raw material	1,44,000
	18,72,000

Credit allowed by suppliers = $\frac{\text{Rs. 18,72,000}}{\text{360 days}}$ x 30 days = Rs. 1,56,000

(vii) Creditors for wages:

Outstanding wage payment = $\frac{\text{Rs. 5,58,000}}{\text{360 days}}$ x 15 days = Rs. 23,250

Question 4 Unit 1 - Working Capital Requirement (Double Shift Working)

ICAI SM, RTP May 21

MT Ltd. has been operating its manufacturing facilities till 31.3.2021 on a single shift working with the following cost structure:

	Per unit (Rs.)
Cost of Materials	24
Wages (out of which 60% variable)	20
Overheads (out of which 20% variable)	20
	64
Profit	8
Selling Price	72

As at 31.3.2021 with sales of Rs 17,28,000, the company held :	Per unit (Rs.)
Stock of raw materials (at cost)	1,44,000
Work-in-progress (valued at prime cost)	88,000
Finished goods (valued at total cost)	2,88,000
Sundry debtors	4,32,000

In view of increased market demand, it is proposed to double production by working an extra shift. It is expected that a 10% discount will be available from suppliers of raw materials in view of increased volume of business. Selling price will remain the same. The credit period allowed to customers will remain unaltered. Credit availed from suppliers will continue to remain at the present level i.e. 2 months. Lag in payment of wages and overheads will continue to remain at one month.

You are required to CALCULATE the additional working capital requirements, if the policy to increase output is implemented, to assess the impact of double shift for long term as a matter of production policy.

Solution 4

1. Statement of cost at single shift and double shift working

	24,000 units		48,000 Units	
	Per unit (Rs.)	Total (Rs.)	Per unit (Rs.)	Total (Rs.)
Raw materials	24	5,76,000	21.6	10,36,000
Wages:				
Variable	12	2,88,000	12	5,76,000
Fixed	8	1,92,000	4	1,92,000
Overheads:				
Variable	4	96,000	4	1,92,000
Fixed	16	3,84,000	8	3,84,000
Total cost	64	15,36,000	49.6	23,80,800
Profit	8	1,92,000	22.4	10,75,200
Sales	72	17,28,000	72	34,56,000

2. Sales in units 2020-21 = $\frac{\text{Sales}}{\text{Unit selling price}} = \frac{\text{Rs. 17,28,000}}{\text{Rs. 72}}$ = 24,000 units

3. Stock of Raw Materials in units on 31.3.2021

$\frac{\text{Value of stock}}{\text{Cost per unit}} = \frac{\text{Rs. 1,44,000}}{\text{Rs. 24}}$ = 6,000 units

4. Stock of work-in-progress in units on 31.3.2021

$\frac{\text{Value of work-in-progress}}{\text{Prime Cost per unit}} = \frac{\text{Rs. 88,000}}{\text{Rs.(24 + 20)}}$ = 2,000units

5. Stock of finished goods in units 2020-21

$\frac{\text{Value of stock}}{\text{Total Cost per unit}} = \frac{\text{Rs. 2,88,000}}{\text{Rs. 64}}$ = 4,500 units

Comparative Statement of Working Capital Requirement

	Single Shift (24,000 units)			Double Shift (48,000 units)		
	Units	Rate (Rs.)	Amount (Rs.)	Units	Rate (Rs.)	Amount (Rs.)
Current Assets						
Inventories						
Raw Materials	6,000	24	1,44,000	12,000	21.6	2,59,200
Work-in-Progress	2,000	44	88,000	2,000	37.6	75,200
Finished Goods	4,500	64	2,88,000	9,000	49.6	4,46,400
Sundry Debtors	6,000	64	3,84,000	12,000	49.6	5,95,200
Total Current Assets (A)			9,04,000			13,76,000
Current Liabilities						
Creditors for Materials	4,000	24	96,000	8,000	21.6	1,72,800
Creditors for Wages	2,000	20	40,000	4,000	16	64,000
Creditors for Overheads	2,000	20	40,000	4,000	12	48,000
Total Current Liabilities (B)			1,76,000			2,84,800
Working Capital (A) – (B)			**7,28,000**			**10,91,200**

Analysis: Additional Working Capital requirement = Rs. 10,91,200 – Rs. 7,28,000 = Rs. 3,63,200, if the policy to increase output is implemented.

Question 5 — **Unit 1 - Operating Cycle**

MTP May 20

The following information is provided by MNP Ltd. for the year ending 31st March, 2020:

Raw Material Storage period 45 days

Work-in-Progress conversion period 20 days

Finished Goods storage period 25 days, Debt Collection period 30 days

Creditors payment period 60 days, Annual Operating Cost Rs. 25,00,000

(Including Depreciation of Rs. 2,50,000) , Assume 360 days in a year.

You are required to calculate

i. Operating Cycle period

ii. Number of Operating Cycle in a year.

iii. Amount of working capital required for the company on a cost basis.

iv. The company is a market leader in its product and it has no competitor in the market. Based on a market survey it is planning to discontinue sales on credit and deliver products based on pre-payments in order to reduce its working capital requirement substantially. You are required to compute the reduction in working capital requirement in such a scenario.

Solution 5

i. **Calculation of Operating Cycle Period:**

Operating Cycle Period = R + W + F + D – C

= 45 + 20 + 25 + 30 – 60 = 60 days

ii. **Number of Operating Cycle in a Year** = $\frac{360}{\text{Operating Cycle Period}} = \frac{360}{60} = 6$

iii. **Amount of Working Capital Required**

$$\frac{\text{Annual operating cost}}{\text{Number of operating cycle}} = \frac{\text{Rs. 25,00,000 – Rs. 2,50,000}}{6} = \frac{\text{Rs. 22,50,000}}{6}$$

= Rs. 3,75,000

iv. **Reduction in Working Capital**

Operating Cycle Period = R + W + F – C = 45 + 20 + 25 – 60 = 30 days

Amount of Working Capital Required = $\frac{\text{Rs. 22,50,000}}{6} \times 30$ = Rs. 1,87,500

Reduction in Working Capital = Rs. 3,75,000 – Rs. 1,87,500 = Rs. 1,87,500

Note: If we use Total Cost basis, then amount of Working Capital required will be Rs. 4,16,666.67 (approx.) and Reduction in Working Capital will be Rs. 2,08,333.33 (approx.)

CA Intermediate
Financial Management

Chapter 9
Management of Working Capital

Unit 2- Treasury and Cash Management

Important Questions

By CA Mohnish Vora (MVSIR)

Official website for books of MVSIR- www.mvsir.in

Question 6 — **Unit 2 - Cash Budget**

ICAI SM, MTP Oct 19, Mar 23

You are given the following information:

i. Estimated monthly Sales are as follows:

	(Rs.)		(Rs.)
January	1,00,000	June	80,000
February	1,20,000	July	1,00,000
March	1,40,000	August	80,000
April	80,000	September	60,000
May	60,000	October	1,00,000

ii. Wages and Salaries are estimated to be payable as follows:

	(Rs.)		(Rs.)
April	9,000	July	10,000
May	8,000	August	9,000
June	10,000	September	9,000

iii. Of the sales, 80% is on credit and 20% for cash. 75% of the credit sales are collected within one month and the balance in two months. There are no bad debt losses.

iv. Purchases amount to 80% of sales and are made and paid for in the month preceding the sales.

v. The firm has taken a loan of Rs.1,20,000. Interest @ 10% p.a. has to be paid quarterly in January, April and so on.

vi. The firm is to make payment of tax of Rs. 5,000 in July, 2019.

vii. The firm had a cash balance of Rs. 20,000 on 1St April, 2019 which is the minimum desired level of cash balance. Any cash surplus/deficit above/below this level is made up by temporary investments/liquidation of temporary investments or temporary borrowings at the end of each month (interest on these to be ignored).

Required

PREPARE monthly cash budgets for six months beginning from April, 2019 on the basis of the above information.

Solution 6

Computation – Collections from Debtors

Particulars	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Total Sales	1,20,000	1,40,000	80,000	60,000	80,000	1,00,000	80,000	60,000
Credit Sales (80% of total Sales)	96,000	1,12,000	64,000	48,000	64,000	80,000	64,000	48,000
Collection (within one month)		72,000	84,000	48,000	36,000	48,000	60,000	48,000
Collection (within two months)			24,000	28,000	16,000	12,000	16,000	20,000
Total Collections			1,08,000	76,000	52,000	60,000	76,000	68,000

Monthly Cash Budget for Six Months: April to September, 2019

Particulars	Apr	May	Jun	Jul	Aug	Sep
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Receipts:						
Opening Balance	20,000	20,000	20,000	20,000	20,000	20,000
Cash Sales	16,000	12,000	16,000	20,000	16,000	12,000
Collections from Debtors	1,08,000	76,000	52,000	60,000	76,000	68,000
Total Receipts (A)	1,44,000	1,08,000	88,000	1,00,000	1,12,000	1,00,000
Payments:						
Purchases	48,000	64,000	80,000	64,000	48,000	80,000
Wages and Salaries	9,000	8,000	10,000	10,000	9,000	9,000
Interest on Loan	3,000	-----	-----	3,000	-----	-----
Tax Payment	-----	-----	-----	5,000	-----	-----
Total Payment (B)	60,000	72,000	90,000	82,000	57,000	89,000
Minimum Cash Balance	20,000	20,000	20,000	20,000	20,000	20,000
Total Cash Required (C)	80,000	92,000	1,10,000	1,02,000	77,000	1,09,000
Surplus/ (Deficit) (A)-(C)	64,000	16,000	(22,000)	(2,000)	35,000	(9,000)
Investment/Financing: Total effect of (Invest)/ Financing (D)	(64,000)	(16,000)	22,000	2,000	(35,000)	9,000
Closing Cash Balance (A) + (D) - (B)	20,000	20,000	20,000	20,000	20,000	20,000

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Question 7 **Unit 2 - Cleared Funds Forecast**

ICAI SM

Prachi Ltd is a manufacturing company producing and selling a range of cleaning products to wholesale customers. It has three suppliers and two customers. Prachi Ltd relies on its cleared funds forecast to manage its cash.

You are an accounting technician for the company and have been asked to prepare a cleared funds forecast for the period Saturday 7 August to Wednesday 11 August 2021 inclusive. You have been provided with the following information:

1. Receipts from customers

	Credit terms	Payment method	7 Aug 2021 sales	7 Jul 2021 sales
W Ltd	1 calendar month	BACS	Rs. 150,000	Rs. 130,000
X Ltd	None	Cheque	Rs. 180,000	Rs. 160,000

a) Receipt of money by BACS (Banker's Automated Clearing Services) is instantaneous.

b) X Ltd's cheque will be paid into Prachi Ltd's bank account on the same day as the sale is made and will clear on the third day following this (excluding day of payment).

2. Payments to suppliers

Supplier name	Credit terms	Payment method	7 Aug 2021 purchases	7 Jul 2021 purchases	7 Jun 2021 purchases
A Ltd	1 calendar month	Standing order	Rs. 65,000	Rs. 55,000	Rs. 45,000
B Ltd	2 calendar months	Cheque	Rs. 85,000	Rs. 80,000	Rs. 75,000
C Ltd	None	Cheque	Rs. 95,000	Rs. 90,000	Rs. 85,000

a) Prachi Ltd has set up a standing order for Rs. 45,000 a month to pay for supplies from A Ltd. This will leave Prachi's bank account on 7 August. Every few months, an adjustment is made to reflect the actual cost of supplies purchased (you do NOT need to make this adjustment)

b) Prachi Ltd will send out, by post, cheques to B Ltd and C Ltd on 7 August. The amounts will leave its bank account on the second day following this (excluding the day of posting).

3. Wages and salaries

	July 2021	August 2021
Weekly wages	Rs. 12,000	Rs. 13,000
Monthly salaries	Rs. 56,000	Rs. 59,000

a) Factory workers are paid cash wages (weekly). They will be paid one week's wages, on 11 August, for the last week's work done in July (i.e. they work a week in hand).

b) All the office workers are paid salaries (monthly) by BACS. Salaries for July will be paid on 7 August.

4. Other miscellaneous payments

a) Every Saturday morning, the petty cashier withdraws Rs. 200 from the company bank account for the petty cash. The money leaves Prachi's bank account straight away.

b) The room cleaner is paid Rs. 30 from petty cash every Monday morning.

c) Office stationery will be ordered by telephone on Sunday 8 August to the value of Rs. 300. This is paid for by company debit card. Such payments are generally seen to leave the company account on the next working day.

d) Five new softwares will be ordered over the Internet on 10 August at a total cost of Rs. 6,500. A cheque will be sent out on the same day. The amount will leave Prachi Ltd's bank account on the second day following this (excluding the day of posting).

5. Other information

The balance on Prachi's bank account will be Rs. 200,000 on 7 August 2021. This represents both the book balance and the cleared funds.

PREPARE a cleared funds forecast for the period Saturday 7th Aug to Wednesday 11th Aug 2021 inclusive using the information provided. Show clearly uncleared funds float each day.

Solution 7

Cleared Funds Forecast

	7 Aug 21	8 Aug 21	9 Aug 21	10 Aug 21	11 Aug 21
	(Saturday)	(Sunday)	(Monday)	(Tuesday)	(Wednesday)
Receipts					
W Ltd	1,30,000	0	0	0	0
X Ltd	0	0	0	1,80,000	0
(a)	1,30,000	0	0	1,80,000	0
Payments					
A Ltd	45,000	0	0	0	0
B Ltd	0	0	75,000	0	0
C Ltd	0	0	95,000	0	0
Wages	0	0	0	0	12,000
Salaries	56,000	0	0	0	0
Petty Cash	200	0	0	0	0
Stationery	0	0	300	0	0
(b)	1,01,200	0	1,70,300	0	12,000
Cleared excess Receipts over payments (a) – (b)	28,800	0	(1,70,300)	1,80,000	(12,000)
Cleared bal b/f	2,00,000	2,28,800	2,28,800	58,500	2,38,500
Cleared bal c/f (c)	**2,28,800**	**2,28,800**	**58,500**	**2,38,500**	**2,26,500**
Uncleared funds float					
Receipts	1,80,000	1,80,000	1,80,000	0	0
Payments	(1,70,000)	(1,70,300)	0	(6,500)	(6,500)
(d)	10,000	9,700	1,80,000	(6,500)	(6,500)
Total book bal c/f [c+d]	**2,38,800**	**2,38,500**	**2,38,500**	**2,32,000**	**2,20,000**

Notes :

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Question 8

PYQ Jan 25

KP Ltd. has provided the following information:

(i) Estimated monthly sales:

Month	Rs. in Lakh
April-2024	10
May-2024	12
June-2024	15
July-2024	10
August-2024	13
September-2024	14

ii. Gross Profit Ratio is 20%.

iii. Cost of Goods sold is paid in next month.

iv. Sales are in credit and credit period is allowed for 2 months.

v. Indirect Expenses are paid in the same month.

Monthly indirect expenses are as follows:

Month	Rs. in Lakh
June-2024	1.0
July-2024	1.2
August-2024	1.0
September-2024	1.3

vi. Dividend amounting September 2024, 3 Lakh will be paid in the month of September 2024

vii. Cash Balance on 01/07/2024 was 1.5 Lakh.

viii. The company has to maintain minimum cash balance of 1 Lakh. If there is cash balance deficit in any month, company would take a temporary short term loan and if cash balance exceed 2 Lakh, then company would invest for short term excess amount of 2 Lakh.

ix. Ignore the interest on short term loans and short term investment.

You are required to prepare Cash Budget for three months starting from July 2024.

Solution 8

Cash Budget (Rs. in lakh)

Particulars	July	August	September
Opening Balance	1.5	1	2
Add: Receipts			
Collection from debtors	12	15	10
Total cash available (A)	**13.5**	**16**	**12**
Less: Payments			

Payment of COGS	12	8	10.4
Payment of indirect exp	1.2	1	1.3
Payment of Dividend	-	-	3
Total payments (B)	**13.2**	**9**	**14.7**
Closing Balance before adjustment	0.3	7	-2.7
Minimum cash balance desired	1	1	1
Less: Temporary Investment	-	5	-
Add: Temporary Borrowing	0.7	-	3.7
Cash Closing Balance	1	2	1

W.N. 1				
COGS payment	**June**	**July**	**Aug**	**Sept**
Sales	15	10	13	14
COGS (80%)	12	8	10.4	11.2
Paid in		12	8	10.4

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Unit 3- Management of Inventory

Important Questions

By CA Mohnish Vora (MVSIR)

Official website for books of MVSIR- www.mvsir.in

Question 9 — **Unit 3 – Re-order level & EOQ**

PYQ May 22

A company requires 36,000 units of a product per year at cost of Rs. 100 per unit. Ordering cost per order is Rs. 250 and the carrying cost is 4.5% per year of the inventory cost. Normal lead time is 25 days and safety stock is NIL.

Assume 360 working days in a year.

i. Calculate the Reorder Inventory Level.

ii. Calculate the Economic Order Quantity (EOQ).

iii. If the supplier offers 1% quantity discount for purchase in lots of 9,000 units or more, should the company accept the proposal?

Solution 9

Annual Consumption = 36,000 (A)

Ordering Cost = Rs. 250 per order (O)

Carrying Cost = $\frac{4.5}{100}$ x 100 = Rs. 4.5 (C)

Lead Time = 25 days

i. Reorder Level = Lead Time × Daily Consumption ⇒ $\frac{36,000}{360}$ x 25 = Rs. 4.5 (C)

= 2,500 units

ii. Economic Order Quantity (EOQ) = $\sqrt{\frac{2AO}{C}}$ ⇒ $\sqrt{\frac{2x36,000x250}{4.5}}$ = 2,000 units

iii. Evaluation of Profitability of Quantity Discount Offer:

a. When EOQ is ordered

		(Rs.)
Purchase Cost	(36,000 units Rs. Rs. 100)	36,00,000
Ordering Cost	[(36,000 units/2,000 units) Rs. Rs. 250]	4,500
Carrying Cost	(2,000 units Rs. ½ Rs. Rs. 4.5)	4,500
Total Cost		36,09,000

b. When Quantity Discount is accepted

		(Rs.)
Purchase Cost	(36,000 units x Rs. 99*)	35,64,000
Ordering Cost	[(36,000 units/9,000 units) Rs. 250]	1,000
Carrying Cost	(9,000 units ½ Rs. 99 x 4.5%)	20,048
Total Cost	35,85,048	

*Unit Cost = Rs.100

Less: Quantity Discount @ 1% = Rs. 1

Purchase Cost = Rs. 99

Advise – The total cost of inventory is lower if Quantity Discount is accepted.

Hence, the company is advised to accept the proposal.

Notes :

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Unit 4- Management of Receivables

Important Questions

By CA Mohnish Vora (MVSIR)

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Question 10

Mosaic Limited has current sales of Rs 15 lakhs per year. Cost of sales is 75 per cent of sales and bad debts are one per cent of sales. Cost of sales comprises 80 per cent variable costs and 20 per cent fixed costs, while the company's required rate of return is 12 per cent. Mosaic Limited currently allows customers 30 days' credit, but is considering increasing this to 60 days' credit in order to increase sales.

It has been estimated that this change in policy will increase sales by 15 per cent, while bad debts will increase from one per cent to four per cent. It is not expected that the policy change will result in an increase in fixed costs and creditors and stock will be unchanged. Should Mosaic Limited introduce the proposed policy? ANALYSE (Assume a 360 days year)

Solution 10

i) Evaluation of credit Policy [Total Approach]

(Amt in ₹)

	Particulars	Present Policy [30 days]	Proposed Policy [60 days]
A)	Expected Profit		
	a) Sales	15,00,000	[15L+15%] = 17,25,000
	b) Costs other than Bad Debts		
	• Variable cost [a × 75% × 80%]	9,00,000	10,35,000
	• Fixed cost [15L × 75% × 20%]	2,25,000	2,25,000
		11,25,000	12,60,000
	c) Bad Debts	15,000 [15L × 1%]	69,000 [17.25L × 4%]
	d) Expected Profit [a-b-c]	3,60,000	3,96,000
B)	Opp. Cost of Inv in Rec	11,250 [11.25L × 30/360 × 12%]	25,200 [12.60L × 60/360 × 12%]
C)	Net Benefits [A-B]	3,48,750	3,70,800

Since NB are higher in proposed policy, thus Mosaic Ltd should accept the proposed policy.

Question 11

PYQ Sep 24

AB Enterprises deals in hardware materials having current turnover t30 Lakhs per annum. All sales are on credit and average collection period is 30 days with zero bad debts. The customers are requesting to increase the credit period. As a result of increase in credit period sales will also increase. Other information is as under:

Credit policy	Increase in collection period (days)	Increase in sales (Rs.)	Bad debts anticipated
A	15	3,00,000	1%
B	30	5,00,000	3.5%

The Selling price is Rs. 100/- per unit. Variable cost per unit is Rs. 50/- and fixed cost is Rs. 5,00,000. Required rate of return on additional investment is 20%. **Creditors for variable cost are ready to give 15 days extra credit for the additional cost incurred.**

Assume a 360 days year. You are required to analyse the present and proposed credit policies using the "Total Approach" method and recommend the credit policy to be adopted.

Solution 11

A. Statement showing the Evaluation of Credit Policies (Total Approach)

Particulars		Present Credit Policy	Proposed Credit Policy	
			A	B
	Credit Period (in days)	30	45	60
	Units sold	30,000	33,000	35,000
		Rs.	Rs.	Rs.
A	**Expected Profit:**			
	(a) Credit Sales @ Rs. 100 per unit	30,00,000	33,00,000	35,00,000
	(b) Total Cost other than Bad Debts			
	(i) Variable Costs @ Rs. 50 per unit	15,00,000	16,50,000	17,50,000
	(ii) Fixed Costs	5,00,000	5,00,000	5,00,000
		20,00,000	21,50,000	22,50,000
	(c) Bad Debts	-	33,000	1,22,500
	(d) Expected Profit [(a) – (b) – (c)]	**10,00,000**	**11,17,000**	**11,27,500**

B	Opportunity Cost of Investments in Receivables (i)-(ii)	33,333	52,500	72,917
C	Net Benefits (A – B)	9,66,667	10,64,500	10,54,583

Recommendation: The Proposed Policy A (i.e. increase in collection period by 15 days or total 45 days) should be adopted since the net benefits under this policy are higher as compared to other policies.

Working Notes:

(i) Calculation of Opportunity Cost of Average Investment in Receivables

Particulars		Present Credit Policy	Proposed Credit Policy	
			A	B
	Credit Period (in days)	30	45	60
		Rs.	Rs.	Rs.
(a)	Cost of Sales (Variable Cost + Fixed Cost)	20,00,000	21,50,000	22,50,000
(b)	Average Debtors = Cost of Sales × (Credit period) / 360	1,66,667	2,68,750	3,75,000
(c)	Average Creditors for extra variable cost [(Additional Variable Cost) x 15/360]	-	6,250	10,417
(d)	**Average Investment in Receivables or Net Working Capital = (b) – (c)**	1,66,667	2,62,500	3,64,583
(e)	**Opportunity Cost @20% of average Investments in Receivables**	33,333	52,500	72,917

Question 12

As a part of the strategy to increase sales and profits, the sales manager of a company proposes to sell goods to a group of new customers with 10% risk of non-payment. This group would require one and a half months credit and is likely to increase sales by Rs 1,00,000 p.a. Production and Selling expenses amount to 80% of sales and the income-tax rate is 50%. The company's minimum required rate of return (after tax) is 25%. Should the sales manager's proposal be accepted? ANALYSE & COMPUTE the degree of risk of non-payment that the company should be willing to assume if the required rate of return (after tax) were (i) 30%, (ii) 40% & (iii) 60%.

Solution 12

a) Evaluation of new proposal

	Particulars	Amt (₹)
A)	Expected Profit	
	a) Sales	1,00,000
	b) Cost other than B.D. Prod & Selling Exp [1L x 80%]	80,000
	c) Bad Debts [1L x 10%]	10,000
	d) Expected Net PBT [a-b-c]	10,000
	e) Tax @ 50%	5,000
	f) Expected Net PAT [d-e]	5,000
B)	Opp. cost of Invt in Rec. (Net of Tax) [80,000 x 1.5/12 x 25%]	2,500
C)	Net Benefit [A-B]	2,500

Conclusion: Since Net Benefit is POSITIVE, thus we should accept the sales manager's proposal.

b) Computation of Degree of Risk of Non-Payment for diff. rate of returns

Particulars	Read Rate of Return		
	30%	40%	60%
A) Exp. Profit			
a) Sales	1,00,000	1,00,000	1,00,000
b) Costs other than B.D. Prod & Selling Exp	80,000	80,000	80,000

		X	Y	Z
	c) Bad Debts	x	y	z
	d) Expected Net PBT [a-b-c]	20,000 - x	20,000 - y	20,000 - z
	e) Tax 50%	10,000 - 0.5x	10,000 - 0.5y	10,000 - 0.5z
	FY Exp. Net PAT [d-e]	10,000 - 0.5x	10,000 - 0.5y	10,000 - 0.5z
BY	Opp. cost of Invt in Rec (Net of Tax)	3,000 [80K × 1.5/12 × 30%]	4,000 [80K × 1.5/12 × 40%]	6,000 [80K × 1.5/12 × 60%]
CY	Net Benefit [A - B]	7,000 - 0.5x	6,000 - 0.5y	4,000 - 0.5z

Explanation (Not part of Solution → Exam ⊗)

- "x" → Risk of Non-Payment when reqd. rate of return is 30%.
- Matlab, jab 30% reqd return hai, toh maximum hum kitna bad debt jhel sakte hai.

..... & Similarly for y & z.

CY Calc of Maximum Degree of Risk of Non-Payment Acceptable

- When Reqd Rate = 30%

$$7,000 - 0.5x = 0$$
$$\Rightarrow 0.5x = 7,000$$
$$\Rightarrow x = ₹14,000$$

$$\therefore \text{Bad Debts as a \% of Sales} = \frac{14000}{1,00,000} \times 100 = 14\%$$

- When Reqd Rate = 40%

$$6,000 - 0.5y = 0$$
$$\Rightarrow 0.5y = 6,000$$
$$\Rightarrow y = ₹12,000$$

$$\therefore \text{Bad Debts as a \% of Sales} = \frac{12,000}{1,00,000} \times 100 = 12\%$$

- When Reqd Rate = 60%

$$4,000 - 0.5z = 0$$
$$\Rightarrow 0.5z = 4,000$$
$$\Rightarrow z = ₹8,000$$

$$\therefore \text{Bad Debts as a \% of Sales} = \frac{8,000}{1,00,000} \times 100 = 8\%$$

Question 13 **Unit 4 - Factoring**

MTP Mar 19

Navya Ltd has annual credit sales of Rs. 45 lakhs. Credit terms are 30 days, but its management of receivables has been poor and the average collection period is 50 days, Bad debt is 0.4 per cent of sales. A factor has offered to take over the task of debt administration and credit checking, at an annual fee of 1 per cent of credit sales. Navya Ltd. estimates that it would save Rs. 35,000 per year in administration costs as a result. Due to the efficiency of the factor, the average collection period would reduce to 30 days and bad debts would be zero. The factor would advance 80 per cent of invoiced debts at an annual interest rate of 11 per cent. Navya Ltd. is currently financing receivables from an overdraft costing 10 per cent per year.

If occurrence of credit sales is throughout the year, COMPUTE whether the factor's services should be accepted or rejected. Assume 365 days in a year.

Solution 13

	Rs.
Present level of receivables is	6,16,438
In case of factor, receivables would reduce to	3,69,863
The costs of the existing policy are as follows:	
Cost of financing existing receivables:	61,644
Cost of bad debts:	18,000
Cost of current policy	79,644
The cost under the factor are as follows:	
Cost of financing new receivable through factor:	
(Rs. 3,69,863 × 0.8 × 0.11) + (Rs. 3,69,863 × 0.2 × 0.10) = (32,548 + 7,397)	39,945
Factor's annual fee:	45,000
Administration costs saved:	(35,000)
Net cost under factor:	49,945

From the above analysis it is clear that the factor's services are cheaper than Existing policy by Rs. 29,699 (Rs. 79,644 - Rs.49,945) per year. Hence, the services of the factor should be accepted.

Question 14

RTP Jan 25

Nirmoh Limited wants to avail short-term loan from the bank. However, bank grants short term loan by keeping the collateral in the form of accounts receivable. A bank is analyzing the receivables of Nirmoh Limited to identify acceptable collateral for a short-term loan.

The current policy of the company is 3/10 net 40. Bank will lend only to the extent of 90% of acceptable receivables at an interest rate of 12% only if both the conditions mentioned below are fulfilled. Bank will keep a reserve of 5% for cash discount & returns

a) Customers are not currently overdue for more than 5 days to the net period

b) Average aging (payment period) of the customer should not exceed 15 days past the net period.

If any of the above conditions are not fulfilled, the bank will lend 65% of the receivables subject to a reserve of 15% and the interest rate will be charged at 15% on such accounts. Tax 25%.

On scrutiny of all receivables, following are the acceptable receivables considered for lending-

Accounts	Amount (Rs.)	Outstanding in Days since invoiced	Average Aging (payment period) in Days
DR 01	50,000	37	40
DR 02	25,000	25	48
DR 03	1,20,000	47	49
DR 04	72,000	10	56
DR 05	45,000	30	30
DR 06	1,75,000	39	50
DR 07	19,000	55	25
DR 08	54,000	44	54
DR 09	1,05,000	15	25
DR 10	37,000	22	75

You are required to CALCULATE:

a) Total amount lend by the bank b) Effective Interest cost (%) to the company

Solution 14

Condition (a) says that accounts shouldn't be overdue for more than 5 days to the net period. In other words, it means those accounts who are overdue by 45 days (40 days + 5 additional days), will not fulfill condition a) and thus will not be eligible for 90% lending.

Therefore, from the above, we can see that Accounts DR 03 & DR 07 are overdue for more than 45 days and hence will not be eligible for 90% lending.

Condition (b) says that average receivables ageing (payment period) should not exceed 15 days to the net period i.e. it should not exceed 55 days (40 days + 15 days = 55 days). Therefore, from the above, we can see that Accounts DR 04 & DR 10 has an ageing of more than 55 days. Hence, they would also not be eligible for 90% lending.

Amount of Bank Lending:

Accounts	Bank Lending at 90%	Bank Lending at 65%
DR 01	50,000	-
DR 02	25,000	-
DR 03	-	1,20,000
DR 04	-	72,000
DR 05	45,000	-
DR 06	1,75,000	-
DR 07	-	19,000
DR 08	54,000	-
DR 09	1,05,000	-
DR 10	-	37,000
Total	**4,54,000**	**2,48,000**
(-) Reserve	22,700 {4,54,000 x 5%}	37,200 {2,48,000 x 15%}
Net	**4,31,300**	**2,10,800**
Loan	**3,88,170**	**1,37,020**

Total short-term loan granted by the bank = Rs. 5,25,190

(B) Calculation of the Effective Interest Cost

Interest at 12% (On 90% lending) = 3,88,170 x 0.12 = 46,580.4

Interest at 15% (On 65% lending) = 1,37,020 x 0.15 = 20,553 Total Interest = Rs. 67,133.4

Effective Interest Cost (%) = Interest (1-t) / Total Short-term Loan

= 67,133.4 (1-0.25) / 5,25,190

Effective Interest Cost (%) = 9.59%

CA Intermediate
Financial Management

Chapter 9
Management of Working Capital

Unit 5- Management of Payables

Important Questions

By CA Mohnish Vora (MVSIR)

Official website for books of MVSIR- www.mvsir.in

Question 15 — **Unit 5 – Cost of not taking Discount**

RTP May 18

A Ltd. is in manufacturing business & it acquires raw material from X Ltd. on a regular basis. As per the terms of agreement the payment must be made within 40 days of purchase. However, A Ltd. has a choice of paying Rs. 98.50 per Rs. 100 it owes to X Ltd. On or before 10th day of purchase.

Required: EXAMINE whether A Ltd. should accept the offer of discount assuming average billing of A Ltd. with X Ltd. is Rs. 10,00,000 and an alternative investment yield a return of 15% and company pays the invoice.

Solution 15

Annual Benefit of accepting the Discount

$$\frac{\text{Rs. 1.5}}{\text{Rs. 100 – Rs. 1.50}} \times \frac{\text{365 days}}{\text{40 – 10 days}} = 18.53\%$$

Annual Cost = Opportunity Cost of foregoing interest on investment = 15%

If average invoice amount is Rs. 10,00,000

	If discount is	
	Accepted (Rs.)	Not Accepted (Rs.)
Payment to Supplier (Rs.)	9,85000	10,00,000
ROI of Rs.9,85,000 for 30 days {Rs. 9,85,000 × (30/365) × 15%}		(12,144)
	9,85,000	9,87,856

Thus, from above table it can be seen that it is cheaper to accept the discount.

CA Intermediate
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Chapter 9
Management of Working Capital

Unit 6- Financing of Working Capital

Important Questions

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Question 16 **Unit 6 - Sources of Working Capital Funds**

RTP Nov 21, PYQ Dec 21, MTP April 23

The Alliance Ltd., a Petrochemical sector company had just invested huge amount in its new expansion project. Due to huge capital investment, the company is in need of an additional Rs. 1,50,000 in working capital immediately. The Finance Manger has determined the following three feasible sources of working capital funds

i. Bank loan: The Company's bank will lend Rs. 2,00,000 at 15%. A 10% compensating balance will be required, which otherwise would not be maintained by the company.

ii. Trade credit: The company has been offered credit terms from its major supplier of 3/30, net 90 for purchasing raw materials worth Rs. 1,00,000 per month.

iii. Factoring: A factoring firm will buy the company's receivables of Rs. 2,00,000 per month, which have a collection period of 60 days. The factor will advance up to 75% of the face value of the receivables at 12% on an annual basis. The factor will also charge commission of 2% on all receivables purchased. It has been estimated that the factor's services will save the company a credit department expense and bad debt expense of Rs. 1,250 and Rs. 1,750 per month respectively.

On the basis of annual percentage cost, ADVISE which alternative should the company select? Assume 360 days year.

Solution 16

i. Bank loan: Since the compensating balance would not otherwise be maintained, the real annual cost of taking bank loan would be:

$$\frac{15}{90} \times 100 = 16.67\% \text{ p.a.}$$

ii. Trade credit: Amount upto Rs. 1,50,000 can be raised within 2 months or 60 days. The real annual cost of trade credit would be:

$$\frac{3}{97} \times \frac{360}{60} \times 100 = 18.56\% \text{ p.a.}$$

iii. Factoring:

Commission charges per year = 2% x (Rs. 2,00,000 x 12) = Rs. 48,000

Total Savings per year = (Rs. 1,250 + Rs. 1,750) x 12 = Rs. 36,000

Net factoring cost per year = Rs. 48,000 - Rs. 36,000 = Rs. 12,000

Annual Cost of Borrowing Rs. 1,50,000 receivables through factoring would be:

$$\frac{12\% \times 1,50,000 + 12,000}{\text{Rs. } 1,50,000} \times 100 = \frac{\text{Rs.}18,000 + \text{Rs.}12,000}{\text{Rs. } 1,50,000} \times 100 = 20\% \text{ p.a.}$$

Advise: The company should select alternative of Bank Loan as it has the lowest annual cost i.e. 16.67% p.a.

Question 17 — Unit 6 - Maximum Permissible Bank Finance

PYQ May 22

Following information and ratios are given for W Limited for the year ended 31st March, 2022

Liabilities	Amount	Assets	Amount
Equity Shares Rs. 10 each	200	Fixed Assets Raw	500
Retained earnings	200	materials W.I.P	150
11% Debentures	300	Finished good	100
Public deposits (Short-Term)	100		50
Trade Creditors	80		
Bills Payable	100		
	980		**980**

Calculate the amount of maximum permissible bank finance under three methods as per Tandon Committee lending norms.

The total core current assets are assumed to be Rs. 30 lakhs.

Solution 17

Current Assets = 150 + 100 + 50 + 125 + 55 = Rs. 480 Lakhs

Current Liabilities = 100 + 80 + 100 = Rs. 280 Lakhs

Maximum Permissible Banks Finance under Tandon Committee Norms:

Method I

Maximum Permissible Bank Finance = 75% of (Current Assets – Current Liabilities)

= 75% of (480 - 280) = Rs. 150 Lakhs

Method II

Maximum Permissible Bank Finance = 75% of Current Assets – Current Liabilities

= 75 % of 480 – 280 = Rs. 80 Lakhs

Method III

Maximum Permissible Bank Finance = 75% of (Current Assets – Core Current Assets) – Current Liabilities

= 75 % of (480 - 30) – 280 = Rs. 57.5 Lakhs

CA Intermediate
Financial Management

FM Theory

Important Questions

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INDEX

FM Theory IMP Questions

FM Chapter 1 - Scope and Objectives of Financial Management

RTP Jan 2026

1	What are disadvantages of Profit Maximization?

(i) Emphasizes the short-term gains
(ii) Ignores risk or uncertainty
(iii) Ignores the timing of returns
(iv) Requires immediate resources.

MTP Dec 2025

2	HOW do we measure the value/wealth of a firm?

According to Van Horne, "Value of a firm is represented by the market price of the company's common stock. The market price of a firm's stock represents the focal judgment of all market participants as to what the value of a firm is.
It takes into account present & prospective future EPS, timing & risk of these earnings, dividend policy & many other factors that bear upon market price.
The market price serves as a performance index or report card of the firm's progress. It indicates how well management is doing on behalf of stockholders."

MTP Nov 2025

3	DIFFERENTIATE between Financial Management and Financial Accounting.

Though financial management and financial accounting are closely related, still they differ in the treatment of funds and also with regards to decision - making.

Treatment of Funds: In accounting, the measurement of funds is based on the accrual principle. The accrual based accounting data do not reflect fully the financial conditions of the organisation. An organisation which has earned profit (sales less expenses) may said to be profitable in the accounting sense but it may not be able to meet its current obligations due to shortage of liquidity as a result of say, uncollectible receivables. Whereas, the treatment of funds, in financial management is based on cash flows. The revenues are recognised only when cash is actually received (i.e. cash inflow) and expenses are recognised on actual payment (i.e. cash outflow). Thus, cash flow based returns help financial managers to avoid insolvency and achieve desired financial goals.

Decision-making: The chief focus of an accountant is to collect data and present the data while the financial manager's primary responsibility relates to financial planning, controlling and decision-making. Thus, in a way it can be stated that financial management begins where financial accounting ends.

	PYQ May 2025
4	**What is agency cost and what are its types? How can a company minimize agency cost and align the interest of manager and shareholder?**

Agency Problem is the chances that managers may place personal goals ahead of the goal of owners. Agency Problem leads to Agency Cost. Agency cost is the additional cost borne by the shareholders to monitor the manager and control their behaviour so as to maximize shareholders wealth.

Types of Agency Cost: Generally, Agency Costs are of four types (i) monitoring (ii) bonding (iii) opportunity (iv) structuring.

Following efforts have been made to address the issues of minimizing agency cost and align the interest of manager and shareholders:

- ✓ Managerial compensation is linked to the profit of the company to some extent and also with the long-term objectives of the company.
- ✓ Employee is also designed to address the issue with the underlying assumption that maximisation of the stock price is the objective of the investors.
- ✓ Effecting monitoring can be done.

	PYQ Jan 2025
5	**Discuss objectives & advantages of wealth maximization goal of FM.**

Objective of Wealth Maximisation: Highest market value of shares.

Advantages of Wealth Maximisation:
(i) Emphasizes the long term gains
(ii) Recognises risk or uncertainty
(iii) Recognises the timing of returns
(iv) Considers shareholders' return.

	MTP Aug 2025
6	**ABC Ltd. is evaluating two investment opportunities. Project X offers high short- term accounting profits with aggressive cost-cutting measures, while Project Y provides lower immediate profits but improves customer satisfaction, brand loyalty, and long-term cash flows.** **As a financial manager, WHICH project should the company choose to ensure value creation? JUSTIFY your answer by comparing the concepts of profit maximization, wealth maximization, and value creation.**

Project Y should be chosen by the financial manager to ensure long-term value creation.
Profit maximization focuses on increasing short-term profits, often ignoring risk, sustainability, and timing of returns. Project X aligns with this approach by maximizing current profits, but may harm the firm's reputation, employee morale, and customer satisfaction.

Wealth maximization, on the other hand, is concerned with increasing the net present value of shareholders' wealth over the long run. It considers cash flows, risk, and time value of money. Project Y, despite lower immediate profits, enhances long-term cash flows and strengthens brand equity, which contributes to shareholder wealth.

Value creation refers to making strategic decisions that generate sustainable returns exceeding the cost of capital. Project Y builds intangible assets like customer loyalty and goodwill, which leads to long-term competitive advantage and value creation.
Therefore, based on wealth maximization and value creation principles, Project Y is the strategically sound choice.

MTP Sep 2025

7	**Write a short note on financial distress and insolvency.**

There are various factors like price of the product/ service, demand, price of inputs e.g. raw material, labour etc., which is to be managed by an organisation on a continuous basis. Proportion of debt also need to be managed by an organisation very delicately. Higher debt requires higher interest and if the cash inflow is not sufficient then it will put lot of pressure to the organisation. Both short term and long-term creditors will put stress to the firm. If all the above factors are not well managed by the firm, it can create situation known as distress, so financial distress is a position where Cash inflows of a firm are inadequate to meet all its current obligations.

Now if distress continues for a long period of time, firm may have to sell its asset, even many times at a lower price. Further when revenue is inadequate to revive the situation, firm will not be able to meet its obligations and become insolvent. So, insolvency basically means inability of a firm to repay various debts and is a result of continuous financial distress.

PYQ Dec 2021

8	**Explain in brief the phases of the evolution of financial management**

Financial management **evolved gradually over the past 50 years**.
The three stages of its evolution are:
1) **The Traditional Phase**: Here FM was considered necessary only during **occasional events** such as **takeovers, mergers, expansion, liquidation, etc**.
2) **The Transitional Phase**: During this phase, the **day-to-day problems** that financial managers faced were given importance. The general problems related to **funds analysis, planning and control** were given more attention in this phase.
3) **The Modern Phase**: Modern phase is **still going on**. During this phase, **many theories have been developed** regarding efficient markets, **capital budgeting**, option pricing, **valuation models** and also in several other important fields in financial management. Here, financial management is viewed as a **supportive and facilitative function**, not only for top management but **for all levels of management.**

PYQ May 2024

9	**State with brief reasons whether the following statements are true or false:** **(i) Maximising Market Price Per Share (MPS) as the financial objective which maximises the wealth of shareholders.** **(ii) A combination of lower risk and higher return is known as risk return trade off and at this level of risk-return, profit is maximum.** **(iii) Financial distress is a position when accounting profits of a firm are sufficient to meet its long-term obligations.** **(iv) Angel investor is one who provides funds for start-up m exchange for an ownership/equity.**

Statement	True or False	Reason
Maximising MPS as the financial objective which maximises the wealth of shareholders.	**True**	Maximizing MPS or Market value as the financial objective will ensure the maximizing shareholder's wealth.
A combination of lower risk and higher return is known as risk-return trade off and at this level of risk-return, profit is maximum.	**False**	There is a direct relationship between risk & profit. Higher the risk, higher is the possibility of profits. Stockholders expect greater returns from investments of higher risk and vice-versa.
Financial distress is a position when accounting profits of a firm are sufficient to meet its long-term obligations.	**False**	Financial distress is a position where Cash inflows of a firm are inadequate to meet all its current obligations.
Angel investor is one who provides funds for start-up in exchange for an ownership/equity.	**True**	Angel Financing is a form of an equity-financing where an angel investor provides capital for startup or expansion, in exchange for an ownership/equity in the company.

FM Chapter 2 – Types of Financing

RTP Jan 2026

1 Write the main features of Bulldog Bond.

- It is denominated in Bulldog Pound Sterling/Great Britain Pound (GBP)
- Issued in London
- Issuer Non- UK Company
- Regulations: Great Britain
- Purpose: Access of capital available in UK market
- Issue proceeds can be used to fund UK operation
- Issue proceeds can be used to fund a company's local opportunities

RTP Sep 2025

2 IDENTIFY the most relevant sources of funds:
(i) It is the most expensive source of funds.
(ii) High degree of risk since they have to be repaid as per agreement.
(iii) It supports businesses in their routine activities.
(iv) Business has options to raise capital from International markets also.
(v) Last option for startups which doesn't qualify for bank funding

i. Equity
ii. Debentures
iii. Funding from Banks
iv. International Funding
v. Angel Financing

RTP Sep 2025

3 Trade credit and bank overdraft are two commonly used short-term financing sources but each has distinct features. On the light of the statement SHOW the difference between trade credit and bank overdraft.

Trade credit	Bank overdraft
Credit extended by suppliers, allowing the firm to delay payment for G/S.	Customers are allowed to withdraw in excess of credit bal. in Current A/c.
The usual duration of such credit is 15 to 90 days.	Though repayable on demand, but continue for long, by annual renewals.
Interest free loan, thus failure to avail this facility has an interest cost.	Interest is charged on daily balances
Generates automatically in course of business & is quite common in b'ness.	Borrower need to apply to bank. OD is operated in same way as cash credit & current accounts.
It enhances automatically with increase in volume of business & fast payment.	A fixed limit is granted to borrower within which borrower is allowed to overdraw his account.

MTP Dec 2025

4	**Oceanic Retail Pvt. Ltd., a fast-growing chain of supermarkets, is planning to expand its presence across multiple cities. The company's CFO, Mr. Arvind Mehta, is evaluating different lease contracts for acquiring stores and equipment. The legal team has informed him that besides the common Finance Lease and Operating Lease, there are several other types of lease arrangements. EXPLAIN four other types of lease arrangements. (Write all 4 points)** **OR** **What is Leveraged Lease? Explain. (Write only 2nd point) – PYQ Sep 2024**

(i) Sales and Lease Back: Under this type of lease, the owner of an asset sells the asset to a party (the buyer), who in turn leases back the same asset to the owner in consideration of a lease rentals. Under this arrangement, the asset is not physically exchanged but it all happen in records only. The main advantage of this method is that the lessee can satisfy himself completely regarding the quality of an asset and after possession of the asset convert the sale into a lease agreement.
Under this transaction, the seller assumes the role of lessee (as the same asset which he has sold came back to him in the form of lease) and the buyer assumes the role of a lessor (as asset purchased by him was leased back to the seller). So, the seller gets the agreed selling price and the buyer gets the lease rentals.

(ii) Leveraged Lease: Under this lease, a third party is involved besides lessor & the lessee. The lessor borrows a part of the purchase cost (say 80%) of the asset from the third party i.e., lender and asset so purchased is held as security against the loan. The lender is paid off from the lease rentals directly by the lessee and the surplus after meeting the claims of the lender goes to the lessor. The lessor is entitled to claim depreciation allowance.

(iii) Sales-aid Lease: Under this lease contract, the lessor enters into a tie up with a manufacturer for marketing the latter's product through his own leasing operations, it is called a sales-aid lease. In consideration of the aid in sales, the manufacturer may grant either credit or a commission to the lessor. Thus, the lessor earns from both sources i.e. from lessee as well as the manufacturer.

(iv) Close-ended and Open-ended Leases: In the close-ended lease, the assets get transferred to the lessor at the end of lease, the risk of obsolescence, residual value etc., remain with the lessor being the legal owner of the asset. In the open-ended lease, the lessee has the option of purchasing the asset at the end of the lease period.

	MTP Aug 2025
5	**A company owns a large asset (a commercial building) and is facing a cash crunch. The CFO suggests a sale and leaseback arrangement. As a finance student, WHAT practical benefits and risks would you consider before supporting this decision?**

Benefits of sale and leaseback arrangement:

1) Immediate cash inflow to ease the cash crunch.
2) Continued use of the asset without ownership, avoiding disruption.
3) Off-balance sheet financing improves capital structure ratios.

Risks of sale and leaseback arrangement:

1) Loss of ownership may mean higher long-term costs.
2) Lease obligations add to fixed costs and reduce flexibility.
3) Hence, sale and leaseback decision can be applied only if the lease terms are favorable and the company lacks better financing options.

	MTP Sep 2025
6	**A company is looking to raise funds through an instrument that provides fixed periodic returns to the investor but does not grant voting rights. Interestingly, this instrument is considered to have characteristics of both equity and debt. It ranks above equity shareholders but below debenture holders in case of liquidation.** **Which type of financing instrument should the company use and why?**

Preference shares are a hybrid financial instrument. They offer a fixed dividend (like debt), but the capital raised is considered part of the equity of the company. Holders of preference shares:

1) Do not have voting rights in most cases (unlike equity shareholders).
2) Rank above equity shareholders in case of company liquidation, but below debt holders like debenture holders.
3) Are repaid after creditors but before equity holders, making them less risky than equity but riskier than debt.

	MTP Sep 2025
7	**What is venture capital financing? Briefly describe its characteristics.**

Venture capital financing refers to financing of new high risky venture promoted by qualified entrepreneurs who lack experience and funds to give shape to their ideas. In broad sense, under venture capital financing, venture capitalist make investment to purchase equity or debt securities from inexperienced entrepreneurs who undertake highly risky ventures with potential to succeed in future.

Characteristics of Venture Capital financing are:

1) It is basically an equity finance in new companies.
2) It can be viewed as a long-term investment in growth-oriented small firms.
3) Apart from providing funds, the investor also provides support in the form of sales strategy, business networking a

MTP Nov 2025

8	EXPLAIN the methods of venture capital financing.

(i) Equity financing: The venture capital undertakings generally require funds for a longer period but may not be able to provide returns to the investors during the initial stages. Therefore, the venture capital finance is generally provided by way of equity share capital. The equity contribution of venture capital firm does not exceed 49% of the total equity capital of venture capital undertakings so that the effective control and ownership remains with the entrepreneur.

(ii) Conditional loan: A conditional loan is repayable in the form of a royalty after the venture is able to generate sales. No interest is paid on such loans. In India venture capital financiers charge royalty ranging between 2 and 15 per cent; actual rate depends on other factors of the venture such as gestation period, cash flow patterns, risk and other factors of the enterprise. Some Venture capital financiers give a choice to the enterprise of paying a high rate of interest (which could be well above 20%) instead of royalty on sales once it becomes commercially sound.

(iii) Income note: It is a hybrid security which combines the features of both conventional loan and conditional loan. The entrepreneur has to pay both interest and royalty on sales but at substantially low rates. IDBI's VCF provides funding equal to 80 – 87.50% of the projects cost for commercial application of indigenous technology.

(iv) Participating debenture: Such security carries charges in three phases — in the start-up phase no interest is charged, next stage a low rate of interest is charged up to a particular level of operation, after that, a high rate of interest is required to be paid.

PYQ May 2025

9	What are key features of bridge financing?

1) Bridge finance refers to loans taken by a company normally from commercial banks for a short period because of pending disbursement of loans sanctioned by financial institutions.

2) The bridge loans are repaid/ adjusted out of the term loans as & when disbursed by the concerned institutions.

3) Bridge loans are normally secured by hypothecating movable assets, personal guarantees and demand promissory notes.

4) Generally, rate of interest on bridge finance is higher than term loans.

PYQ Jan 2025

10 Explain the Environmental, Social and Governance linked Bonds

These bonds carry a responsibility of the issuer company to prioritize optimal environmental, social and governance (ESG) factors. Investing in ESG bonds is considered as socially responsible investing. ESG bonds can be project based - green bonds and social bonds; and target-based – sustainability linked bonds (SLBs).

- **Green bonds:** These are the most popular ESG bonds that are issued by a financial, non-financial or public institution, where the bond proceeds are used to finance "green projects". Green projects are aimed at positive environmental and/or climate impact including the cultivation of eco-friendly technology.

- **Social bonds:** These bonds finance the socially impactful projects. The projects here are related to the social concerns such as Human rights, Equality, animal welfare etc.

- **Sustainability-linked bonds (SLBs):** These bonds are combination of green bonds and social bonds. Proceeds of SLBs are not meant for a specific project but for general corporate purpose to achieve Key Performance Indicator (KPIs).

PYQ Jan 2025

11 State any two advantages of virtual banking.

1) Lower cost of handling a transaction.
2) The increased speed of response to customer requirement.
3) Lower cost of operating branch network along with reduced staff costs leads to cost efficiency.
4) It allows the possibility of improved and a range of services being made available to the customer rapidly, accurately and at his convenience.

PYQ Sep 2024

12 Discuss any 2 advantages & disadvantages of debentures.

Advantages:
1) Cost of debentures is much lower than cost of preference or equity capital as **interest is tax-deductible**. Also, investors consider debenture investment **safer** than equity or pref &thus expect a lower return on debenture investment.
2) Debenture financing **does not result in dilution of control**.

Disadvantages:
(i) Interest & repayment of principal amount is an **obligatory payment**.
(iii) Debenture financing **enhances financial risk** associated with the firm because of above reason.

PYQ May 2024

13	ABC Ltd. is approaching the banks for financing its business activity. You are required to describe any four forms of bank credit for the consideration of the company

(i) Cash Credit: This facility will be given by the banker to the customers by giving certain amount of credit facility on continuous basis. The borrower will not be allowed to exceed the limits sanctioned by the bank.

(ii) Bank Overdraft: It is a short-term borrowing facility made available to the companies in case of urgent need of funds. The banks will impose limits on the amount they can lend. When the borrowed funds are no longer required they can quickly and easily be repaid. The banks issue overdrafts with a right to call them in at short notice.

(iii) Bills Discounting: The Company which sells goods on credit will normally draw a bill on the buyer who will accept it and sends it to the seller of goods. The seller, in turn discounts the bill with his banker. The banker will generally earmark the discounting bill limit.

(iv) Bills Acceptance: To obtain finance under this type of arrangement a company draws a bill of exchange on bank. The bank accepts the bill thereby promising to pay out the amount of the bill at some specified future date.

(v) Bank Guarantees: Bank guarantee is one of the facilities that the commercial banks extend on behalf of their clients in favour of third parties who will be the beneficiaries of the guarantees.

MTP Aug 2025

14	Is there any difference between crowd funding and peer to peer lending? EXPLAIN briefly. OR Explain the features of crowd funding. (PYQ May 2024)

Crowd funding means raising money for an individual or organisation from a group of people to fund a project, typically via internet (social media and crowdfunding websites). It generally involves collecting funds from family, friends, strangers, corporates and many more in exchange of equity (known as Equity funding), loans (known as P2P lending) or nothing at all (i.e. donation).

This source of funding also helps start-up to substantiate demand for their product before entering into production.

In the crowdfunding process, three parties are involved i.e. fund raiser, mediator and fund investor. The platforms (mediator) may also charge certain fees in the form of processing fee, transaction fee, etc. either as a fixed amount or a percentage or in combination of both.

Peer-to-Peer (P2P) lending: It is that category of crowdfunding where lenders match with the borrowers in order to provide unsecured loans through online platform. The fund raised are paid back by the borrowers with interest, though this kind of lending involves certain risk of defaults (just as the banks bear in the case of conventional method of lending). Anyone interested in investing money under P2P lending can visit the P2P lending platforms and choose amongst borrowers considering risk & returns. Some of the platforms offering P2P lending are i2iFunding, Lendbox, Faircent, Rupee Circle, etc.

Hence, we can say that the **crowd funding is a broader concept** and P2P lending is basically a part of crowd funding.

	MTP Sep 2025
15	**A firm is managing its finances and aims to ensure that it has access to funds for the long term. It evaluates various sources like equity, debt, retained earnings, and also credit offered by suppliers. Which of the above mentioned sources should be classified as a short-term source of finance and why by mentioning its characteristics in brief?**

Trade credit is a facility offered by suppliers that allows the buyer to purchase goods and services now and pay later, typically within 30 to 90 days. While it may appear essential for operations and cash flow, it is actually a form of short-term financing. It is:

1) A part of working capital management.
2) Used to fund day-to-day operational needs.
3) Thus, not suitable or classified as a long-term source of finance.

FM Chapter 3 – Ratio Analysis

MTP Apr 2022

1 DISCUSS the limitations of financial ratios

1. **Diversified product lines**: Many businesses operate a large number of divisions in quite different industries. In such cases ratios calculated on the basis of aggregate data cannot be used for inter-firm comparisons.
2. **Financial data are badly distorted by inflation**: Historical cost values may be substantially different from true values. Such distortions of financial data are also carried in the financial ratios.
3. **Seasonal factors** may also influence financial data.
4. To give a good shape to the popularly used financial ratios (like current ratio, debt – equity ratios, etc.): The **business may make some year-end adjustments**. Such window dressing can change the character of financial ratios which would be different had there been no such change.
5. **Differences in accounting policies and accounting period**: It can make the accounting data of two firms non-comparable as also the accounting ratios.
6. **There is no standard set of ratios against which a firm's ratios can be compared**: Sometimes a firm's ratios are compared with the industry average. But if a firm desires to be above the average, then industry average becomes a low standard. On the other hand, for a below average firm, industry averages become too high a standard to achieve.
7. **Financial ratios provide clues but not conclusions**. These are tools only in the hands of experts because there is no standard ready-made interpretation of financial ratios policy.

FM Chapter 4 – Cost of Capital

	MTP Dec 2025
1	**TechWave Ltd. plans to buy new machinery worth Rs 50 lakh to increase production. The Finance Manager says that before investing, the company must understand the cost of capital. In this regard you are required to EXPLAIN the meaning of cost of capital. Also, briefly STATE three reasons why cost of capital is significant for decision-making at TechWave Ltd.**

Cost of capital is the return expected by the providers of capital (i.e. shareholders, lenders and the debt-holders) to the business as a compensation for their contribution to the total capital.

The cost of capital is important to arrive at correct amount and helps the management or an investor to take an appropriate decision. The correct cost of capital helps in the following decision making:

(i) Evaluation of investment options: The estimated benefits (future cash flows) from available investment opportunities (business or project) are converted into the present value of benefits by discounting them with the relevant cost of capital. Here it is pertinent to mention that every investment option may have different cost of capital hence it is very important to use the cost of capital which is relevant to the options available.

(ii) Financing Decision: When a finance manager has to choose one of the two sources of finance, he can simply compare their cost and choose the source which has lower cost. Besides cost, he also considers financial risk and control.

(iii) Designing of optimum credit policy: While appraising the credit period to be allowed to the customers, the cost of allowing credit period is compared against the benefit/ profit earned by providing credit to customer of segment of customers. Here cost of capital is used to arrive at the present value of cost and benefits received.

FM Chapter 5 – Capital Structure

RTP Jan 2026

1 What are the causes of over-capitalization?

1) Raising more money through issue of shares/deb than co. can employ profitably.
2) Borrowing huge amount at higher rate than rate at which company can earn.
3) Excessive payment for the acquisition of fictitious assets such as goodwill etc.
4) Improper provision for depreciation, replacement of assets & distribution of dividends at a higher rate.
5) Wrong estimation of earnings and capitalization

PYQ Sep 2024

2 What are the remedies of over-capitalization?

1) Company should go for thorough reorganization.
2) Buyback of shares.
3) Reduction in claims of debenture-holders and creditors.
4) Value of shares may also be reduced. This will result in sufficient funds for the company to carry out replacement of assets.

MTP Dec 2025

3 DISCUSS financial break-even and EBIT-EPS indifference analysis.

Financial BEP→ minimum level of EBIT to satisfy all fixed financial charges i.e. interest & preference dividend. It is the level of EBIT→ where EPS = zero.
If EBIT is less than financial BEP→ then EPS will be negative
But, if EBIT is more than BEP→ then more fixed costs financing instruments can be taken in capital structure, otherwise, equity would be preferred.

EBIT-EPS analysis is a vital tool for designing the optimal capital structure of a firm. The objective of this analysis is to find the EBIT level that will equate EPS regardless of the financing plan chosen.

$$\frac{(EBIT - I_1)(1-T)}{E_1} = \frac{(EBIT - I_2)(1-T)}{E_2}$$

PYQ May 2025

4 What is hierarchy of financing under 'Pecking Order' theory, and why does it exist?

Pecking order theory suggests that managers may use various sources for raising of fund in the following order:
1) Managers first choice is to use internal finance.
2) In absence of internal finance, they can use debt etc.
3) Managers may issue new equity shares as a last option. The hierarchy of financing Pecking order exist to Minimize the cost of capital, financial control and avoiding negative market signals.

	MTP Aug 2025
5	**Briefly EXPLAIN the process for analysing Optimal Capital Structure**

1) Objective of financial management is to maximize wealth. Therefore, one should choose a capital structure which maximizes wealth. For this purpose, following analysis should be done:
2) EBIT-EPS-MPS analysis: Chose a capital structure which maximizes market price per share. For that, start with same EBIT for all capital structures and calculate EPS. Thereafter, either multiply EPS by price earning ratio or divide it by cost of equity to arrive at MPS.

3) Indifference Point analysis: In above analysis, we have considered value at a given EBIT only. What will happen if EBIT changes? Will it change your decision also? To answer this question, you can do indifference point analysis.

4) Financial Break-Even Point (BEP) analysis: With change in capital structure, financial risk also changes. Though this risk has already been considered in PE ratio or in cost of equity in point one above, but one may calculate and consider it separately also by calculating Financial BEP.

	MTP Aug 2025
6	**A company is currently debt-free and is considering raising Rs.10 crore. As a finance manager, what practical factors would you evaluate before deciding whether to raise funds through debt, equity, or a mix of both? JUSTIFY your approach briefly.**

Before deciding the capital structure, one should evaluate:

1) **Cost of capital –** Debt is cheaper due to tax shield, but excessive debt increases financial risk.
2) **Control considerations –** Equity dilutes ownership; debt doesn't.
3) **Current interest rate and market conditions –** Favorable debt terms or bullish equity market can guide the choice.
4) **Cash flow stability –** If the company has stable cash flows, it can safely take on debt. If the company has stable earnings and wants to retain control, a mix with a reasonable portion of debt to optimize cost is favourable.

FM Chapter 6 – Leverage Decisions

PYQ May 2025

1

"The total risk of any business is the combination of degree of operating and financial risk". In the light of the above statement, you are required to consider the first two columns of the given table and give your comments in the 3rd column.
Your comments should depict the total risk profile by using the most appropriate amongst the following three words only:
Lower, Higher and Moderate
Also select the best combination of DOL and DFL from the given table

DOL	DFL	Comments
Low	High	
High	Low	
High	High	

DOL	DFL	Comments
Low	High	Moderate total risk. Best combination. Higher financial risk is balanced by lower total business risk.
High	Low	Moderate total risk. Not a good combination. Lower EBIT due to higher DOL and lower advantage of trading on equity due to low DFL.
High	High	Higher total risk. Very risky combination.

FM Chapter 7 – Investment Decisions

PYQ Jan 2025	
1	**State the concept of exclusion of Financing Cost Principle.**

The exclusion of financing costs principle means that:
(i) The interest on long-term debt is ignored while computing profits and taxes.
(ii) The expected dividends are deemed irrelevant in cash flow analysis.

PYQ May 2024	
2	**Discuss the relevance of Payback reciprocal in capital budgeting decisions.**

Reciprocal of the payback would be a close approximation of the Internal Rate of Return if the life of the project is at least twice the payback period and the project generates equal amount of the annual cash inflows.

The payback reciprocal is a helpful tool for quick estimation of rate of return of a project provided its life is at least twice the payback period.

It may be calculated as follows:
Payback Reciprocal = Average annual cash flows/initial Investment
Or
Payback Reciprocal = 1 / payback period

FM Chapter 8 – Dividend Decisions

MTP Dec 2025

1 EXPLAIN any common form of dividend.

Generally, the dividend can be of the following forms (depending upon some factors that will be discussed later):

1. **Cash dividend:** It is the most common form of dividend. Cash here means cash, cheque, warrant, demand draft, pay order or directly through Electronic Clearing Service (ECS) but not in kind.
2. **Share repurchases:** A share repurchase is transaction in which company buys back its own shares using corporate cash. This is done by lot of corporates these days.
3. **Stock dividend (Bonus Shares):** It is a distribution of shares in lieu of cash dividend. When the company issues new shares to its existing shareholders without any consideration it is called bonus shares.

MTP Nov 2025

2 STATE the Limitations of Walter's Model

1) The formula does not consider all the factors affecting dividend policy and share prices. Moreover, determination of market capitalisation rate is difficult.
2) Further, the formula ignores such factors as taxation, various legal and contractual obligations, management policy and attitude towards dividend policy and so on.

PYQ Sep 2024

3 List any four assumptions of Gorden's Model.

Gordon's model is based on the following assumptions:

1) Firm is an all equity firm i.e. no debt.
2) Ke will remain constant, because change in discount rate will affect the present value.
3) Retention ratio (b), once decide upon, is constant i.e. constant dividend payout ratio will be followed.
4) Growth rate (g = br) is also constant, since retention ratio and IRR will remain unchanged and growth, which is the function of these two variable will remain unaffected.
5) Ke> g, this assumption is necessary and based on the principles of series of sum of geometric progression for 'n' number of years.
6) All investment proposals of the firm are to be financed through retained earnings only

FM Chapter 9 – Working Capital Management

RTP Jan 2026

1	**What do you understand by Spontaneous Sources of finance and explain its sources of finance?**

Spontaneous sources of finance are those which naturally arise in the course of business operations. Trade credit, credit from employees, credit from suppliers of services, etc. are some of the examples which may be quoted in this respect.

(i) Trade Credit: Trade credit is a spontaneous source of finance which is normally extended to the purchaser organization by the sellers or services providers. It contributes to about one-third of the total short-term requirements.
(ii) Bills Payable: In the case of "Bills Payable" the purchaser will have to give a written promise to pay the amount of the bill/invoice either on demand or at a fixed future date to the seller or the bearer of the note.
(iii) Accrued Expenses: The accrued expenses refer to the services availed by the firm, but the payment for which has yet to be made. It is a built in and an automatic source of finance as most of the services like wages, salaries, taxes, duties etc., are paid at the end of the period.

MTP Aug 2025

2	**A finance executive of XYZ company claims that "Increasing the firm's current ratio by accumulating more inventory is a sound strategy for improving working capital efficiency."** **As a financial analyst, do you agree with the statement? Justify your answer using relevant working capital concepts, and explain the potential risks associated with the strategy mentioned.**

While accumulating more inventories may increase the current ratio (Current Assets / Current Liabilities), it does not necessarily improve working capital efficiency. The reasons are as follows:

1) **Inefficient Use of Funds:** Increasing inventory ties up cash in unsold goods, which may lead to higher holding costs (storage, insurance, obsolescence).
2) **False Sense of Liquidity:** Inventory is a less liquid current asset compared to cash or receivables. A high current ratio driven by inventory does not ensure actual liquidity.
3) **Decline in Inventory Turnover:** More inventories may reduce the inventory turnover ratio, indicating poor inventory management.
4) **Risk of Obsolescence:** Excess stock might become obsolete, especially in fast-moving industries (e.g., technology, fashion), resulting in losses.
5) **Working Capital Efficiency Metrics:** Efficient working capital management focuses on optimizing the cash conversion cycle (CCC) not just boosting ratios. Stockpiling inventory may increase CCC, reducing efficiency.

Hence, it may be concluded that increasing inventory inflates the current ratio but harms working capital efficiency by locking funds in slow-moving assets. True efficiency comes from balancing liquidity with turnover, not simply increasing asset size.

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