CA INTER
FM
TOP 50 QUESTIONS

"Best way to revise for exams"

FOR COMPLETE REVISION

SOLUTION BOOK

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Sol 1

	Capital		
ESC	100 ×	5000 Shares	= ₹5,00,000
10% Debentures			= ₹5,00,000

Sol (a)

Income Statement

Particulars	At 50,000 units	At 60,000 units
Sales @12	× 50,000 = ₹6,00,000	× 60,000 = ₹7,20,000
− VC @ 8	× 50,000 = −₹4,00,000	× 60,000 = −₹4,80,000
Contribution @4	₹2,00,000	= ₹2,40,000
− Fixed cost	− ₹1,00,000	− ₹1,00,000
EBIT	₹1,00,000	₹1,40,000
− Interest (5L × 6%)	− 50,000	− 50,000
EBT	₹50,000	₹90,000
− Tax 50%	−₹25000	−₹45000
EAT & EAES	₹25000	₹45,000
÷ number of equity shares	÷ 5000	÷ 5000
EPS	₹5/share	₹9/share

(i) % change in EPS = $\frac{9-5}{5} \times 100 = \frac{4}{5} \times 100 =$ 80%

Increase in EPS by 80%.

(ii) $DFL = \frac{EBIT}{EBT}$

$DFL = \frac{100000}{50000} = 2$

$DFL = \frac{140000}{90000} = 1.55$

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

$DOL = \frac{2,00,000}{1,00,000} = 2$

$DOL = \frac{2,40,000}{1,40,000} = 1.71$

(iv) Comment,

when Sales increased from 50,000 units to 60,000 units

→ The EPS has increased from ₹5 to ₹9. which shows more income for equity shareholders.

→ DOL has decreased from 2 to 1.71 which shows reduced operating risk.

→ DFL has decreased from 2 to 1.55 which shows reduced financial risk.

Sol 2

Sales =	15,00,000	100%
− VC (BIS)	−4,50,000	−30%
Contribution =	10,50,000	70%
− FC (BIS) =	−3,00,000	
EBIT (on i)	7,50,000	
− Int (BIS)	− 1,50,000	
EBT (on ii)	6,00,000	

(on i) DoL = 1.4

$$\frac{\text{Cont}}{\text{EBIT}} = 1.4$$

$$\frac{10,50,000}{\text{EBIT}} = 1.4$$

$$\frac{10,50,000}{1.4} = \text{EBIT}$$

EBIT = 7,50,000

(on ii) DFL = 1.25

$$\frac{\text{EBIT}}{\text{EBT} - \frac{\text{Pref Div}}{(1-t)}} = 1.25$$

$$\frac{7,50,000}{\text{EBT}} = 1.25$$

EBT = 6,00,000

Sol 8 Main Solution

(i) % Change in Sales = 15% ✓

% Change in Taxable Income (EBT) = ?

Self NOTE: (In this Question % change in EBT will be used in place of % Change in EPS, as EBT is last spot in this Question.)

$DCL = DOL \times DFL = 1.4 \times 1.25 = 1.75$

$$DCL = \frac{\%\text{ change in EPS}}{\%\text{ change in Sales}} = \frac{\%\text{ change in Taxable Income (EBT)}}{\%\text{ change in Sales}}$$

$$1.75 = \frac{\%\text{ change in Taxable Income}}{15\%}$$

→ 26.25% = % Change in Taxable Income (EBT).

To verify

Income Statement

Particulars	original	After 15% sale increase
Sales	15,00,000	+15% = 1725,000
− Variable cost	−4,50,000	+15% = −517500
Contribution	10,50,000	12,07,500
− FC	−3,00,000	−3,00,000
EBIT	7,50,000	9,07,500
− Interest	−1,50,000	−1,50,000
EBT	6,00,000	7,57,500

$$\%\text{ Change in EBT} = \frac{757500 - 600000}{600000} \times 100 = 26.25\%$$

Hence Verified.

Sol 3

Income Statement

Particulars	Amt (₹)
Sales	84,00,000
− VC 75% (B/S)	63,00,000
Contribution 25%	21,00,000
− FC	7,50,000
EBIT	13,50,000
− Interest (30L × 12%)	− 3,60,000
− other Int (B/S)	18,777
EBT (con ii) →	9,71,223
− Tax 30%	2,91,367
EAT & EAES	6,79,856
÷ No of Equity shares	÷ 50000
EPS	13.597

(con i) Verify DFL

EBIT = 13,50,000

− Int = 3,60,000

EBT = 9,90,000

$DFL = \frac{EBIT}{EBT} = 1.36$

Given DFL = 1.39

Thus DFL does not match.

(con ii) Let us calculate using given DFL

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

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

EBT = 9,71,223

(i) $DoL = \frac{Cont}{EBIT} = \frac{21,00,000}{13,50,000} = 1.56$

(ii) $DCL = \frac{Cont}{EBT} = \frac{21,00,000}{971223} = 2.16$

(iii) EPS = 13.597 / share

(iv) Earning yield $= \frac{EPS}{MPS} = \frac{13.597}{200} \times 100 = 6.798\%$

Sol 4

Income statement

Particulars	Amount (₹)
Sales	45,00,000
− VC (BIS)	31,50,000
Contribution	13,50,000
− FC	−2,25,000
EBIT	11,25,000
− Interest (20L × 12%)	−2,40,000
− Additional Int (BIS)	−603750
EBT (W(i))	2,81,250
− Tax 30%	−84375
EAT & EAES	196875
÷ No of shares	÷3,85,000
EPS	0.511

W(ii)

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

$1.2 = \frac{Cont}{Cont - 225000}$

$1.2(Cont - 225000) = Cont$

$1.2\,Cont - 270000 = Cont$

$0.2\,Cont = 270000$

$Cont = 1350000$

W(ii)

Cont = 1350000

− FC = −225000

EBIT = 1125000

− Int = −240000

EBT = 885000

$DCL = \frac{Cont}{EBT} = \frac{1350000}{885000}$

DCL = 1.525

(i) $PV\ ratio = \frac{Cont}{Sales} = \frac{1350000}{4500000} \times 100 = 30\%$

$EPS = \frac{EAES}{No\ of\ shares} = 0.511$

$Financial\ leverage = \frac{DCL}{DOL} = \frac{4.8}{1.2}$ (4 Times)

$Asset\ Turnover = \frac{Sales}{Asset} = \frac{4500000}{5850000}$

Asset Turnover ratio = 0.769

Given DCL = 4.8

$DCL = \frac{Cont}{EBT}$

$4.8 = \frac{1350000}{EBT}$

EBT = 2,81,250

W(iii)

BS

E	38.5L
D	20L
	58.5L

58.5L

(ii) Asset Turnover of SM Ltd. = 0.769 Times

Asset Turnover Industry = 1.1 Times.

Asset Turnover of SM Ltd is lowest (inadequate) as Compared to Industry.

(iii)

Sales		3562500
− VC	70%	−2493750
Cont	30%	1068750
− FC		−225000
EBIT		843750
− Int		−240000
− Additional Int		−603750
EBT		0

$\frac{1068750}{30} \times 100$

So, at Sales = ₹35,62,500

EBT = 0

Sol 5

Sales	100x
− VC	−6,00,000
Cont =	100x − 6,00,000
− FC	
EBIT	30,000 + 10x
− Int	3L × 10% = −30,000
EBT	100% 10x
− Tax	−50% −5x
EAT	50% 5x

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

$$4 = \frac{100x - 6,00,000}{30,000 + 10x}$$

$$4(30,000 + 10x) = 100x - 6,00,000$$

$$120000 + 40x = 100x - 6,00,000$$

$$720000 = 60x$$

$$12000 = x$$

Let Sales = 100x

So, EAT = 5x = 5% × 100x

∴ Sales = 12000 × 100 = 12,00,000

Sol (6)

Interest Coverage ratio = $\frac{\text{EBIT}}{\text{Interest}} = \frac{767}{162} =$ 4.73 Times

Debt Service Coverage ratio = $\frac{\text{EAT + Interest + Depreciation}}{\text{Interest + Principal (Instalment)}}$

$\Rightarrow \frac{480 + 162 + 155}{162 + 178} =$ 2.34 Times

EBIT	767
− Int	−162
EBT	605
− Tax	−125
EAT	480

Qd 7

(i) Income Statement

Particulars	Amt (₹)
Sales	60,00,000
− COGS	−18,00,000
Gross Profit	42,00,000
− operative Exp (CB 18)	33,90,000
+ operating Income	—
operating Profit = EBIT	8,10,000
− Interest	−60,000
EBT 100%	7,50,000
− Tax − 50%	−3,75,000
EAT 50%	3,75,000

(ii) Balance Sheet

share capital	10,50,000	FA (BS)	17,00,000
R & S	4,50,000		
		CA	4,00,000
15% Debentures	4,00,000	Stock	1,50,000
		Debtors	2,00,000
CL		Cash	50,000
Sundry creditors	2,00,000		
	21,00,000		21,00,000

Cond (i) Return on Networth

$$25\% = \frac{EAT}{\text{Networth}} \times 100$$

$$25\% = \frac{375000 \text{ (working iv)}}{\text{Networth}} \times 100$$

$$\text{Networth} = \frac{375000 \times 100}{25}$$

Networth = ₹ 15,00,000

Working (ii)

Networth = 15,00,000

Share Capital : Reserves

7 : 3

$15,00,000 \times \frac{7}{10}$, $15,00,000 \times \frac{3}{10}$

₹ 10,50,000 & 4,50,000 ✓

Working (iii)

$$CR = \frac{CA}{CL} = \frac{2}{1} = \frac{CA}{2,00,000}$$

4,00,000 = CA

CA → Stock 1,50,000; Debtors 2,00,000; Cash (CB) 50,000

WN (v) Net Profit to Sales = 6.25%

$\frac{NP}{Sales} \times 100 = 6.25\%$

$\frac{NP}{60,00,000} \times 100 = 6.25\%$

NP = 3,75,000 = EAT

WN (iv) ITR = $\frac{COGS}{Av\ Stock}$

$12 = \frac{18,00,000}{Av\ Stock}$

Av Stock = 1,50,000

Assumed

Closing Stock = Av Stock = 1,50,000.

WN (vi) Interest on Debentures = Int rate × Debentures

60,000 = 15% × Debentures

Debentures = ₹4,00,000

Sol 8

Balance Sheet

Capital Block	6,00,000	FA (BIS)	4,00,000
Share Capital 3,00,000			
Debentures 1,50,000		CA	4,00,000
Net Profit 1,20,000		Debtors 2,00,000	
Reserves 30,000		Stock 1,50,000	
		Other CA 50,000 (BIS)	
CL	2,00,000		
Creditors 1,50,000			
Other CL 50,000 (BIS)			
	8,00,000		8,00,000

Cond (i) $CR = \frac{CA}{CL} = 2$

$CA = 2CL$

$WC = CA - CL$

$2,00,000 = 2CL - CL$

$2,00,000 = CL$

$4,00,000 = CA$

Cond (ii) $\frac{\text{Capital Block}}{CA} = \frac{3}{2}$

$\frac{\text{Capital Block}}{4,00,000} = \frac{3}{2}$

$\text{Capital Block} = 4L \times \frac{3}{2} = 6L$

Capital Block = 6,00,000

- Net Profit = 10% × Sales = 10/100 × 12 = 1,20,000
- Reserves = 2.5% × Sales = 30,000

Balance → 4,50,000

Debentures : Share Capital

1 : 2

₹1,50,000 ₹3,00,000

WON(iii) FA To Turnover

$$\frac{FA}{Sales} = \frac{1}{3}$$

$$\frac{4,00,000}{Sales} = \frac{1}{3}$$

Sales = 12,00,000

WON(iv) Sales = 12L

Cash sale : Credit Sales

1 : 2

4,00,000 & 8,00,000

WON(v)

$$\text{Creditors Velocity} = \frac{12 \times \text{Av Creditors}}{\text{Credit Purchases}}$$

$$2 = \frac{12 \times \text{Creditors}}{\text{Credit Purchases (= COGS)}}$$

$$2 = \frac{12 \times \text{Creditors}}{9,00,000}$$

Creditors = 1,50,000

WON(vi)

$$\text{Stock Velocity} = \frac{12 \times \text{Av Stock}}{\text{COGS}}$$

$$2 = \frac{12 \times \text{Stock}}{\text{COGS}}$$

$$2 = \frac{12 \times \text{Stock}}{9,00,000}$$

Stock = 1,50,000

WON(vii)

$$\text{Debtors Velocity} = \frac{12 \times \text{Av Debtors}}{\text{Credit Sales}}$$

$$3 = \frac{12 \times \text{Debtors}}{\text{Credit Sales}}$$

$$3 = \frac{12 \times \text{Debtors}}{8,00,000}$$

Debtors = 2,00,000

(viii)

Sales	12,00,000
− GP	25% − 3,00,000
COGS	9,00,000

Opening Stock + Purchases − Closing Stock = COGS

Purchases = 9,00,000

Sol 9

Balance Sheet Rudra Ltd.

Networth (120L÷4)		30,00,000	Fixed Asset (1,20,00,000÷4)		30,00,000
• Capital	10,00,000		Current Assets		45,00,000
• Reserves	20,00,000		Stock (1,20L÷6) = 20L		
10% long term Debt (120L÷4)		30,00,000	Debtors	20L	
CL		15,00,000	Cash	5L	
• Creditors	10,00,000				
• O/S Int	3,00,000				
• Other CL (B/S)	2,00,000				
		75,00,000			75,00,000

Working

B/S

Networth		→ (x/4)	FA		x/4
Capital	—				
Reserve	—				
10% long term loan		(x/4)	CA		(2x/6 + 5,00,000)
CL			Stock	(x/6)	
Creditors	(x/12)	(2x/18 + 5,00,000/3)	Debtors	(x/6)	
O/S Interest			Cash	5,00,000	

Working (ii)

$$\frac{\text{Debt}}{\text{Equity}} = \frac{1}{1}$$

$$\frac{\text{Debt}}{(x/4)} = \frac{1}{1}$$

$$\text{Debt} = \frac{x}{4}$$

Working (iii)

$$CR = \frac{CA}{CL} = \frac{3}{1}$$

$$CA = 3CL$$

$$\left(\frac{2x}{6} + 5,00,000\right) = 3CL$$

$$\frac{2x}{18} + \frac{5,00,000}{3} = CL$$

Working (iv)

$$\text{Acid Test Ratio} = \frac{QA}{CL} = \frac{8}{3}$$

(v) FA TR = Sales / FA = 4/1

x/FA = 4/1

x/4 = FA

(vi) ΔTR = Sales / Δstock = 6

x/Δstock = 6

x/6 = Δstock

(vii) Δstock / Debtors = 1/1

Δstock = Debtors

x/6 = Debtors

(viii) Sales / Networth = 4/1

x/Networth = 4/1

x/4 = Networth

(ix) Capital / Reserve = 1/2

Networth = 30L

Capital : Reserve = 1 : 2

30L × 1/3 = 10L

30L × 2/3 = 20L

(x) GP = 20% on cost = 1/5 on sales

GP = 1/6 on sales.

Sales = x

GP = 1/6 × x = 1/6 x

COGS = 5/6 x

(xi) COGS / Creditors = 10/1

5x/6 / Creditors = 10/1

x/12 = Creditors

120/12 = 10L

Def Sales = x

(xii) Int o/s = 10% × loan

Int o/s = 10% × 30L

= 3 lacs

Total Liabilities = Total Assets

Networth + Long term loan + CL = FA + CA

$\frac{x}{4} + \frac{x}{4} + \frac{2x}{18} + \frac{5,00,000}{3} = \frac{x}{4} + \frac{2^2x}{8} + 5,00,000$

$\frac{x}{4} + \frac{2x}{+89} - \frac{2x}{63} = 5,00,000 - \frac{5,00,000}{3}$

$\frac{x}{4} + \frac{x}{9} - \frac{x}{3} = \frac{5,00,000}{1} - \frac{5,00,000}{3}$

$\frac{9x + 4x - 12x}{36} = \frac{15,00,000 - 5,00,000}{3}$

$\frac{1x}{36} = \frac{10,00,000}{3}$

$x = \frac{10,00,000}{3} \times 36 = 1,20,00,000$

Sol 10

Statement of WACC (MV weights)

Sources	Market value		weights (A)	Rate (B)	A × B
ESC 50,000 × 39 = 19,50,000 R&S		₹ 19,50,000	1950/2926	19%	
8% Pref SC	(4,00,000/25) × 16 = 2,56,000		256/2926	12.5%	
12% Debt	(6,00,000/100) × 120 = 7,20,000		720/2926	7%	
		2926000			WACC = 15.48%

Working (i) Pref Share

Cum Div Price = ₹18
− Pref Div −2
(25 × 8%)
Ex-Div Price = ₹16

$$K_P = \frac{P_D}{P_0} = \frac{₹2}{16} = 12.5\%$$

Working (ii) Debt

$$K_d = \frac{I(1-t)}{P_0} = \frac{₹12(1-30\%)}{120} = 7\%$$

Self Note: Iss Question mei Ke = Ker thai isliye humne distribute MVeq ES Ko nahi kiya thai into MVeq ESC & MVeq RE

Sol 11

Pattern of raising additional finance.

(c) Total funds required = ₹20,00,000

Debt : Equity = 30 : 70

Debt ₹6,00,000

- upto 3.6L @ 8%
- Next 2.4L @ 12%

Equity ₹14,00,000

- RE ₹4,20,000
- fresh ESC ₹9,80,000

Sol

(a)

$EPS = ₹4$,

$DPS = D_0 = ₹4 \times 50\% = ₹2$.

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

$$Ke = \frac{2(1+10\%)}{44} + 10\% = 15\%$$

$Ke = K_{RE} = 15\%$

(b)

Debt	amt	weight (A)	Rate (B)	(A) × (B)
upto ₹3,60,000	3.6L	3.6/6	8%(1−40%) = 4.8%	2.88%
Next ₹2,40,000	2.4L	2.4/6	12%(1−40%) = 7.2%	2.88%
	6L			5.76%

Post Tax average cost of additional Debt = 5.76%.

(a) Computation of WACC

Particulars	Amount	Weight (A)	Rate (B)	(A) x (B)
Equity & RE	14,00,000	14/20	15%	
Debt	6,00,000	6/20	5.76%	
	20,00,000			

WACC = Ko = 12.23%

Sol 12

(WN 1)

Existing		Capital optimal weight
Debt	30m	0.5
Equity	30m	0.5
	60m	

Additional funds	
Debt	0.5
Equity	0.5
	30m

RE = 3m

t = 40%

New Debt at Par, Int = 8%.

Equity, MPS = ₹30 NP = ₹27.

Dividend yield = $\frac{D_1}{P_0} = \frac{₹1.2}{30 \text{ (MPS)}} = 4\%$; g = 8%.

@ Current capital structure is Debt 0.5
Equity 0.5
and it is considered optimum.

So, Total New funds = 30m

- Debt (0.5) — 15m
- (0.5) Equity — 15m
  - Retained Earning — 3m
  - Fresh Equity — 12m

(b) we need equity funds = 15m
Internally generated (RE) = 3m
fresh Equity = 12m

(c) components of common equity

Kre = Cost of retained Earning = $\frac{D_1}{MP} + g = \frac{1.2}{30^*} + 8\% = 12\%$

Ke = Cost of fresh equity = $\frac{D_1}{NP} + g = \frac{1.2}{27} + 8\% = 12.44\%$

fresh equity

(d) Breaking point → At what capital expenditure rate will change.

$= \frac{\text{Amount of retained Earning}}{\text{weight of equity}} = \frac{3m}{0.5}$

$= ₹ 6m$

So, the cost of capital changes after ₹6m total capital.

$I(1-t) = 8\%(1-40\%) = 4.8\%$

(c) (i) For First 6m (First Breaking Point)

	Amt	weight (A)	Rate (B)	(A) × (B)
RE (Equity)	3m	0.5	12%	6%
Debt	3m	0.5	4.8%	2.4%
	6m			

WMCC$_1$ = 8.4%

(ii) For Next 24m (Second Breaking Point)

	Amt	weight (A)	Rate (B)	(A) × (B)
Fresh Equity	12m	0.5	12.44%	6.22%
Debt	12m	0.5	4.8%	2.4%
	24m		WMCC$_2$	8.62%

(iii) Method (1)

Calculation of WACC for whole 30m.

		weight	Rate
RE	3m	0.1	12%
Equity	12m	0.4	12.44%
Debt	15m	0.5	4.8%
	30m	1	WACC → 8.576%

Method (2)

	Amt	weight	Rate
First 6m	6m	0.2	8.4%
Next 24m	24m	0.8	8.62%
	30m		WACC 8.576%

Sol 13

WN(i) Existing Capital Structure → optimum

Debenture	30000	0.15
PSC	10000	0.05
Equity	1,60,000	0.80
	2,00,000	1

WN(ii) MPS = ₹23.6 = P_0

D_1 = (Last EPS) × 50% = ₹2.36 × 50% = D_1 ₹1.18

So, Remaining must be RE ₹2.36 × 50% = ₹1.18 RE per share

Total RE = 1.18 × 10,000 = ₹11800

WN(iii)

$$K_d = \frac{I(1-t)}{NP} = \frac{₹16(1-50\%)}{96} = 8.33\%$$

WN(iv)

$$K_P = \frac{PD}{NP} = \frac{₹1.1}{9.2} = 11.96\%$$

WN(v)

$$K_{ee}\ (old) = \frac{D_1}{P_0} + g$$

$$K_{ee} = \frac{1.18}{23.6} + 10\% = 15\%$$

$$g = \frac{1.1 - 1.0}{1.0} \times 100 = 10\%$$

↓ we have calculated g from EPS table.

Solution

(A) (i) K_d = 8.33%

(ii) K_P = 11.96%

(iii) K_e (from RE) = K_{re} = 15%

(B) WMCC (only using RE (no new shares))

Source	Weight	×	Rate
Debt	0.15	×	8.33%
PSC	0.05	×	11.96%
Equity (RE)	0.80	×	15%

WACC ⇒ 13.85%

(C) Breaking Point

Total capital before fresh equity is raised.

EPS of 2010 = ₹2.36

RE = ₹2.36 × 50% = ₹1.18 per share

Total RE = ₹1.18 × 10,000 shares = ₹11,800

$$\text{Breaking Point} = \frac{₹11,800}{0.80} = ₹14,750$$

(D) Fresh equity K_e = $\frac{D_1}{NP} + g = \frac{1.18}{20^+} + 10\% =$ 15.9%

Debt	0.15	×	8.33%
PSC	0.05	×	11.96%
Equity (new fresh)	0.80	×	15.9%

WMCC ⇒ 14.57%

Q14

Ans (i) Corrected Income Statement of last year

EBIT	18,00,000
- Int (10,00,000 × 15% × 9/12)	-1,12,500
EBT	16,87,500
- Tax 35% DAT	-5,90,625
EAT or EAES	10,96,875
÷ Number of Shares	÷ 1,00,000
EPS	₹10.97
MPS	₹109.7

Ans (ii)

Debentures × 15% × 9/12 = 1,12,500

Debentures = ₹10,00,000.

Original P/E ratio = MPS / EPS = ₹109.7 / ₹10.97 = 10 Times.

Ans (iii) Existing Capital

ESC = 1,00,000 × ₹10 = ₹10,00,000

RAS = ₹12,00,000

15% Debentures ₹10,00,000

Current CE = ₹32,00,000

Existing EBIT = ₹18,00,000

Existing ROI = EBIT / CE = ₹18,00,000 / ₹32,00,000 × 100 = 56.25%.

Ans (iv) Additional funds required ₹10L

Option (1)

- Loans ₹10,00,000
- old ESC 10,00,000, old RE 12,00,000 → Equity 22,00,000
- old Debt 10,00,000

Option (2)

- ESC 10000 × 100 = ₹10,00,000

old ESC = 10,00,000, old RE = 12,00,000, New Equity 10,00,000 → Equity 32,00,000

• New loan ₹10,00,000

$\frac{D}{D+E} = \frac{20L}{20L+22L} = \frac{20}{42} > 40\%$

47.62% > 40%

Paap!!! hogaya hai

★ So, New P/E ratio 10 − 25% ⇒ 7.5 Times

Additional Debt / Int rate = 18%

Old Debt = 10,00,000

$\frac{D}{D+E} = \frac{10L}{10L+32L} = \frac{10}{42}$

23.80% < 40%

No Paap!!!

New P/E ratio = 10 Times

Additional Debt / Int = —

Statement for calculation of MPS

Particulars	Loan option	Equity option
New EBIT (42L × 56.25%)	₹ 23,62,500	₹ 23,62,500
− Interest		
old 10L × 15%	− ₹ 1,50,000	− ₹ 1,50,000
New 10L × 18%	− ₹ 1,80,000	×
EBT	₹ 20,32,500	₹ 22,12,500
− Tax × 35%	− ₹ 7,11,375	− ₹ 7,74,375
EAT / EAES	₹ 13,21,125	₹ 14,38,125
÷ no of shares	÷ 1,00,000	÷ 1,10,000
EPS	₹ 13.21	₹ 13.07
★ P/E ratio	× 7.5 Times	× 10 Times
MPS	₹ 99.075	₹ 130.7

Advice: Selection option (II) (Raise funds using Equity) because it has better MPS.

Q.15 contd

Amount required = ₹60L

Alternative (a)

ESC 30,000 Shares × ₹200 = ₹60L

Alternative (b)

18% Debt (60L × 2/3) = 40L

Equity Share Capital (60L × 1/3) = 20L
(10,000 Shares × ₹200)

Main Solution

For Indifference Point

$$EPS_1 = EPS_2$$

$$\frac{(EBIT - 0)(1-40\%) - 0}{30,000} = \frac{(EBIT - 720000)(1-40\%) - 0}{10,000}$$

$$\frac{(EBIT)(0.6)}{30,000} = \frac{(EBIT - 720000)(0.6)}{10,000}$$

$$\frac{(EBIT)(0.6)}{30,000} \times \frac{10000}{(0.6)} = (EBIT - 720000)$$

$$\frac{EBIT}{3} = (EBIT - 720000)$$

$$EBIT = 3(EBIT - 7,20,000)$$

$$EBIT = 3EBIT - 21,60,000$$

$$21,60,000 = 2\,EBIT$$

$$₹\,10,80,000 = EBIT.$$

So, Indifference level EBIT = ₹10,80,000.

★ Calculating Indifference Level EPS

$$\frac{(10,80,000 - 0)(1-40\%) - 0}{30,000} = \boxed{₹21.6}$$

(b) Indifference Level EBIT = ₹ 10,80,000. ✓
Indifference Level EPS = ₹ 21.6. ✓

(ii) which Plan is better in different situation

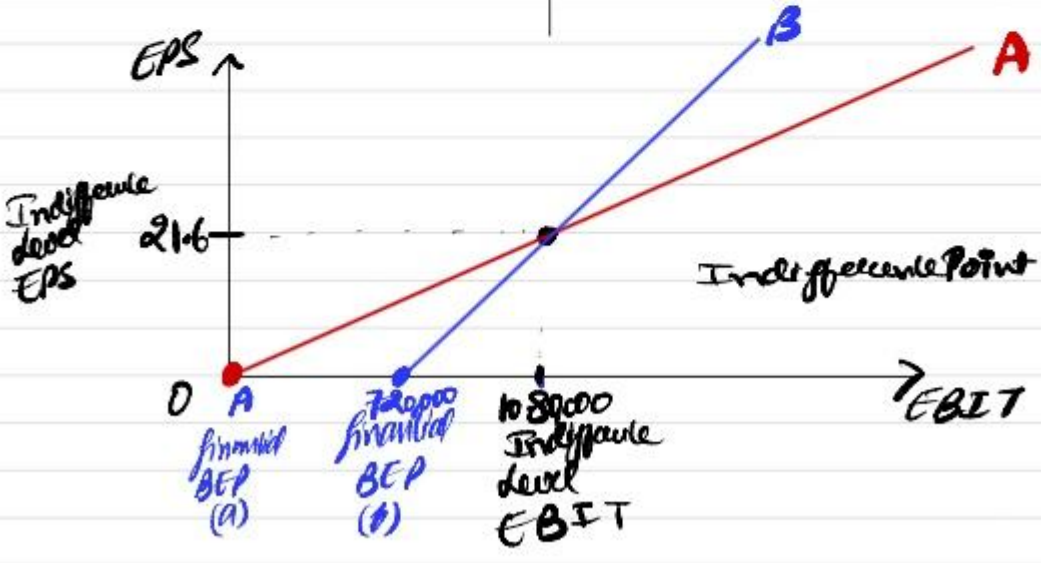
Method Preferred by NG.

Alternative (a)

Financial BEP = $0 + \frac{0}{(1-40\%)} = \boxed{0}$

Alternative (b)

Financial BEP = ₹ $72,000 + \frac{0}{(1-40\%)} = ₹ 72,000$



Decision Table

① If EBIT < 10,89,000, Select (A) it has higher EPS.

② If EBIT = 10,89,000, Select A & B. Both have equal EPS.

③ If EBIT > 10,89,000, Select (B) it has higher EPS.

Method No ② Shown in one question in ICAI Module

Indifference level EBIT = ₹10,89,000

lower EBIT = 10,79,000 | Higher EBIT = 10,89,000

Calculating EPS at Slightly lower EBIT = ₹10,79,000.

	Alternative (a)	Alternative (b)
EBIT	₹10,79,000	₹10,79,000
− Int	0	− 7,20,000
EBT	10,79,000	3,59,000
− Tax 40%	− 4,28,000	− 1,43,600
EAT & EAES	6,42,000	2,10,000
÷ No of shares	÷ 30,000	÷ 10,000
EPS	₹21.4	₹21

At slightly lower EBIT than Indifference Point Alternative (a) is better.

Calculation of EPS at slightly higher level of EBIT = ₹10,90,000.

Particulars	Alternative (a)	Alternative (b)
EBIT	₹ 10,90,000	₹10,90,000
− Interest	0	− 7,20,000
EBT	10,90,000	3,70,000
− Tax 40%	− 436,000	− 1,48,000
EAT or EAES	654,000	2,22,000
÷ no of shares	÷ 30,000	÷ 10,000
EPS	₹218	₹22.2

At slightly higher EBIT Alternative (b) is better. ✓

Sol 16

Levered Co

Step① EBIT = 30,000
− Int 12 × 10% = −19000
EAES = 11,000

Step② VE = EAES / Ke = 11,000 / 12.5%

VE = ₹1,60,000

Step③ VE = ₹1,60,000
VD = ₹1,00,000
VF = ₹2,60,000

Unlevered Co

Step① EBIT = 30,000
− Int = −
EAES = ₹30,000

Step② VE = EAES / Ke = 30,000 / 12.5%

VE = ₹2,40,000

Step③ VE = ₹2,40,000
VD = −
VF = ₹2,40,000

If 15% owned of Levered Co.

Sell Shares → Unlevered Co.

Step① Sell 15% Shares of Levered Co & raise 15% Debt of Levered Co.

15% of VE = 15% × 1.6L = ₹24,000
15% × Debt = 15% × 1L = ₹15,000

Amount available = ₹39,000
to invest

Step② Amount invested = 39,000
Value of firm = 2,40,000

% of Co purchased = 39,000 / 2,40,000 × 100 = 16.25%

Buy 16.25% of Equity

Step ③

Earning foregone

15% × EAEs

15% × 20,000 = ₹3000

Step ④

Earning Earned

16.25% × EAEs

30,000 = ₹4875

− Int on Borrowing ₹15000 × 10% after tax = − ₹1500

Net Earning = ₹3375

We have Arbitrage gain of ₹375 by shifting investment from levered firm to unlevered firm.

Q17

(i) Operating Cycle Period

Particulars	Days
Raw Material Period	45
WIP Conversion Period	20
FG Storage Period	25
Debt Collection Period	30
− Creditor Payment Period	−60
Operating Cycle Period	60 days

(ii) Number of operating cycles in a year

$= \frac{360}{\text{Operating Cycle Period}}$

$= \frac{360}{60} =$ 6 Times

(iii) Operating Expenses = ₹ 25,00,000

− Dep − ₹ 2,50,000

Cash operating Exp = ₹ 22,50,000

WC required = $\frac{\text{Cash operating Exp}}{360} \times$ Operating Cycle Period

$= \frac{22,50,000 \times 60}{360} =$ ₹ 3,75,000

(iv) If No credit Sale

New operating Cycle Period = 60 days (old)

− 30 days (Debtors collection period)

30 days

New WC required = $\frac{22,50,000}{360} \times 30 =$ ₹ 1,87,500

Reduction in WC = 375000 − 187500 = ₹ 1,87,500

Sol 18 wrkg

Cost sheet

Particulars	Amt (₹)
Material	3,00,000
wages	2,40,000
Manufacturing Exp	3,00,000
Depreciation (B/S)	1,20,000
COGS	9,60,000
+ Admin exp (General)	75,000
+ Selling exp	37,500
cost of Sales	10,72,500
+ Profit (B/S)	1,27,500
Sales	12,00,000

Sales 12,00,000
− GP 20% −2,40,000
COGS = 9,60,000

Cost sheet as per cash cost basis

Particulars	Amount (₹)
Material	3,00,000
Labour	2,40,000
Manu. exp	3,00,000
Cash cost of goods sold	8,40,000
+ Selling exp	37,500
+ Admin (General)	75,000
Cash cost of sales	9,52,500

Sol 18 Main solution

Statement for estimation of WC

Particulars	Amount (₹)
Current Assets	
Stock of RM = (3,00,000 × 1/12)	25,000
Stock of FG = (8,40,000 × 1/12)	70,000
Debtors = 12,00,000 (9,52,500 × 2/12)	1,58,750
Advance selling exp (37500 × 3/12)	9,375
Cash	40,000
Total Current Assets (A)	3,03,125
Current Liabilities	
Creditors = (3,09,000 × 2/12)	50,000
O/S wages = (2,40,000 × 1/12)	20,000
O/S Manufacturing exp = (3,09,000 × 1/12)	25,000
O/S Admin exp = (75000 × 1/12)	6,250
Total Current liabilities (B)	1,01,250
Excess of CA over CL	201,875
+ Safety margin 15% × 201875	30,281
Net WC	232,156

Q119

Working: Cost Sheet

Particulars	Amount (₹)
RM Purchased	112700
+ op RM	+0
− cl RM	−16,100
RM Consumed	96,600
Direct Exp	66,250
Gross factory cost	162850
+ op WIP	+0
− cl WIP	−16,350
Net factory cost	146,500
+ op FG	+0
− cl FG	−14,650
COGS	131850
+ Admin exp (General)	+14000
+ Selling exp	+13000
Cost of Sales	158850

clRM = 96600/12 × 2 = 16100

₹84000
90% Sold → 75600
10% cl FG → 8400
(84000 + 15%) × 100% cl WIP → 21850

₹62500
90% → 56250
10% → 6250
(62500 × 15% × 40% → 3750

14,650 cl FG
16,350 cl WIP

20% Cash Sale
80% credit Sales 127080

Main Calculation

Statement for WC estimation

Particulars	Amount (₹)
CA	
Stock of RM	16,100
Stock of WIP	16,350
Stock of FG	14,650
Debtors = (Cost of credit sales × 2/12)	
= (127080 × 2/12)	21180
Cash in hand	8000
Prepaid expenses: -	
• wages (66250 × 1/12)	5521
• Admin exp (14000 × 1/12)	1167
• Selling exp (13000 × 1/12)	1083
• Advance Income tax (10,000 × 70% × 3/12)	1750
Total CA (A)	85,801
CL	
Creditors (112700 × 1.5/12)	14088
Provision for Tax × (10000 × 30%)	3000
Total CL (B)	17088
Excess of CA over CL (A) − (B)	68,713
+10% unforeseen contingencies reserve	6871
Net WC	75,584

Sol 20

Debtors = 40L × 90/360 = ₹10,00,000

Less commission = 10L × 3% = −₹30,000

Less Reserves = 10L × 10% = −₹1,00,000

Amt available for Advance = ₹8,70,000

Less Interest $\left(8{,}70{,}000 \times 18\% \times \frac{90}{360}\right)$ = −₹39,150

Net Advance Amount = ₹8,30,850.

Statement for evaluation of factoring Proposal.

Particulars	Amount (₹)
Benefits	
Saving in admin cost	₹1,00,000
Saving in Bad Debt (3% × 40L)	₹1,20,000
Total Benefits (A)	₹2,20,000
Costs	
Commission (30,000 × 360/90)	₹1,20,000
Interest (39,150 × 360/90)	₹1,56,600
Total costs (B)	₹2,76,600
Net cost of factoring (B) − (A)	₹56,600.

Effective factoring rate = $\frac{56{,}600}{830{,}850} \times 100$ = **6.81%**

As effective factoring rate < ROI (opportunity rate)

6.81% < 15%

So, factoring is cheaper and should be accepted.

Sol 21

Statement for Evaluation of Credit Policy

Particulars	Present	Proposal I	Proposal II
Sales	50,00,000	60,00,000	67,50,000
Less VC (70% of SP)	−35,00,000	−42,00,000	−47,25,000
Less Bad Debt	−1,50,000	−3,00,000	−4,50,000
(A) Estimated Profit	13,50,000	15,00,000	15,75,000
Less			
(B) Int cost on Debtors Cost (WN2)	−1,75,000	−2,80,000	−3,93,750
Net Benefit (A)−(B)	11,75,000	12,20,000	11,81,250

Advice: Select Policy option (I) because it has highest Net Benefit.

WN1

Calculation of ACP

$\text{Debtors} = \text{Sales} \times \frac{ACP}{12}$

$ACP = \left(\frac{\text{Debtors} \times 12}{\text{Sales}}\right)$

	Present	Proposal I	Proposal II
	$\frac{12.5L \times 12}{50L}$	$\frac{20L \times 12}{60L}$	$\frac{28.125L \times 12}{67.5L}$
	3 months	4 months	5 months

WN2

Int cost on Debtors cost

	Present	Proposal I	Proposal II
	VC	VC	VC
	$35L \times \frac{3}{12} \times 20\%$	$42L \times \frac{4}{12} \times 20\%$	$47.25L \times \frac{5}{12} \times 20\%$
	₹1,75,000	₹2,80,000	₹3,93,750

Sol 23

Cash - Budget

Particulars	April	May	June	July	Aug	Sept.
Opening Cash	20000	20,000	20,000	20,000	20,000	20,000
Cash Receipts						
Cash Sale 20%	16000(A)	12000(M)	16000(J)	20000(J)	16,000(A)	12,000(S)
Debtor 1M 60%	84000(M)	48000(A)	36000(M)	48000(J)	60000(J)	48000(A)
Debtor 2M 20%	24000(F)	28000(M)	16000(A)	12000(M)	16000(J)	8000(J)
(A) Total Cash Receipts	1,44,000	108000	88,000	1[illegible],000	112,000	1[illegible]9,000
Payments						
Creditors Paid (80% Purchase)	48000(M)	64000(J)	80000(J)	64000(A)	48000(S)	80,000 (Oct)
Int Paid	3000	—	—	3000	—	—
wages	9000	8000	10000	10000	9,000	9000
Advance Tax	—	—	—	5,000	—	—
Total Payment (B)	60,000	72,000	90,000	82000	57,000	89,000
Closing Cash (A)-(B)	84000	36000	(2000)	18000	55000	11,000
-Temp Invest	-64000	-16000			-35000	
+Sell Investment			22000	2000		+9000
Net Closing Cash	20,000	20000	20,000	20,000	20,000	20,000

WN① Int on Debenture = 1,20,000 × 10% = ₹12000

3000 (J) 3000 (A) 3000 (J) 3000 (S)

WN② Collection from Sales = 100%

20% Cash Sale (Same month as Sales)

80% Credit Sales

80% × 75% = 60% (1M)

80% × 25% = 20% (2M)

Sol 23

$K_e = 16\%$

$r = RoI = 20\%$

PAT (Net Profit)	₹30,00,000
− Pref dividend (₹100 L × 12%)	− ₹12,00,000
EAFS	₹18,00,000
÷ No of Equity Shares	÷ 3,00,000
EPS	₹6/share

① If $P_0 = ₹42$, Calculate Dividend Payout ratio

Walters model.

$$P_0 = \frac{D + \frac{(EPS - D) \times r}{K_e}}{K_e}$$

$$42 = \frac{D + \frac{(6 - D) \times 20\%}{16\%}}{16\%}$$

$$42 \times 16\% = D + (6 - D)(1.25)$$

$$6.72 = D + 7.5 - 1.25D$$

$$0.25D = 7.5 - 6.72$$

$$D = 3.12$$

So, desired dividend Payout $= \frac{3.12}{6} =$ 52%

Sol Q3(2)

If desired share price = ₹30

$$P_0 = \frac{D + \frac{(EPS - D) \times \gamma}{Ke}}{Ke}$$

$$30 = \frac{D + \frac{(6 - D) \times 20\%}{16\%}}{16\%}$$

$$30 \times 16\% = D + (6 - D) \times 1.25$$

$$4.8 = D + 7.5 - 1.25D$$

$$0.25D = 7.5 - 4.8$$

$$D = \frac{2.7}{0.25} = ₹10.8$$

So $D = ₹10.8$

∴ Desired Dividend Payout $= \frac{10.8}{6} = 180\%$

Q.24

Earnings = ₹1,00,000 , EPS = ₹5
Dividends = ₹60,000 , DPS = ₹3
Number of shares = ₹20,000
ROI = r = 20%

$$Ke = \frac{1}{P/E} = \frac{1}{10} \times 100 = 10\%$$

(a) Price of shares as per walter model.

$$P = \frac{D + \frac{(E-D) \times r}{Ke}}{Ke} = \frac{3 + \frac{(5-3) \times 20\%}{10\%}}{10\%} = ₹30$$

(b) Capitalization rate = Ke = $\frac{1}{P/E} = \frac{1}{10} \times 100 = 10\%$

(c)

r = 20%, Ke = 10%, As per walter's model, optimal Dividend = 0% (r > Ke)

So, optimal Dividend Payout ratio = 0%.

(d) Market price per share at optimal Dividend Policy

$$P = \frac{0 + \frac{(5-0) \times 20\%}{10\%}}{10\%} = ₹100$$

Sol 25

Face value of Share = ₹100

Number of Shares originally = $n = \frac{₹1000000}{₹100} =$ 10,000 Shares

Market Price of Share = MPS = $P_0 =$ ₹100 (at par)

Proposed Dividend = $D_1 =$ ₹10

Capitalization rate = $K_e = 12\%$

(i) If Dividend is not declared. So, actual $D_1 = 0$

As per MM

$$P_0 = \frac{D_1 + P_1}{(1+K_e)}$$

$$₹100 = \frac{0 + P_1}{(1+12\%)}$$

$$₹112 = P_1$$

(ii) If Dividend is declared, So, Actual Dividend = $D_1 =$ ₹10

As per MM

$$P_0 = \frac{D_1 + P_1}{1+K_e}$$

$$₹100 = \frac{10 + P_1}{(1+12\%)}$$

$$112 = 10 + P_1$$

$$102 = P_1$$

(iii) If Company Paid Dividend.

$D_1 = ₹10$

$P_1 = ₹102$

Earning = ₹5,00,000

Investment = ₹10,00,000

To find = Δn = change in number of shares.

Earnings =		₹5,00,000
less Dividend =	10,000 Shares × ₹10 =	− ₹1,00,000
less Investment		= − ₹10,00,000
Amount to be raised		= (₹6,00,000)

If means we have to raise equity for ₹ 6,00,000.

$\Delta n = \frac{₹6,00,000}{₹102} =$ **5882** (approx).

Number of new shares to be issued = 5882

To verify MM approach.

Value of firm before = Value of firm after dividend.

$$n \times P_0 = \frac{(n+\Delta n)P_1 - \text{Investment} + \text{Earnings}}{(1+Ke)}$$

LHS

10,000 × ₹100

₹10,00,000

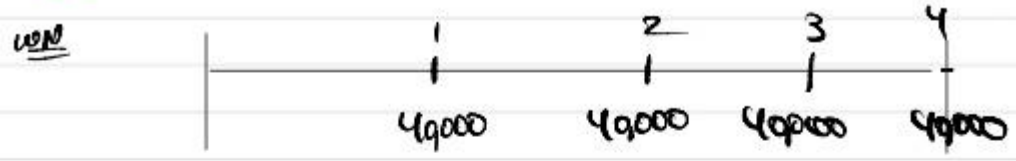
RHS

$$\frac{(10,000+5882) \times 102 - 10,00,000 + 5,00,000}{(1+12\%)}$$

$= ₹9,99,768$ (approx)

verified

Sol 26



PVCo = ( )

Step 0 At IRR = 15%, NPV = 0.

	Year	PVfact (15%)	Amount	PV
Outflow Cost of Project	0	1	x	(x)
Inflow CFAT	1–4	2.855	40,000	1,14,200
			NPV =	0

So, $(x) + 1,14,200 = 0$

$x = 1,14,200$

So, Cost of Project = PVCo = ₹ 1,14,200

Step ② Now calculate NPV at z% (Cost of Capital) So, that PI = 1.064

Particulars	yr	PV factor	Amt	PV
outflow	0	1	1,14,200	(1,14,200)
				PVCO
Inflow				
CFAT	1-4	? a	40,000	40,000 a
				PVCI

$$PI = \frac{PVCI}{PVCO}$$

$$1.064 = \frac{40,000\ a}{1,14,200}$$

$$\frac{1.064 \times 1,14,200}{40,000} = a$$

$$3.03772 = a$$

$$3.038 = a \quad \text{So, Cost of Capital} = 12\%$$

Fair Calculation Cost of Capital = Discounting rate = 12%

		Discount AF 12%		
outflows	0	1	1,14,200	(1,14,200)
Inflows				
CFAT	1-4	3.038	40000	121520
			NPV	7320

$$PBP = \frac{\text{Initial outflow}}{\text{Annual inflow}} = \frac{₹1,14,200}{40000} = 2.85 \text{ years.}$$

PBP

Sol 27

Particulars	X	Y
Income		
Saving in labour	90,000	1,20,000
+ Saving in Scrap	10,000	15,000
− Maintenance	− 7,000	− 11,000
− Indirect Material	− 6,000	− 8,000
− Supervision	− 12,000	− 16,000
− Dep	$\left(\frac{150000-0}{5}\right)$ = −30,000	$\left(\frac{240000-0}{6}\right)$ −40,000
PBT	45,000	60,000
− Tax 30%	− 13,500	− 18,000
PAT	31500	42000 ✓
+ Dep	+ 30000	+ 40,000
CFAT	61,500	82,000.

(i) ARR = $\frac{\text{Average PAT}}{\text{Average Investment}}$ or $\frac{\text{Average PAT}}{\text{Initial Investment}}$

for machine X = $\frac{31,500}{\left(\frac{150000+0}{2}\right)}$ or $\frac{31500}{150,000}$

⇒ 42% 21%

for machine Y = $\frac{42000}{\left(\frac{240000+0}{2}\right)}$ or $\frac{42000}{240,000}$

35% 17.5%

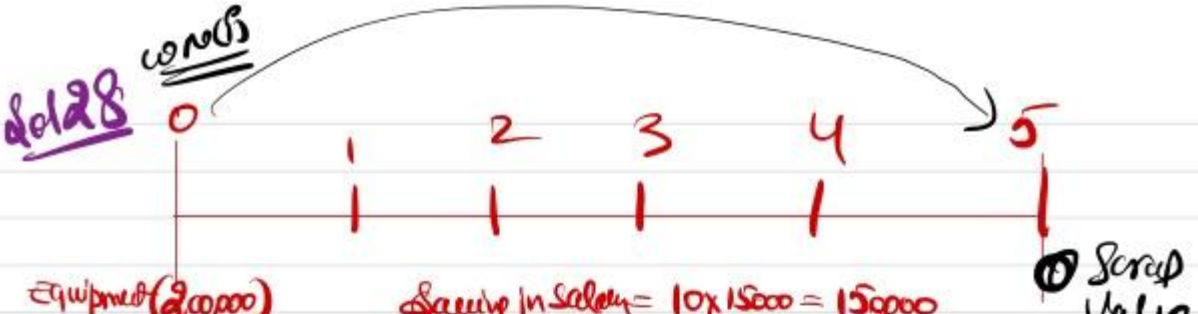
(ii)

Particulars	yr	Afactor 10%	X Amt	X PV	Y Amt	Y PV
outflow	0	1	150000	(1,50,000)	2,40,000	(2,40,000)
			PVCO (A)	1,50,000	PVCO (A)	2,40,000
Inflow	1-5	3.791	61,500	233147		
	1-6	4.355			82,000	357110
			PVCI (B)	233147	PVCI (B)	357110
NPV				83,147		117,110
÷ cummulative PV factor diff				÷ 3.791		÷ 4.355
Equivalent Annual NPV				21,933		26,891

$PI = \frac{PVCI}{PVCO}$ → $\frac{233147}{150000} = 1.55$ $\quad \frac{357110}{240000} = 1.488$

$NPV\ Index = \frac{NPV}{PVCO}$ $\quad \frac{83147}{150,000} = 0.55$ $\quad \frac{117110}{240000} = 0.488$

Q128



Equipment (2,00,000)
Initial (50,000)
(2,50,000)

Saving in Salary = 10 × 15000 =	150000
+ Reduced Delay	8,000
+ RM Savings =	12,000
+ Billing Savings =	3,000
Total Savings =	173,000 P.a
− Computer operators (2 × 40000)	− 80,000
− maintenance	−12,000
− Dep $\left(\frac{250000-0}{5}\right)$	− 50,000
PBT	31,000
− Tax 40%	−12400
PAT	18,600
+ Dep	+50,000
CFAT =	68,600 P.a

Sol 28 **Main Solution**

(i) Initial Cash outlay = 2,00,000 + 50,000 = ₹2,50,000.

(ii) operating Cash flow for 1 to 5 years = ₹68,600 P.a

Terminal Cash flow = ₹0

(iii) & (iv)

Calculation of NPV & KPI

Particulars	yr	PVf at	Amount	PV
Initial Capital outlay	0	1	2,50,000	(2,50,000)
			PVCo (A)	(2,50,000)
Annual CFAT	1-5	3.605	68,600	247303
Scrap Value	5	0.567	0	0
			PVCI (B)	2,47,303

NPV = PVCI − PVCo = (2697)

$$PI = \frac{PVCI}{PVCo} = 0.989$$

(v) **Calculation of Payback Period**

Initial Investment = ₹2,50,000
Annual Inflow (CFAT) = ₹68,600

$$\text{Payback Period} = \frac{₹2,50,000}{68,600} = 3.64 \text{ years.}$$

or

= 3 years + 0.64 × 12

= 3 years 8 months (approx)

(vi) At end of 5 years WDV = 0, So, we must have deducted full amount of asset as depreciation.

- Initial Investment = 2,00,000 + 59,000 = ₹2,59,000

- Annual CFAT

Savings in labour =	1,59,000
+ Saving in Prod^{n} delay	8000
+ Saving in Stockout	12,000
+ Saving in Billing	3000
Total Savings	1,73,000
- Salary (2 × 4000)	−80,000
− Maintenance	−12,000
− Dep $\left(\frac{2,59,000-0}{5}\right)$	− 59,000
& − Dep $\left(\frac{25000-25000}{5}\right)$	
PBT	31000
− Tax	−12400
PAT	18,600
+ Dep	59,000
CFAT	68,600

- At end

Sale of Asset = 25000
− WDV = 0
CG = 25000

CG Tax 25000 × 40% = 10,000

Sale = 25000
− Tax 10000
Cash inflow 15000

Calculation of NPV

outflow	0	1	2,59,000	(2,59,000)
CFAT	1-5	3.605	68,600	247303
Scrap sale	5	0.567	15,000	8505
			NPV	5808

(VII) Initial Investment = ₹ 2,50,000.

- CFAT Annual

Savings	173000
– Salary	–89000
– Maintenance	– 12,000
– Dep $\left(\frac{250000-20000}{5}\right)$	–46000
PBT	35000
Tax 40%	–14000
PAT	21,000
+ Dep	+ 46000
CFAT	67,000

- At end

Sale of Asset = 0

– WDV = – 20,000

Capital loss = –20,000

Tax saving on loss = 20,000 × 40% = 8000

Cash Sale = 0

+ Tax Saving + 8000

Terminal Value = 8000

Calculation of NPV

outflow	0	1	2,50,000	(2,50,000)
Annual CFAT	1–5	3.605	67,000	241535
+ Terminal Value	5	0.567	8,000	4536
			NPV	(3929)

Sol 29

Statement of ranking

Project	PVCo (B)	xPI	PVCI (A)	NPV (A) − (B)	Rank (on PI)
1	3,00,000	1.22	3,66,000	66,000	I
2	1,50,000	0.95	1,42,500	−7500	—
3	3,50,000	1.20	4,20,000	70,000	II
4	4,50,000	1.18	5,31,000	81,000	III
5	2,00,000	1.20	2,40,000	40,000	II
6	4,00,000	1.05	4,20,000	20,000	IV

(ii) If Projects are divisible

Rank	Project		PVCo	NPV
I	1		3,00,000	66,000
II	3		3,50,000	70,000
II	5		2,00,000	40,000
			8,50,000	
III	4	~~4,50,000~~	1,50,000	$\left(\frac{81,000 \times 1.5}{4.5}\right)$ = 27,000
			10,00,000	2,37,000

(i) If Projects are not divisible

Combination ①

Project	PVCo	NPV
3	3,50,000	70,000
4	4,50,000	81,000
5	2,00,000	40,000
	10,00,000	1,91,000

Combination ②

Project	PVCo	NPV
1	3,00,000	66,000
3	3,50,000	70,000
5	2,00,000	40,000
	8,50,000	1,76,000

Rejected

Combination ③

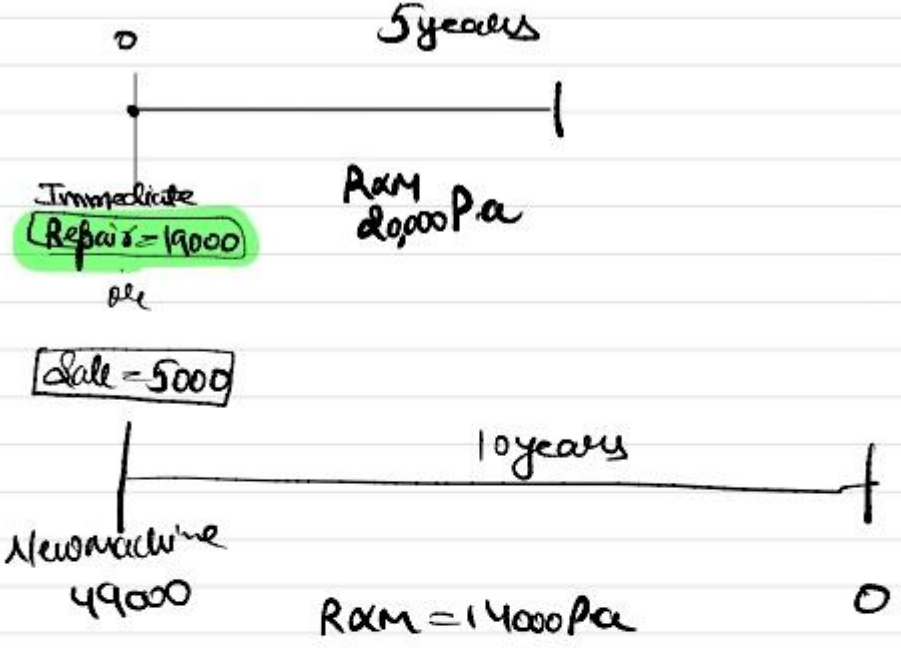
Project	PVCo	NPV
3	3,50,000	70,000
5	2,00,000	40,000
6	4,00,000	20,000
	9,50,000	1,30,000

Rejected

Select Combination ①, Invest in Project 3, 4 & 5.

Sol 30

con(i)



Case(i) If we repair & use old Machine

Particulars	Yr	PV factor	Amt	PV
outflows				
Immediate Repair 19000 (1-50%)	0	1	9500	9500
Annual RaM 20,000 (1-50%)	1-5	3.791	10,000	37910
			PVCo	47410
			÷ Cummulative PV factor	÷3.791

Equivalent Annual PVCo = ₹12506 ✓

Case ② If we Buy new Machine

Particulars	yr	PV factor	Amt	PV
Buy Machine	0	1	49000	
Sale of old Machine	0	1	-5000	44000
Annual R&M 14000 (1-50%)	1-10	6.145	7000	43015
Tax Savings on Dep (49000-0)/10 Dep × tax rate ×50%	1-10	6.145	2450	(15055.25)
			PVCO	71959.75
		÷ Cummulative	PV factor	÷ 6.145
Equivalent Annual PVCO				11710 ✓

Advice: The Company should buy new Machine, because it has lower Equivalent Annual PVCo.

Sol(31)

Income Statement

Particulars	Situation A Plan XY	Situation A Plan XM	Situation B Plan XY	Situation B Plan XM
Sales 6000 x 30				
-VC 6000 x 20				
Contribution	60,000	60,000	60,000	60,000
- Fixed Cost	-20,000	-20,000	-25,000	-25,000
EBIT	40,000	40,000	35,000	35,000
- Interest				
XY (40,000 x 12%)	-4800		-4800	
XM (10,000 x 12%)		-1200		-1200
EBT	35,200	38,800	30,200	33,800
DOL = Cont / EBIT	1.50	1.50	1.71	1.71
DFL = EBIT / EBT	1.14	1.03	1.16	1.04

Note:

Measure of Risk

Leverage → Internal risk

Beta → External Risk (Stock Market Point of view)

AFM

Leverage & Beta are directly related.

Sol 32

Statement for Estimation of operating leverage

Particulars	(i) DOL = % Δ in EBIT / % Δ in Sales	Beta
PQR	DOL = 25% / 27% = 0.93	1.00
RST	DOL = 32 / 28% = 1.28	1.15
TUV	DOL = 36% / 23% = 1.565	1.30
WXY	DOL = 40% / 21% = 1.904	1.40

(ii) Comment → DOL is measure of operating risk. Higher the DOL higher is operating risk.

So, PQR has lowest operating risk.
& WXY has highest operating risk.

(iii) Beta is a measure of external risk which measure change in share price with a change in market.
DOL measure operating risk.
As both Beta & DOL measure risk of company. So, they are directly related.

- Hence if a company (ex: PQR) has lower DOL it will have lower Beta also.
- If a company has higher DOL, it will have higher Beta also.

★ Margin of Safety = 1 / DOL , DOL = 1 / MOS

Sol 33

	P		Q
①	EBT_P	=	EBT_Q
②	$MOS_P = 0.20$		$MOS_Q = 1.25 \text{ Times} \times 0.20 = 0.25$
	$DOL = \frac{1}{MOS} = \frac{1}{0.20} = 5 \text{ Times}$		$DOL = \frac{1}{0.25} = 4 \text{ Times}$
③	$Interest_P = ₹1,50,000$		$Int_Q = ₹1,50,000 - \frac{1}{3} \times 150,000$ $Int_Q = ₹1,00,000$
④	$DFL_P = 4 \text{ Times}$		$DFL_Q = 75\% \times 4 = 3 \text{ Times}$

Main Solution

Income Statement

Particulars		P		Q
Sales		₹ 40,00,000		₹18,00,000
– VC		– ₹30,00,000		– ₹12,00,000
Contribution	WN② 25%	₹ 10,00,000	33.33%	₹ 6,00,000
– FC	(B/S)	– 8,00,000		– 4,50,000
EBIT	WN①	₹2,00,000		₹1,50,000
– Interest		– ₹1,50,000		₹1,00,000
EBT		₹50,000		₹ 50,000
– Tax	– 45%	– 22,500	– 45%	– 22,500
EAT		₹ 27,500		₹27,500

WN① $DFL = \frac{EBIT}{EBIT - Int}$

$4 = \frac{x}{x - 1,50,000}$

$4x - 6,00,000 = x$

$3x = 6,00,000$

$x = 2,00,000$

$3 = \frac{y}{y - 1,00,000}$

$3y - 3,00,000 = y$

$2y = 3,00,000$

$y = 1,50,000$

WN②

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

$5 = \frac{Cont\ P}{2,00,000}$

$₹10,00,000 = Cont\ P$

$4 = \frac{Cont\ Q}{1,50,000}$

$₹6,00,000 = Cont\ Q$

Sol (34)

B/S

Prop funds	x	FA	$0.75x$
		CA	
CL			

$$\frac{FA}{\text{Prop funds}} = 0.75$$

$$\frac{FA}{x} = 0.75$$

$$FA = 0.75x$$

$$CA - CL = 6,00,000$$

$$\text{Prop funds} + CL = FA + CA$$

$$x = 0.75x + CA - CL$$

$$x = 0.75x + 6,00,000$$

$$0.25x = 6,00,000$$

$$x = ₹24,00,000$$

$$\text{Prop funds} = x = ₹24,00,000$$

$$FA = 0.75x = ₹18,00,000$$

① Coverage ratio = $\frac{\text{Funds available before Paying}}{\text{Amount to be paid}}$

(A) Int Coverage ratio = $\frac{EBIT}{Interest} = \frac{767}{162}$

4.73 Times

(2) Debt Service Coverage Ratio = $\frac{EAT + Int + \text{Non cash Exp (depreciation)} + \text{Non operating Exp (loss on sale FA)}}{Interest + Installment}$

$= \frac{480 + 162 + 155(Dep)}{162 + 178}$

$=$ **2.34 Times**

EBIT =	767 ✓
− Int	−162 ✓
EBT	605
− Tax	−125
EAT (PAT) =	480 ✓

Sol 36

Forecasted Balance sheet (31/3/02)

Share Capital		**FA**	3,95,000
14% PSC	1,00,000	Cost 5,00,000 + 1,00,000	
ESC	2,00,000	− Acc dep. (1,04,000 + 45000)	
General Reserves (40,000 + 4400) (RE)	44,400	**CA**	1,33,750
12% Debentures (60,000 + 50,000)	1,10,000	Stock 33,750	
CL		Debtors 1,00,000	
Creditors	72000		
Bank O/D (BLF)	9350		
	5,28,750		5,28,750

WN ① FA Turnover ratio = 1.5

$$\frac{\text{Sales}}{\text{cost of FA}} = \frac{1.5}{1}$$

$$\frac{\text{Sales}}{6,00,000} = \frac{1.5}{1}$$

Sales = ₹ 9,00,000

WN ③ $\text{STR} = \frac{\text{COGS}}{\text{Av Stock}}$

$$14.4 = \frac{6,75,000}{\left(\frac{60,000 + \text{Cl Stock}}{2}\right)}$$

Cl. Stock = ₹ 33,750

WN ②

Material	40%	₹ 3,60,000
Labour	25%	₹ 2,25,000
Man. exp	10%	₹ 90,000
office exp	10%	₹ 90,000
Dep	5%	₹ 45,000
Total Cost	90%	8,10,000
+ Profit	10%	+ 90,000
Sales	100%	9,00,000

⇒ **COGS = ₹ 6,75,000**

WN ④

EBIT =	90,000
− Interest (60,000 + 50,000) × 12%	− 13,200
EBT	76,800
− Tax 50% =	− 38,400
EAT =	38,400
− Pref Div (1,00,000 × 14%)	− 14,000
EAES	24,400
− Equity Div (2,00,000 × 10%)	− 20,000
Retained Earning	4,400

WN ⑤ Debtors $= \frac{1}{9}$ Sales $= \frac{1}{9} \times 9,00,000 =$ ₹1,00,000

Creditors $= \frac{1}{5}$ of Material Cost $= \frac{1}{5} \times 3,60,000 =$ ₹72,000

Sol 37

Statement for WACC (MV weights)

Particulars	Market Value	Weights (A)	Rate (B)	(A) x (B)
ESC	$\left(\frac{5,00,000}{10}\right) \times 25 = ₹12,50,000$	$\frac{125}{185}$	14.52%	9.81%
PSC	$\left(\frac{2,50,000}{100}\right) \times 108 = ₹2,70,000$	$\frac{27}{185}$	11.26%	1.64%
Debt	$\left(\frac{3,00,000}{100}\right) \times 110 = ₹3,30,000$	$\frac{33}{185}$	5.99%	1.07%
	₹18,59,000		WACC ⇒	12.52%

WN① Kd. FV = ₹100, MP = ₹110, RV = ₹100, flotation cost = 2%, Int = ₹10, n = 10 yrs, t = 30%

NP = ₹110 − 2% = ₹107.8

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

$$Kd = \frac{₹10(1-30\%) + \left(\frac{100 - 107.8}{10}\right)}{\left(\frac{100 + 107.8}{2}\right)}$$

$$Kd = \left(\frac{7 - 0.78}{103.9}\right) \times 100 = 5.99\%$$

WN② For KP, FV = ₹100, RV = ₹100, flotation cost = 3%, MP = ₹108, n = 10 years, Pd = 12% × 100 = ₹12.

NP = 108 − 3% = 104.76

$$KP = \frac{Pd + \left(\frac{RV - NP}{n}\right)}{\left(\frac{RV + NP}{2}\right)}$$

$$KP = \frac{12 + \left(\frac{100 - 104.76}{10}\right)}{\left(\frac{100 + 104.76}{2}\right)} = 11.26\%$$

WN③ For Ke. g = 5%, D_1 = ₹2, MP = 25, Flotation cost = ₹4

$$Ke = \frac{D_1}{NP} + g \Rightarrow \frac{2}{(25-4)} + 5\%$$

$$\Rightarrow \frac{2}{21} \times 100 + 5\% = 14.52\%$$

Sol 38

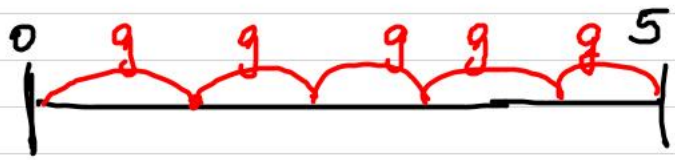
Statement of WACC (Book value weights)

Source	Book value	(A) Weight	(B) Rate	(A) x (B)
ESC	120L	$\frac{120}{195}$	18.5%	
RE	30L	$\frac{30}{195}$	18%	
PSC	36L	$\frac{36}{195}$	14.29%	
Debt	9L	$\frac{9}{195}$	10.95%	
	195L		WACC	17.29%

Statement of WACC (Market value weights)

Source	Market value	(A) Weight	(B) Rate	(A) x (B)
ESC				
200L (20:30 = 4:1)	$200L \times \frac{4}{5} = 160L$	$\frac{160}{244.15}$	18.5%	
RE	$200L \times \frac{1}{5} = 40L$	$\frac{40}{244.15}$	18%	
PSC	33.75L	$\frac{33.75}{244.15}$	14.29%	
Debt	10.40L	$\frac{10.40}{244.15}$	10.95%	
	244.15		WACC	17.51%

WN①



10.60 — 14.19

$10.60(1+g)^5 = 14.19$

$(1+g)^5 = \frac{14.19}{10.60}$

$(1+g) = \left(\frac{14.19}{10.60}\right)^{\frac{1}{5}}$

$g = \left(\frac{14.19}{10.60}\right)^{\frac{1}{5}} - 1$

$g = 1.0600 - 1$

$g = 0.06 \times 100 = 6\%$

$(x)^{\frac{1}{n}}$

Step① Type 'x', Press '√' 12 Times
Step② $-1 =$
Step③ $\pm n =$
Step④ $+1 =$
Step⑤ '$\times x =$' 12 Times

$g = 6\%$, $D_1 = ₹15$, Share Price = 125, Floatation cost = 5

K_{re} = (old K_e)

$$K_{re} = \frac{D_1}{P_0} + g$$

$$K_{re} = \frac{15}{125} \times 100 + 6\%$$

$$K_{re} = 18\%$$

New K_e

$$K_e = \frac{D_1}{NP} + g$$

$$K_e = \frac{15}{(125-5)} \times 100 + 6\%$$

$$K_e = 18.5\%$$

WN 2 $\quad K_p = \frac{P_d}{NP} = \frac{₹15}{₹105} \times 100 = 14.29\%$

WN 3

	Our Debenture	Others Debentures
Face value	₹100	₹100
Int	₹15	₹16
MP	₹ x	₹100

$$\frac{Int}{MP} \Rightarrow \frac{15}{x} = \frac{16}{100}$$

$$\frac{15 \times 100}{16} = x$$

∴, MP of our Debentures = ₹93.75

NP = MP − floatation cost

= 93.75 − 2% = ~~91.875~~

= 93.75 − (2% × 100) = ₹91.75

$$K_d = \frac{I(1-t) + \left(\frac{RV - NP}{n}\right)}{\left(\frac{RV + NP}{2}\right)} = \frac{15(1-35\%) + \left(\frac{100 - 91.75}{11 \text{ yrs}}\right)}{\left(\frac{100 + 91.75}{2}\right)}$$

$K_d \Rightarrow 10.95\%$

Q39

Statement for WACC

Sources	Book Amount	Weight (A)	Rate (B)	(A) × (B)
ESC	10,00,000	10/50 = 0.2	20%	0.04
RE	15,00,000	15/50 = 0.3	20%	0.06
Term loan	10,00,000	10/50 = 0.2	$0.01125x$	$0.00225x$
Red Debenture	15,00,000	15/50 = 0.3	$\left(\frac{0.75x+1}{98.5}\right)$	$0.3\left(\frac{0.75x+1}{98.5}\right)$
	50L	1		

WACC $\Rightarrow 0.15$

WN ① Int rate of term loan = 1.5 × Int rate of Debentures

Term loan

Int rate = $1.5x$%

$n = 5$ yrs

$$Kd_2 = \frac{1.5x(1-25\%) + \left(\frac{100-100}{5}\right)}{\left(\frac{100+100}{2}\right)}$$

$$= \frac{1.5x(0.75) + 0}{100}$$

$$Kd_2 = \frac{1.125x}{100} = 0.01125x$$

Debenture

Int rate = x%

$n = 3$ years

$MP = 97$

$FV = 100 = RV$

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

$$= \frac{x(1-25\%) + \left(\frac{100-97}{3}\right)}{\left(\frac{100+97}{2}\right)}$$

$$Kd_1 \Rightarrow \frac{0.75x+1}{98.5}$$

WN ③ $$Ke = \frac{1}{PIE} = \frac{1}{5} \times 100 = 20\%$$

$Ke_{RE} = Ke = 20\%$

$$0.04 + 0.06 + 0.00225x + 0.3\left(\frac{0.75x + 1}{98.5}\right) = 0.15$$

$$0.10 + 0.00225x + \left(\frac{0.225x + 0.3}{98.5}\right) = 0.15$$

$$\frac{0.00225x}{1} + \frac{0.225x + 0.3}{98.5} = 0.15 - 0.10$$

$$\frac{(0.00225x)(98.5) + 1(0.225x + 0.3)}{98.5} = 0.05$$

$$0.221625x + 0.225x + 0.3 = 0.05 \times 98.5$$

$$0.446625x + 0.3 = 4.925$$

$$0.446625x = 4.625$$

$$x = \frac{4.625}{0.446625} = 10.355\% \sim 10.36\%$$

$$x = 10.36\%$$

So, Int rate of Debenture = x = 10.36%

Int rate of Term loan = $1.5x = 1.5 \times 10.36\% = 15.54\%$

Sol 40

WN ①

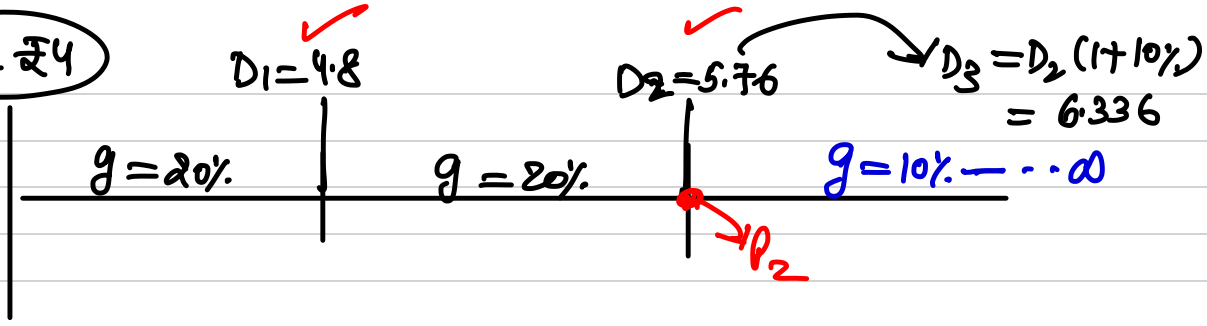
Sales = ₹40 (100,000 + 50%)	=	₹60,00,000
− VC = 17 × (150,000)	=	₹ −25,50,000
Contribution	=	₹34,50,000
− FC		− ₹15,00,000
EBIT	=	₹19,50,000

Statement for EPS

Particulars	Alternative 1 Debt 5L, Eq 15L	Alternative 2 Debt 10L, Eq 10L	Alternative 3 Debt 14L, Eq 6L
EBIT	19,50,000	19,50,000	19,50,000
− Interest			
• first 5L × 10%	−50,000	−50,000	−50,000
• Next 5L × 15%	×	−75,000	−75,000
• Next 4L × 20%			−80,000
EBT	19,00,000	18,25,000	17,45,000
− Tax 40%	− 7,60,000	− 7,30,000	− 6,98,000
EAT & EAES	11,40,000	10,95,000	10,47,000
÷ No of eq shares	÷ 107500	÷ 105000	÷ 103000
Earning Per Share	₹10.60	₹10.43	₹10.17

Conclusion : Select Alternative 1, because it provide highest EPS.

Sol 42



Particulars	year	Amount (A)	15% Discounting rate (B)	(A) × (B)
D_1	1	$D_0(1+g)$ $4(1+20\%)$ = 4.8	0.8696	4.17
D_2	2	$D_1(1+g)$ $4.8(1+20\%)$ = 5.76	0.7561	4.36
P_2	2	$P_2 = \frac{D_3}{Ke-g}$ = 126.72	0.7561	95.81
		$P_2 \Rightarrow \frac{6.336}{(15\%-10\%)}$	PV today = ₹104.34	

Intrinsic value of share today = ₹104.34

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

$$P_2 = \frac{D_3}{Ke-g}$$

Sol 41

Statement for EPS estimation

Particulars	Proposal P	Q	R
Capital Structure			
ESC	₹20 × 2,00,000 = ₹40L	₹20 × 1,00,000 = ₹20L	₹20 × 1,00,000 = ₹20L
10% Debt	×	(Int rate = 10%) ₹20L	×
10% PSC	×	×	(Pref Div 10%) = ₹20L
EBIT	18,00,000	18,00,000	18,00,000
− Interest (10% × 20L)	×	− 2,00,000	×
EBT	18,00,000	16,00,000	18,00,000
− Tax 50%	9,00,000	− 8,00,000	− 9,00,000
EAT	9,00,000	8,00,000	− 9,00,000
− Pref Div	×	×	− 2,00,000
EAES	9,00,000	8,00,000	7,00,000
÷ No of shares	÷ 2,00,000	÷ 1,00,000	÷ 1,00,000
(i) EPS	₹ 4.5	₹ 8	₹ 7
(ii) Financial BEP $\left(Int + \frac{Pref\ Div}{(1-t)}\right)$	0 + 0 = 0	2,00,000	0 + 2,00,000/(1−50%) = ₹ 4,00,000

(iii) Indifference level of EBIT

$$EPS_1 = EPS_2$$

$$\frac{(EBIT - Int_1)(1-t) - PD_1}{n_1} = \frac{(EBIT - Int_2)(1-t) - PD_2}{n_2}$$

Between P & Q

$$\frac{EBIT\ (0.5)}{2,00,000} = \frac{(EBIT - 2,00,000)(0.5) - 0}{1,00,000}$$

- Indiff Level EBIT = ₹ 4,00,000
- Indiff Level EPS = $\frac{₹4,00,000\ (0.5)}{2,00,000}$ = ₹ 1

Between P & R

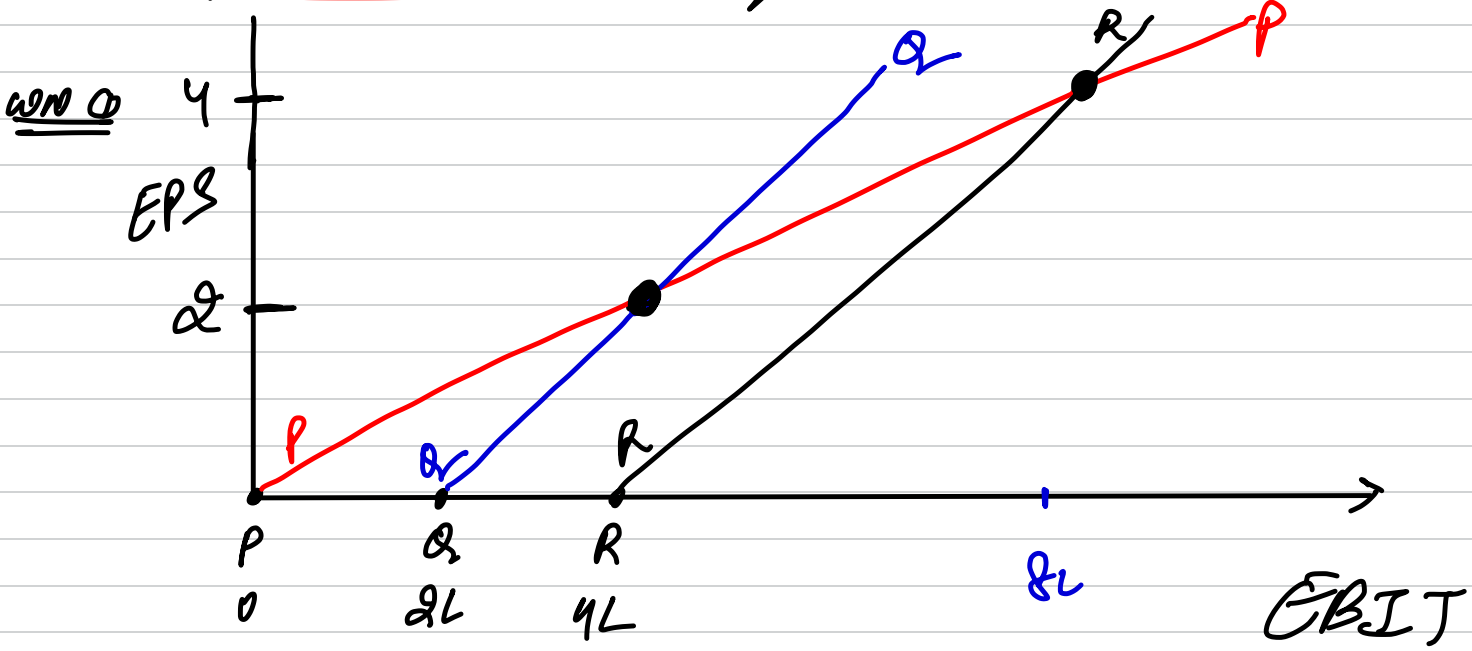
$$\frac{EBIT\,(0.5)}{2,00,000} = \frac{(EBIT - 0)(0.5) - 2,00,000}{1,00,000}$$

Indiff level EBIT = ₹8,00,000
Indiff level EPS = ₹2 per share

Between Q & R

Not possible.

We can say that Financial Proposal Q (Debt) dominates over Proposal R & S at present EBIT level.



Range

EBIT < 4L , Select Proposal P gives highest result.

EBIT = 4L , Indiff Point

EBIT > 4L Select Proposal Q, gives highest EPS.

Sol (B)

WN①

D_0 = ₹3 per qtr × 4 qtrs = ₹12 ✓

WN②

Scenario	ROI	Prob.	b × Prob.
I	20%	0.30	6%
II	15%	0.60	9%
III	12%	0.50	6%

21% Expected ROI

WN③ Average Retention rate = $\frac{40\% + 65\% + 50\% + 45\% + 30\%}{5}$

$b = 46\%$

WN④ $g = b \times r = 46\% \times 21\% = 0.46 \times 21\% = 9.66\%$

WN⑤ $Ke = Rf + \beta(ERm - Rf)$

$= 4.5\% + 1.3(12.5\% - 4.5\%)$

$Ke = 14.9\%$

Gordon model

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

$= \frac{12(1+9.66\%)}{14.9\% - 9.66\%}$

$P_0 = ₹251.1$

Walter's model

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

$P = \frac{12 + \frac{21\%}{14.9\%}(22.22 - 12)}{14.9\%}$

$P = ₹177.21$

WN $EPS(1-b) = DPS$

$EPS(1-0.46) = 12$

$EPS \times .54 = 12$

$EPS = \frac{12}{0.54} = 22.22$

Sol (A)

D_0 = 2.5 × 4 = ₹10 p.a ✓
(per qtr qtrs)

Situation	Retention Rate (b)	Prob.	b × Prob
A	50%	30%	0.15
B	60%	40%	0.24
C	50%	30%	0.15
			0.54 = Expected 'b' (Expected Retention Ratio)

$g = b \times r = 0.54 \times 10\% = 5.4\% = g$ ✓

$(ERm - Rf) = 4.25\%$, $Rf = 3.75\%$

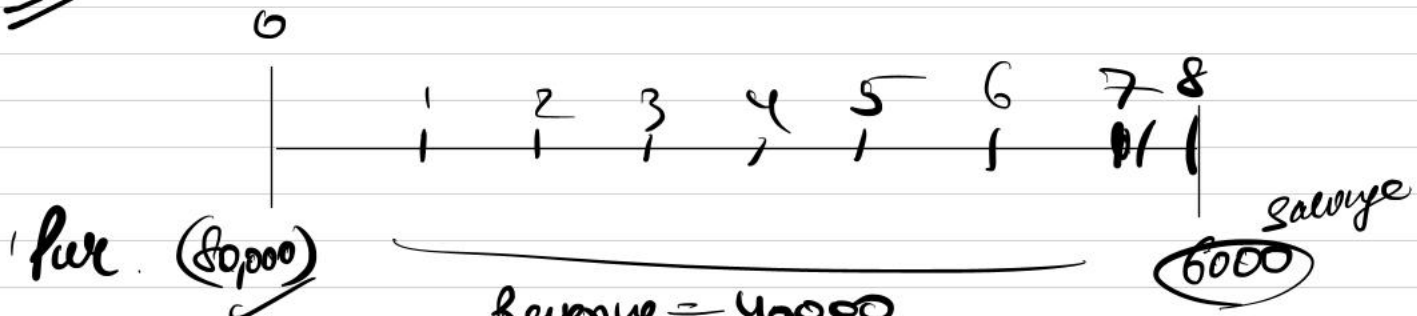
$Ke = Rf + \beta (ERm - Rf)$

$Ke = 3.75\% + 1.2 \times 4.25\% = 8.85\%$ ✓

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

$$P_0 = \frac{₹10(1+5.4\%)}{8.85\% - 5.4\%} = ₹305.51$$

Sol 45



Revenue = 40000
− exp = −7500

If Commission is Before Tax

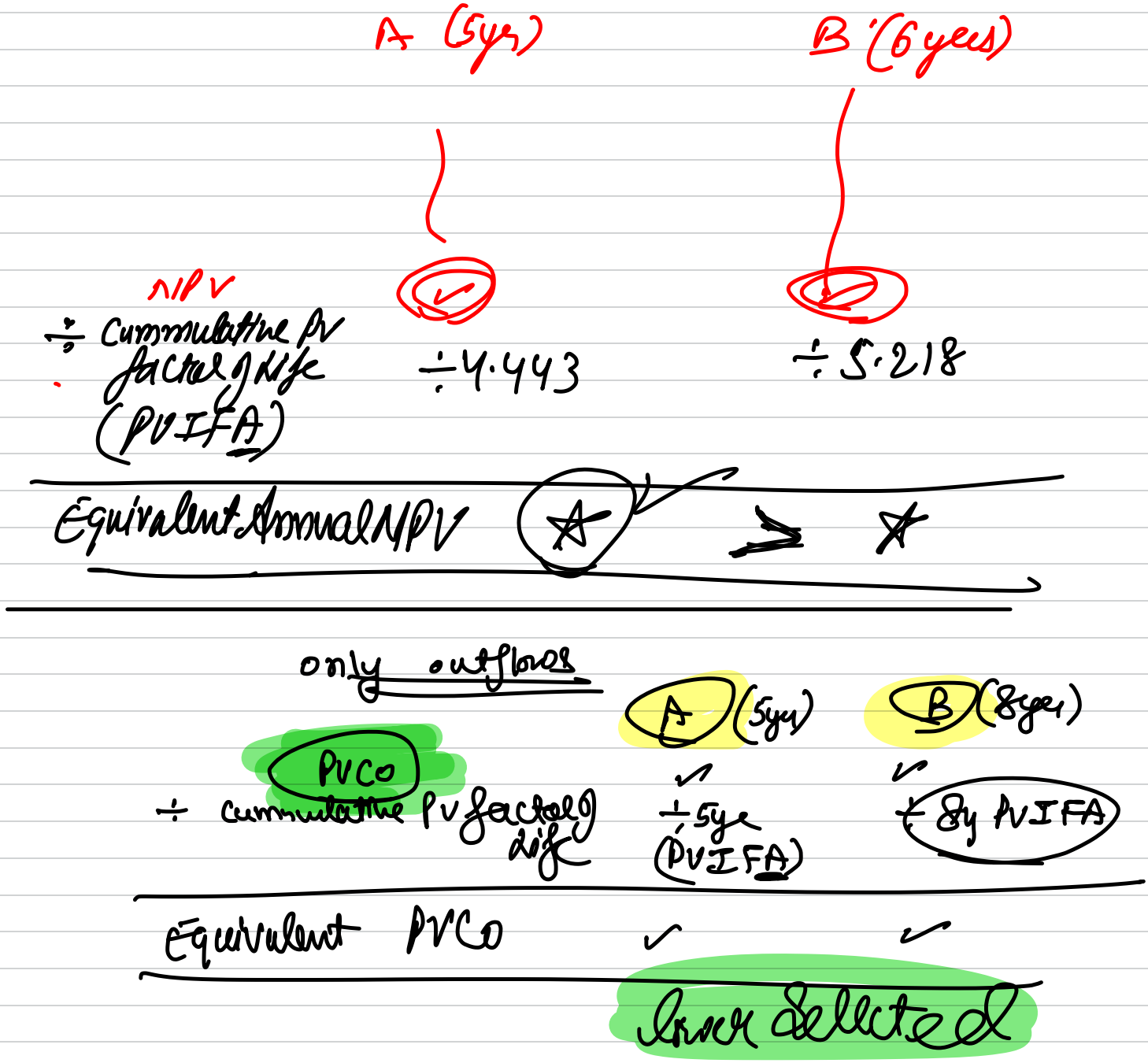
Sales =	40,000
− exp =	− 7500
− Commission =	− 12000
− Dep $\left(\frac{80-6}{8}\right)$ =	− 9250
PBT	11,250
− Tax 30%	−3375
PAT	7875
+ Dep	9250
CFAT	17125

If Commission is after Tax

Sales =	40000
− exp	− 7500
− Dep	− 9250
PBT	23250
− Tax 30%	6975
PAT	16275
− Commission	−12000
+ Depreciation	9250
CFAT	13525

Statement of NPV

Particulars	yr	PVF@8%	(i) If Commission before Tax		(ii) If Commission after Tax	
			Amt	PV	Amt	PV
Purchase of Mach	0	1	80000	80000	80,000	80000
			PVCO	80000	PVCO	80,000
CFAT	1-8	5.334	17125	91344.75	13525	72142.35
Scrap Value	8	0.467	6000	2802	6000	2802
			PVCI	94146.75	PVCI	74944.35
		NPV ⇒		14146.75		(5055.65)



Format for question having only outflows.

Particulars	year	PV factor	Amt	PV
Purchase of Machine	0	1	10,00,000	10,00,000
Running exp (Exp (1-t)) 1,00,000 (1-30%)	1-5	~~2~~	70,000	✓
Less Tax Saving on Dep	1-5	~~3~~	(60,000)	(60,000x)
(Depreciation x Tax rate) (2,00,000 x 30%) (60,000)				
			PVCO	✓

Sol 46

Working (i)

	Machine I	Machine II
	₹10,00,000	₹15,00,000
Dep = (Cost − 0) / 5 years	= ₹2,00,000	= (15,00,000 − 0)/6 = ₹2,50,000
PBTAD	₹3,45,000	₹4,55,000
− Dep	− ₹2,00,000	− ₹2,50,000
PBT	1,45,000	₹2,05,000
− Tax 30%	− 43,500	− 61,500
PAT	101500	1,43,500
+ Dep	+ 2,00,000	+ 2,50,000
CFAT	301500 p.a	393500 p.a

(ii) Statement of NPV

Particulars	yr	PV factor (12%)	Machine I (5yrs) Amount	Machine I (5yrs) PV	Machine II (6yrs) Amount	Machine II (6yrs) PV
outflow	0	1	10,00,000	(10,00,000)	15,00,000	(15,00,000)
CFAT	1-5	3.605	301500	10,86,908		
	1-6	4.111			393500	16,17,679
			NPV	86,908	NPV	1,17,679
÷ Cummulative PV factor				÷ 3.605		÷ 4.111
Equivalent Annual NPV				24108		28625

Decision → Select Machine II, because it provides higher Equivalent Annual NPV.

Lol 47 (A) without Tax

Statement for Equivalent Annual PVCo

Particulars	yrs	PV factor (10%)	Machine A (3yrs)		Machine B (2yrs)	
Purchase value	0	1	1,50,000	1,50,000	1,00,000	1,00,000
Running exp	1-3	2.487	40,000	99,480		
	1-2	1.736			60,000	1,04,160
– Tax saving on Dep	-	–	–	–	–	–
			PVCo	249480		204160
÷ Cummulative PV for life				÷2.487		÷1.736
Equivalent Annual PVCo				(100314) ✓		(117603) ✗

Lol 47 (B) with 30% Tax

Statement for Equivalent Annual PVCo

Particulars	yrs	PV factor (10%)	Machine A (3yrs)		Machine B (2yrs)	
Purchase value	0	1	1,50,000	1,50,000	1,00,000	1,00,000
Running exp (1-t)	1-3	2.487	40000 (1-30%) = 28000	69636		
	1-2	1.736			60000 (1-t) = 42000	72912
– Tax Saving on Dep (Dep x tax rate)	1-3	2.487	(50000 x 30%) = 15000	(37305)		
	1-2	1.736	-	-	15000	(26040)
			PVCo	182331		146872
÷ Cummulative PV for life				÷2.487		÷1.736
Equivalent Annual PVCo				73314		84604

Advice: Select Machine A, Because it has lower Equivalent Annual PVCo.

Sol 48

(Cash cost Basis)

Statement for WC estimation

Particulars	Amount (₹)
C.A	
Stock of RM (9,00,000 × 1/12)	75,000
Stock of FG (29,40,000 × 1/12)	2,45,000
Debtors • Domestic (2023448 × 1/12)	168621
• Export (1006552 × 3/12)	251638
Prepaid selling exp (1,50,000 × 3/12)	37,500
Cash (250,000 - 75000)	1,75,000
Total CA (A)	9,52,759
CL	
Creditors (9,00,000 × 2/12)	1,50,000
O/s wages (720000 × 0.5/12)	30,000
O/s Man. exp (10,80,000 × 1/12)	90,000
O/s Admin exp (240000 × 1/12)	20,000
Income Tax Payable (225000 × 1/4)	56,250
Total CL (B)	3,46,250
Excess of CA over CL	
+ Reserves for Contingency 12%	
Total WC requirement	

Cost Sheet

RM	9,00,000
Labour	7,20,000
Man exp	10,80,000
Works cost	
+ Admin exp	2,40,000
Cost of Prodn	29,40,000
+ Selling exp	1,50,000
Cost of sales	30,90,000

Particulars	Domestic	Export	Total
Actual Sales	24,00,000	10,80,000	
		Required = 12,00,000	(10,80,000 / 90 × 100)
- GP 20%	- 4,80,000	- 240000	
Cost	19,20,000	9,60,000	
+ Selling exp	+103448	+46552	
Cost of Sales	2023448	1006552	

Selling exp = ₹1,50,000

Domestic 2400000 & export 1080000

1,50,000 × 24,00,000 / 34,80,000 & 1,50,000 × 10,80,000 / 34,80,000

₹103448 & ₹46552

Sol 49

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

	Particulars	Present Policy 30 days	Proposed Policy A 40 days	Proposed Policy B 50 days	Proposed Policy C 60 days	Proposed Policy D 75 days
		`	`	`	`	`
A.	Expected Profit:					
	(a) Credit Sales	6,00,000	6,30,000	6,48,000	6,75,000	6,90,000
	(b) Total Cost other than Bad Debts					
	(i) Variable Costs [Sales × 2/ 3]	4,00,000	4,20,000	4,32,000	4,50,000	4,60,000
	(ii)Fixed Costs	50,000	50,000	50,000	50,000	50,000
	Total Cost	4,50,000	4,70,000	4,82,000	5,00,000	5,10,000
	(c) Bad Debts	6,000	9,450	12,960	20,250	27,600
	(d) Expected Profit [(a) – (b) – (c)]	1,44,000	1,50,550	1,53,040	1,54,750	1,52,400
B.	Opportunity Cost of Investments in Receivables	7,500	10,444	13,389	16,667	21,250
C.	Net Benefits (A – B)	1,36,500	1,40,106	1,39,651	1,38,083	1,31,150

Recommendation: The Proposed Policy A (i.e. increase in collection period by 10 days or total 40 days) should be adopted since the net benefits under this policy are higher as compared to other policies.

SP = ₹3
VC = ₹2
VC = 2/3 of SP

Working Notes:

(i) Calculation of Fixed Cost = [Average Cost per unit – Variable Cost per unit] × No. of Units sold

= [` 2.25 - ` 2.00] × (` 6,00,000/3)

= ` 0.25 × 2,00,000 = ` 50,000

(i) Calculation of Opportunity Cost of Average Investments

Opportunity Cost = Total Cost × (Collection period/360) × (Rate of Return/100)

Present Policy	= 4,50,000 ×	(30/360)	× (20/100)	= 7,500
Policy A	= 4,70,000 ×	(40/360)	× (20/100)	= 10,444
Policy B	= 4,82,000 ×	(50/360)	× (20/100)	= 13,389
Policy C	= 5,00,000 ×	(60/360)	× (20/100)	= 16,667
Policy D	= 5,10,000 ×	(75/ 360)	× (20/100)	= 21,250

Opportunity cost of Debtors Cost

Sales xxx
– VC
– FC
– Bad Debt

PBT
– Tax (if given)

PAT
– Opportunity Cost (Post Tax) ← (VC+FC) or Total Sales × ACP/365 × Int rate =

Int cost on Debtors Cost

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Q 1 50

Cash Budget for the months of June, July, August and September

Particulars	June (₹)	July (₹)	August (₹)	September (₹)
Opening Balance	45,000	45,500	45,500	45,000
Add: Receipts				
Cash Sales (20% of respective month's Sales)	1,00,000	98,000	1,08,000	1,22,000
Collection from Debtors	3,48,000	3,80,000	3,96,000	4,12,000
Interest on Investments (Dividend?)	25,000			
Total Receipts (A) ①	5,18,000	5,23,500	5,49,500	5,79,000
Payments:				
Creditors (2 months) April paid in June, and so on.	2,00,000	2,10,000	2,60,000	2,82,000
Wages (½ of previous month + ½ of Current month)	1,62,500	1,65,000	1,65,000	1,67,500
Overheads (1 month), previous month expenses paid now	40,000	38,000	37,500	60,800
Interest on Debentures (6% on ₹ 5,00,000)	30,000	-	-	-
Instalment on Machinery (₹ 4,00,000 ÷ 20 months)	-	20,000	20,000	20,000
Advance Tax	-	-	15,000	-
Total Payments (B) -②	4,32,500	4,33,000	4,97,500	5,30,300
Closing Balance before investment in FD (A) – (B)	85,500	90,500	52,000	48,700
Investment in Fixed Deposit (multiples of 1,000) (Balancing Figure)	– 40,000	– 45,000	– 7,000	3,000
Closing Balance (required around ₹ 45,000)	45,500	45,500	45,000	45,700

Working Notes:

Computation of Collection from Debtors

Particulars	April (₹)	May (₹)	June (₹)	July (₹)	August (₹)	September (₹)
Total Sales	4,20,000	4,50,000	5,00,000	4,90,000	5,40,000	6,10,000
Cash Sales 20%	84,000	90,000	1,00,000	98,000	1,08,000	1,22,000
Credit Sales 80%	3,36,000	3,60,000	4,00,000	3,92,000	4,32,000	4,88,000
Receipt:						
50%		1,68,000	1,80,000	2,00,000	1,96,000	2,16,000
50%			1,68,000	1,80,000	2,00,000	1,96,000
Total Receipts			3,48,000	3,80,000	3,96,000	4,12,000

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