

CA INTER FM TOP 50 QUESTIONS

"Best way to revise for exams"

FOR COMPLETE REVISION



SOLUTION BOOK

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Sol 1

W.N (i) Capital
ESC $100 \times 5000 = ₹5,00,000$
Shares

10% Debentures = ₹50,000

Sol 2

Income Statement

Particulars	At 50,000 units	At 60,000 units
Sales @ 12	$\times 50,000 = ₹6,00,000$	$\times 60,000 = ₹7,20,000$
- VC @ 8	$\times 50,000 = - ₹4,00,000$	$\times 60,000 = - ₹4,80,000$
Contribution @ 4	₹2,00,000	= ₹2,40,000
- Fixed cost	- ₹1,00,000	- ₹1,00,000
EBIT	₹1,00,000	₹1,40,000
- Interest (5% × 10%)	- 50,000	- 50,000
EBT	₹50,000	₹90,000
- Tax 50%	- ₹25,000	- ₹45,000
EAT & EADS	₹25,000	₹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) $DFL = \frac{EBIT}{EBT}$

$DFL = \frac{1,00,000}{50,000} = 2$

$DFL = \frac{1,40,000}{90,000} = 1.55$

(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 (B/S)	-4,50,000	-30%
Contribution =	10,50,000	70%
- FC (B/S) =	-3,00,000	
EBIT (WN(i))	7,50,000	
- Int (B/S)	-1,50,000	
EBT (WN(ii))	6,00,000	

WN(i) $DOL = 1.4$

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

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

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

$EBIT = 7,50,000$

WN(ii) $DFL = 1.25$

$\frac{EBIT}{EBT - \frac{Int}{1-t}} = 1.25$

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

$EBT = 6,00,000$

Solved 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.

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

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

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

→ $26.25\% = \% \text{ change in Taxable Income (EBT)}$

To Verify

<u>Particulars</u>	<u>Income Statement</u>	
	<u>original</u>	<u>After 15% sale increase</u>
Sales	15,00,000	+15% = 17,25,000
- Variable cost	- 4,50,000	+15% = -5,17,500
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

$$\% \text{ change in EBT} = \frac{7,57,500 - 6,00,000}{6,00,000} \times 100 = 26.25\%$$

Hence Verified.

Qol 3

Income Statement

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

con ii Verify DFL

$$EBIT = 13,50,000$$

$$- \text{Int} = 3,60,000$$

$$EBT = 9,90,000$$

$$DFL = \frac{EBIT}{EBT} = (1.35)$$

$$\text{Given DFL} = (1.39)$$

Thus DFL does not match.

con ii Let us calculate using given DFL

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

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

$$EBT = 9,71,223$$

$$(i) DOL = \frac{\text{Cont}}{EBT} = \frac{21,00,000}{13,50,000} = 1.56$$

$$(ii) DCL = \frac{\text{Cont}}{EBT} = \frac{21,00,000}{9,71,223} = 2.16$$

$$(iii) EPS = 13.597 / \text{share}$$

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

Sol 4

Income statement

Particulars	Amount
Sales	45,00,000
- VC (B/S)	31,50,000
Contribution	13,50,000
- FC	-2,25,000
EBIT	11,25,000
- Interest (20L x 12%)	-2,40,000
- Additional Int (AB)	-60,750
EBT	2,81,250
- Tax 30%	-84,375
EAT & EAEs	1,96,875
÷ No of shares	÷ 3,85,000
EPS	0.511

① $\text{P/V ratio} = \frac{\text{Cont}}{\text{Sales}} = \frac{13,50,000}{45,00,000} \times 100 = 30\%$

$\text{EPS} = \frac{\text{EAEs}}{\text{No of shares}} = 0.511$

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

$\text{Asset Turnover} = \frac{\text{Sales}}{\text{Asset}} = \frac{45,00,000}{58,50,000}$

$\text{Asset Turnover ratio} = 0.769$

W.N (i)

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

$1.2 = \frac{\text{Cont}}{\text{Cont} - 22,50,000}$

$1.2 (\text{Cont} - 22,50,000) = \text{Cont}$

$1.2 \text{ Cont} - 27,00,000 = \text{Cont}$

$0.2 \text{ Cont} = 27,00,000$

$\text{Cont} = 13,50,000$

W.N (ii)

$\text{Cont} = 13,50,000$ $\text{DCL} = \frac{\text{Cont}}{\text{EBT}}$

$\text{FC} = -2,25,000$

$\text{EBIT} = 11,25,000$

$\text{Int} = -2,40,000$

$\text{EBT} = 885,000$

$\text{DCL} = \frac{13,50,000}{885,000}$

$\text{DCL} = 1.525$

Given $\text{DCL} = 4.8$

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

$4.8 = \frac{13,50,000}{\text{EBT}}$

$\text{EBT} = 2,81,250$

W.N (iii)

B/S

F 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 lower (inadequate)
as compared to Industry.

(iii)

Sales	35,62,500		$\frac{1068750 \times 100}{30}$
- VC 70%	- 24,93,750		
Conl 30%	1068750		
- FC	- 225,000		
EBIT	843,750		
- Int	- 2,40,000		
- Additional Int	- 603,750		
EBT	0		

∴ 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	36 x 10% = -3,600
EBT	100% 10x
- Tax	50% -5x
EAT	50% 5x

Let Sales = 100x
do, EAT = 5x = 5% x 100x

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

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

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

$$120,000 + 40x = 100x - 6,00,000$$

$$720,000 = 60x$$

$$\boxed{12,000 = x}$$

$$, \text{ Sales} = 12,000 \times 100 = 12,00,000$$

Sol 6

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

$$\text{Debt Service Coverage Ratio} = \frac{\text{EAT} + \text{Interest} + \text{Depreciation}}{\text{Interest} + \text{Principal (Installment)}} \Rightarrow \frac{480 + 162 + 155}{162 + 178} = 2.34 \text{ Times}$$

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

Qd 7

(i) Income Statement

Particulars	Amount (₹)
Sales	600000
- COGS	-180000
Gross Profit	420000
- operating exp (O/S)	339000
+ operating Income	—
operating Profit = EBIT	810000
- Interest	-60000
EBT 100%	750000
- Tax - 50%	-375000
EAT 50%	375000

(ii)

Balance sheet

Share Capital	10,50,000	FA (B/L)	17,00,000
R.O.S	4,50,000	CA	4,00,000
15% Debentures	4,00,000	Stock	1,50,000
CL	—	Debtors	2,00,000
Shareholders' Reserves	2,00,000	Cash	50,000
	<u>21,00,000</u>		<u>21,00,000</u>

Qd (i) Return on Networth

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

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

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

$$Networth = ₹ 15,00,000$$

Qd (ii)

$$Networth = 15,00,000$$

Share Capital	Reserves
7	3
$15,00,000 \times \frac{7}{10}$	$15,00,000 \times \frac{3}{10}$
<u>₹ 10,50,000</u>	<u>₹ 4,50,000</u>

Qd (ii)

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



WN (V) Net Profit to Sales = 6.25%

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

$$\frac{NP}{6000000} \times 100 = 6.25\%$$

$$NP = 3,75,000 \text{ EAT}$$

WN (II) $ITR = \frac{CoGS}{Av Stock}$

$$I\&R = \frac{18,00,000}{Av Stock}$$

$$Av Stock = 1,50,000$$

Assumed

$$Closing Stock - Av Stock = 1,50,000$$

WN (II) Interest on Debentures = Interest $\times$ Debentures

$$60,000 = 15\% \times \text{Debentures}$$

$$\text{Debentures} = ₹4,00,000$$

Sol 8

Balance Sheet

Capital Block
 Share Capital 4,00,000
 Debentures 1,50,000
 Net Profit 1,20,000
 Reserves 30,000
 CL
 Creditors 1,50,000
 Other CL 50,000 (B/S)

6,00,000

2,00,000

8,00,000

FA (B/S)

CA

Debtors 2,00,000
 Stock 1,50,000
 Other CA 50,000 (B/S)

4,00,000

4,00,000

8,00,000

$$\text{CON(1)} \quad CR = \frac{CA}{CL} = 2$$

$$CA = 2CL$$

$$WC = CA - CL$$

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

$$2,00,000 = CL$$

$$4,00,000 = CA$$

$$\text{CON(1)} \quad \frac{\text{Capital Block}}{CA} = \frac{3}{2}$$

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

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

$$\text{Capital Block} = 6,00,000$$

$$\bullet \text{ Net Profit} = 10\% \times \text{Sales} = 10\% \times 12 = 1,20,000$$

$$\bullet \text{ Reserves} = 2.5\% \times \text{Sales} = 30,000$$

$$\text{Balance} \rightarrow 4,50,000$$

Debtors

Share Capital

1

2

2

₹ 1,50,000

₹ 3,00,000

Q. (iii) FA To Turnover

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

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

$$Sales = 12,00,000$$

Q. (iv) Sales = 12L

Cash Sales : Credit Sales

1 : 2

4,00,000

x 8,00,000

Q. (v)

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

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

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

$$\text{Creditors} = 1,50,000$$

Q. (vi)

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

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

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

$$\text{Stock} = 1,50,000$$

Q. (vii)

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

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

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

$$\text{Debtors} = 2,00,000$$

Q. (viii)

Sales	12,00,000
- GP	25% - 3,00,000
COGS	<u>9,00,000</u>

$$\text{Sales} + \text{AV} - \text{COGS} = \text{COGS}$$
$$\text{AV} = 9,00,000$$

Sol 9

Balance Sheet Rudra Ltd.

<u>Networth</u> (12L ÷ 4)	39,00,000	<u>Fixed Asset</u> (1,29,09,000 ÷ 4)	39,09,000
• Capital 10,09,000		<u>Current Assets</u>	45,09,000
• Reserves 29,09,000		Stock (1,20L ÷ 6) = 20L	
10% Long term Debt (12L ÷ 4)	39,09,000	Debtors 2L	
<u>CL</u>	19,09,000	Cash <u>5L</u>	
• Creditors 10,09,000			
• o/s Int 39,09,000			
• other CL 2,09,000 (CAIS)			
	<u>75,09,000</u>		<u>75,09,000</u>

con (i)

B/S

<u>Networth</u>		<u>FA</u>	$\frac{x}{4}$
Capital —		<u>CA</u>	
Reserve —		Stock $(\frac{x}{6})$	
10% Long term Debt	$(\frac{x}{4})$	Debtors $(\frac{x}{6})$	
<u>CL</u>		Cash 5,09,000	
Creditors $(\frac{2x}{12})$	$(\frac{2x}{18} + \frac{5,09,000}{3})$		
o/s Interest			
	<u> </u>		<u> </u>
	<u> </u>		<u> </u>

con (ii)

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

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

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

con (iii)

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

$$CA = 3CL$$

$$(\frac{2x}{6} + 5,09,000) = 3CL$$

$$\frac{2x}{18} + \frac{5,09,000}{3} = CL$$

con (iv)

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

$$\text{WNO (V)} \quad \frac{\text{FA TA}}{\text{FA}} = \frac{\text{Sales}}{1} = \frac{4}{1}$$

$$\frac{x}{\text{FA}} = \frac{4}{1}$$

$$\boxed{\frac{x}{4} = \text{FA}}$$

$$\text{COM (VI)} \quad \frac{\text{STA}}{\text{STAK}} = \frac{\text{Sales}}{\text{STAK}} = 6$$

$$\frac{x}{\text{STAK}} = 6$$

$$\boxed{\frac{x}{6} = \text{STAK}}$$

$$\text{WNO (VII)} \quad \frac{\text{STAK}}{\text{Debtors}} = \frac{1}{1}$$

$$\text{STAK} = \text{Debtors}$$

$$\boxed{\frac{x}{6} = \text{Debtors}}$$

$$\text{WNO (VIII)} \quad \frac{\text{Sales}}{\text{Networth}} = \frac{4}{1}$$

$$\frac{x}{\text{Networth}} = \frac{4}{1}$$

$$\boxed{\frac{x}{4} = \text{Networth}}$$

$$\text{COM (IX)} \quad \frac{\text{Capital}}{\text{Reserve}} = \frac{1}{2}$$

$$\text{Networth} = 30\text{L}$$

$$\begin{array}{cc} \text{Capital} & \text{Reserve} \\ 1 & 2 \end{array}$$

$$30\text{L} \times \frac{1}{3} = 10\text{L}$$

$$30\text{L} \times \frac{2}{3} = 20\text{L}$$

$$\text{COM (X)} \quad \text{GP} = 20\% \text{ on cost} = \frac{1}{5} \text{ on cost}$$

$$\text{GP} = \frac{1}{6} \text{ on sales}$$

$$\begin{aligned} \text{Sales} &= x \\ \text{GP} &= \frac{1}{6} \times x = \frac{1}{6}x \end{aligned}$$

$$\boxed{\text{Costs} = \frac{5x}{6}}$$

$$\text{WNO (XI)} \quad \frac{\text{Costs}}{\text{Creditors}} = \frac{10}{1}$$

$$\frac{5x}{6} = \frac{10}{1}$$

$$\boxed{\frac{x}{12} = \text{Creditors}}$$

$$\frac{320}{12} = 10\text{L}$$

$$\text{Net Sales} = x$$

$$\text{COM (XII)} \quad \text{Int'l's} = 10\% \text{ on } x$$

$$\begin{aligned} \text{Int'l's} &= 10\% \times 30\text{L} \\ &= 3\text{L} \end{aligned}$$

Total Liabilities = Total Assets

$$\text{Net worth} + \text{long term loan} + \text{CL} = \text{FA} + \text{CA}$$

$$\frac{x}{4} + \frac{x}{4} + \frac{2x + 500,000}{18} = \frac{x}{4} + \frac{2x + 500,000}{8}$$

$$\frac{x}{4} + \frac{x}{4} - \frac{2x}{6} = \frac{500,000}{3} - \frac{500,000}{3}$$

$$\frac{x}{4} + \frac{x}{4} - \frac{x}{3} = \frac{500,000}{3} - \frac{500,000}{3}$$

$$\frac{9x + 4x - 12x}{36} = \frac{150,000 - 500,000}{3}$$

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

$$x = \frac{10,000 \times 36}{3} = 1,200,000$$

Qd 10

Statement of WACC (MV weights)

Source	Market Value	Weights	Rate	$W \times R$
ESC $5000 \times 39 = 19,50,000$ R&S	$\rightarrow ₹ 19,50,000$	$\frac{1950}{2926}$	19%	
8% Pref SC	$\left(\frac{400000}{25}\right) \times 16 = 2,56,000$	$\frac{256}{2926}$	12.5%	
12% Debt	$\left(\frac{600000}{100}\right) \times 120 = ₹ 7,20,000$	$\frac{720}{2926}$	7%	
	<u>29,26,000</u>			
				<u>WACC = 15.48%</u>

Ans (i) Pref Share

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

Ex-Div Price = ₹ 16

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

Ans (ii) Debt

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

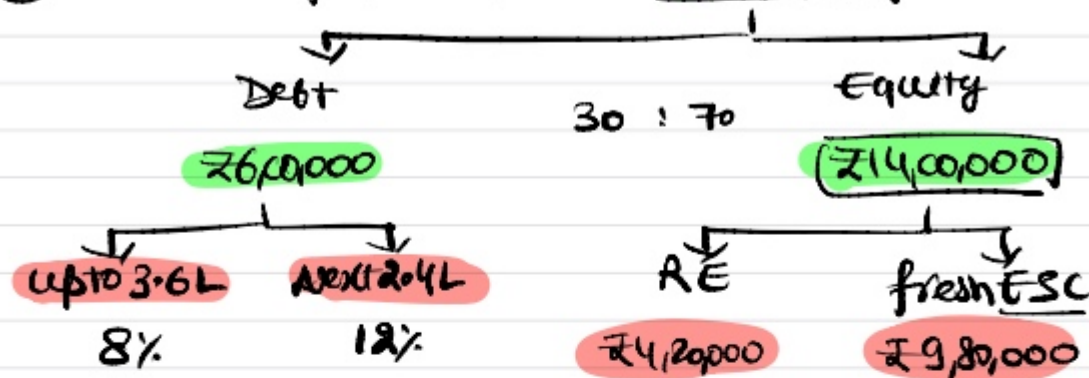
Self Note: In this question we have $K_e = K_{sc}$ hai isliye humne distribute MV of ES ko nahi kiya hai into MV of ES & MV of RE

Sol 11

Between of raising additional finance.

(C)

Total funds required = ₹20,00,000



Sol

(a)

$$EPS = ₹4,$$

$$DPS = D_0 = ₹4 \times 50\% = ₹2.$$

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

$$K_e = \frac{2(1+10\%)}{4} + 10\% = 15\%$$

$$K_e = K_{w} = 15\%$$

(7)

Debt	amt	weight ^(A)	Rate ^(B)	(A) + (B)
upto ₹3,60,000	3.6L	36/6	8%(1-40%) = 4.8%	2.88%
Next ₹2,40,000	2.4L	24/6	12%(1-40%) = 7.2%	2.88%
	<u>6L</u>			<u>5.76%</u>

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	$\frac{14}{20}$	15%	
Debt	6,00,000	$\frac{6}{20}$	5.76%	
	<u>20,00,000</u>			

$$WACC = K_0 = \underline{\underline{12.23\%}}$$

Sol 12
W0000

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

Additional funds	
Debt	0.5
Equity	0.5
30m	

RE = 3m

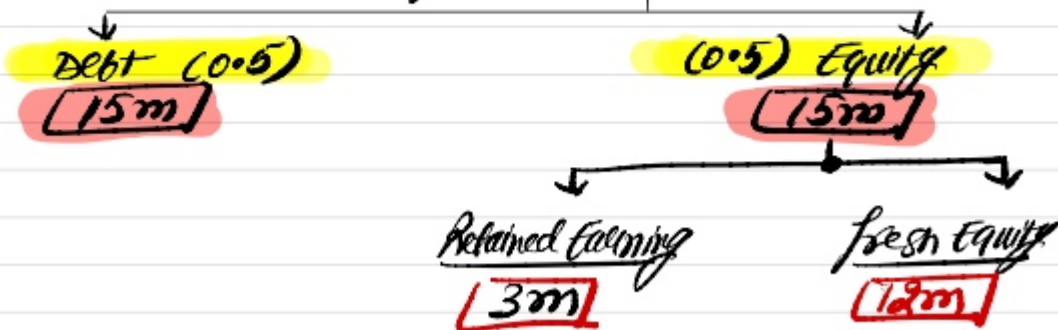
$t = 40\%$

New debt at Par, Int = 8%
Equity, MPS = ₹30 NP = ₹27

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

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

So, Total New funds = 30m



⑥ we need Equity funds = 15m
 Internally generated (RE) = 3m
 fresh Equity = 12m

⑦ components of common Equity

$K_{ec} = \text{Cost of retained Earning} = \frac{D_1}{NP} + g = \frac{1.2}{30} + 8\% = 12\%$

$K_{ef} = \text{Cost of fresh Equity} = \frac{D_1}{NP} + g = \frac{1.2}{27} + 8\% = 12.44\%$

⑧ Breaking point $\rightarrow$ 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.

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

© (i) For First 6m (1st Breaking Point)

	Amt	weight (A)	Rate (B)	(A) x (B)
RE (Equity)	3m	0.5	12%	6%
Debt	3m	0.5	4.8%	2.4%
	<u>6m</u>			

$$WACC_1 = 8.4\%$$

(ii) For Next 24m (2nd Breaking Point)

	Amt	weight (A)	Rate (B)	(A) x (B)
Fresh Equity	12m	0.5	12.44%	6.22%
Debt	12m	0.5	4.8%	2.4%
	<u>24m</u>			<u>8.62%</u>

$$WACC_2 = 8.62\%$$

Method (1)

(iii) Calculation of WACC for whole 30m.

	Amt	weight	Rate
RE	3m	0.1	12%
Equity	12m	0.4	12.44%
Debt	15m	0.5	4.8%
	<u>30m</u>	<u>1</u>	<u>WACC = 8.576%</u>

Method (2)

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

Sol 13

<u>WNO (i)</u>	Existing Capital Structure	→ optimum	
	Debt	30000	0.15
	PSC	10000	0.05
	Equity	1,60,000	0.80
		<u>2,00,000</u>	<u>1</u>

WNO (ii) $MPS = 23.6 = P_0$ ✓

$$D_1 = (200 \text{ EPS}) \times 50\% = 2.36 \times 50\% = \text{₹} 1.18$$

∴, Remaining must be RE $2.36 \times 50\% = \text{₹} 1.18 \text{ RE per share}$

$$\text{Total RE} = 1.18 \times 10,000 = \text{₹} 11800$$

WNO (iii)

$$K_d = \frac{I(1-t)}{NP} = \frac{216(1-50\%)}{96} = 8.33\%$$

WNO (iv)

$$K_P = \frac{PD}{NP} = \frac{21.1}{9.2} = 11.96\%$$

WNO (v)

$$K_{ee} = \frac{D_1}{A_0} + g$$

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

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

↓ we have calculated g from EPS table.

Solution

(A) (i) $K_d = 8.33\%$

(ii) $K_P = 11.96\%$

(iii) $K_e(\text{from RE}) = K_{ue} = 15\%$

(B) WACC (only using RE (no new share))

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

WACC $\Rightarrow 13.85\%$

(C) Breaking Point

Total capital before fresh equity is raised.

EPS of 2010 = ₹ 2.36

RE = ₹ 2.36 x 5% = 1.18 per share

Total RE = 1.18 x 14000 shares = ₹ 11,800

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 x 8.33%

PSC 0.05 x 11.96%

Equity (new/fresh) 0.80 x 15.9%

WACC $\Rightarrow 14.57\%$

Ques 14

Ques (i) Corrected Income Statement of last year

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

Ques (ii)

$$\text{Debt} = 10,00,000 \times 15\% \times \frac{9}{12} = 1,12,500$$

$$\text{Debt} = ₹10,00,000$$

$$\text{Original P/E ratio} = \frac{\text{MPS}}{\text{EPS}} = \frac{₹109.7}{10.97} = 10 \text{ Times}$$

Ques (iii)

Existing Capital

$$\text{Existing EBIT} = ₹18,00,000$$

$$\text{ESC} = 1,00,000 \times ₹10 = ₹10,00,000$$

$$\text{RAS} = ₹12,00,000$$

$$15\% \text{ Debt} = ₹10,00,000$$

$$\text{Current CE} = ₹32,00,000$$

$$\text{Existing ROI} = \frac{\text{EBIT}}{\text{CE}} = \frac{₹18,00,000}{₹32,00,000} \times 100 = 56.25\%$$

Ques IV

Additional funds required (₹10L)

option (1)

$$\bullet \text{ Loans } ₹10,00,000$$

$$\begin{aligned} \bullet \text{ old ESC } 10,00,000 & \rightarrow \text{Equity} \\ \bullet \text{ old RE } 12,00,000 & \rightarrow 22,00,000 \end{aligned}$$

$$\bullet \text{ old Debt } 10,00,000$$

option (2)

$$\bullet \text{ ESC } 10,00,000 \times 100 = ₹10,00,000$$

$$\begin{aligned} \bullet \text{ old ESC} &= 10,00,000 \\ \bullet \text{ old RE} &= 12,00,000 \end{aligned} \rightarrow \text{Equity } 32,00,000$$

$$\text{New Equity } 10,00,000$$

• New loan ₹ 10,00,000

Old Debt = ₹ 10,00,000

$$\frac{D}{D+E} = \frac{20L}{20L+22L} = \frac{20}{42} \approx 47.62\% > 40\%$$

Paap!!! hogaya hai

$$\frac{D}{D+E} = \frac{10L}{10L+32L} = \frac{10}{42} \approx 23.80\% < 40\%$$

No Paap!!!

* So, New P/E ratio 10-25:
Additional Debt $\Rightarrow$ 7.5 Times
Int rate = 18%

New P/E ratio = 10 Times
Additional Debt Int

Main Selection

Statement for calculation of MPS

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

Advice: selection option II (raise funds using Equity) because it has better MPS.

Q215 W&T

Amount Required = ₹60L

Alternative (a)

$$\text{ESC } 30000 \times ₹200 = ₹60L$$

Share

Alternative (b)

18% Debt $(60L \times \frac{2}{3}) = 40L$

Equity Share (optimal)
 $(60L \times \frac{1}{3}) = 20L$
 $(10,000 \times ₹200)$
Share

Main Solution

For Indifference Point

$$EPS_1 = EPS_2$$

$$\frac{(EBIT - 0)(1 - 40\%) - 0}{30,000} = \frac{(EBIT - 72,000)(1 - 40\%) - 0}{10,000}$$

$$\frac{(EBIT)(0.6)}{30,000} = \frac{(EBIT - 72,000)(0.6)}{10,000}$$

$$\frac{(EBIT)(0.6)}{30,000} \times 10,000 = (EBIT - 72,000)(0.6)$$

3

$$EBIT = 3(EBIT - 72,000)$$

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

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

$$₹10,80,000 = EBIT.$$

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

* Calculating Indifference level EPS

$$\frac{(10,80,000 - 0)(1 - 40\%) - 0}{30,000} = \boxed{221.6}$$

∴ Indifference level EBIT = ₹ 10,80,000 ✓
Indifference level EPS = ₹ 221.6 ✓

(ii) which Plan is better in different situation

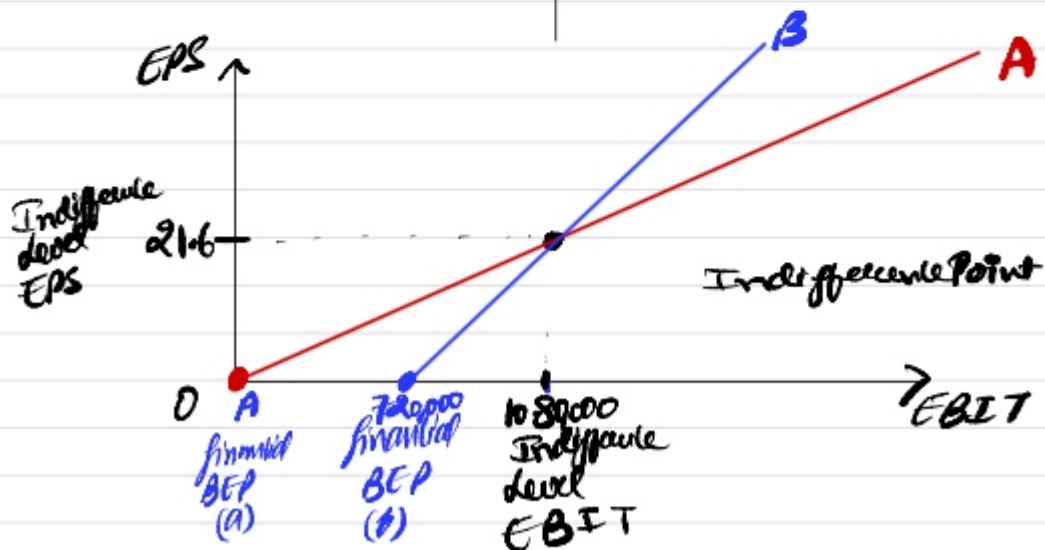
Method Preferred by Mr.

Alternative (a)

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

Alternative (b)

$$\text{financial BEP} = ₹ 720,000 + \frac{0}{(1 - 40\%)} = ₹ 720,000$$



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) Given in one question in ICAT module

Indifference level $EBIT = ₹10,89,000$

lower $EBIT = 10,79,000$ higher $EBIT = 10,99,000$

Calculation 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	- 1,49,000
EAT & EATS	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 EATS	654,000	2,22,000
÷ No. of shares	÷ 30,000	÷ 10,000
EPS	₹ 21.8	₹ 22.2

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

Sol 16

Levered Co

$$\begin{array}{l} \text{Step 1} \quad \text{EBIT} = 30,000 \\ - \text{Int } 14 \times 10\% = -14,000 \\ \hline \text{EATs} = \underline{16,000} \end{array}$$

$$\text{Step 2} \quad \text{VE} = \frac{\text{EATs} - 29,000}{\text{ke } 14.5\%}$$

$$\text{VE} = \underline{21,69,000}$$

$$\begin{array}{l} \text{Step 3} \quad \text{VE} = \underline{21,69,000} \\ \text{VD} = \underline{21,00,000} \\ \hline \text{VF} = \underline{22,60,000} \end{array}$$

Unlevered Co

$$\begin{array}{l} \text{Step 1} \quad \text{EBIT} = 30,000 \\ - \text{Int} = - \\ \hline \text{EATs} = \underline{30,000} \end{array}$$

$$\text{Step 2} \quad \text{VE} = \frac{\text{EATs} - 30,000}{\text{ke } 12.5\%}$$

$$\text{VE} = \underline{22,40,000}$$

$$\begin{array}{l} \text{Step 3} \quad \text{VE} = \underline{22,40,000} \\ \text{VD} = - \\ \hline \text{VF} = \underline{22,40,000} \end{array}$$

£ 15% owned by
Levered Co.

Sell shares

Unlevered
Co.

Step 1 Sell 15% shares of
Levered Co & raise
15% Debt of Levered Co.

$$\begin{array}{l} 15\% \times \text{VE} = 15\% \times 1.61 = \underline{24,000} \\ 15\% \times \text{Debt} = 15\% \times 12 = \underline{15,000} \end{array}$$

Amount available = 239,000
to invest

Step 2
Amount invested = 39,000
Value of firm = 2,49,000

$$\begin{array}{l} \% \text{ of Co purchased} \\ \frac{39,000}{2,40,000} \times 100 = \boxed{16.25\%} \end{array}$$

Buy 16.25% of Equity

Step 3

Earning foregone

$$15\% \times EAE$$

$$15\% \times 20,000 =$$

$$\boxed{\text{₹ } 3000}$$

Step 4

Earning Earned

$$16.25\% \times EAE$$

$$3000 = 24875$$

- Int on Borrowing

$$\text{₹ } 15000 \times 10\%$$

rate of int

$$= \text{₹ } 1500$$

$$\underline{\text{Net Earning} = \text{₹ } 3375}$$

we have Arbitrage gain of 2375 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
- Creditors Payment Period	-60
operating cycle Period	60 days.

(ii) Number of operating cycles in a year

$$= \frac{360}{\text{operating cycle Period}}$$

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

(iii)

$$\begin{aligned} \text{operating Expenses} &= ₹ 22,50,000 \\ \text{— Dep} &= ₹ 22,50,000 \\ \hline \text{Cash operating Exp} &= ₹ 22,50,000 \end{aligned}$$

$$\begin{aligned} \text{WC required} &= \frac{\text{Cash operating Exp}}{360} \times \text{operating cycle Period} \\ &= \frac{22,50,000}{360} \times 60 = ₹ 3,75,000 \end{aligned}$$

(iv) If No credit sale
 New operating cycle Period = 60 days (old)
 — 30 days (Debtors collection Period)

30 days

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

$$\text{Reduction in WC} = 3,75,000 - 1,87,500 = ₹ 1,87,500$$

Sol 18
Wneb

Cost sheet

Particulars	Amount (£)
Material	30000
wages	2,40000
Manufacturing Exp	30000
Depreciation (BIS)	1,20000
Costs	9,60000
+ Admin exp (General)	75000
+ Selling exp	37500
Cost of Sales	10,72,500
+ Profit (BIS)	1,27,500
Sales	12,00,000

$$\begin{array}{rcl}
 \text{Sales} & 12,00,000 & \\
 - \text{GP } 20\% & - 2,40,000 & \\
 \hline
 \text{Costs} & = & 9,60,000
 \end{array}$$



Cost sheet as per cash cost basis

Particulars

Amount (£)

Material	30000
labour	2,40000
Manu. f exp	30000
Cash Cost of goods sold	840000
+ Selling exp	37500
+ Admin (General)	75000

Cash cost of sales

9,52,500.

Ques 18 Main solution

Statement for estimation of WC

Particulars

Amount (₹)

Current Assets

Stock of RM = $(3,00,000 \times 1/12)$

25,000

Stock of FG = $(8,40,000 \times 1/12)$

70,000

Debtors = $12,00,000 \times (95,500 \times 2/12)$

1,58,750

Advance selling exp = $(37,500 \times 3/12)$

9,375

Cash

49,000

Total Current Assets (A)

3,03,125

Current Liabilities

Creditors = $(3,00,000 \times 2/12)$

50,000

o/s wages = $(2,40,000 \times 1/12)$

20,000

o/s Manufacturing exp = $(3,00,000 \times 1/12)$

25,000

o/s Admin exp = $(75,000 \times 1/12)$

6,250

Total Current liabilities (B)

1,01,250

Excess of CA over CL

2,01,875

+ Safety margin $15\% \times 2,01,875$

30,281

Net WC

2,32,156

Sol 19

WIP Cost Sheet

Inventories	Amount (₹)
RM purchased + op RM - CIRM	112700 + 0 - 16100
RM consumed	96600
Wage & Exp	66250
Gross factory cost + op WIP - COWIP	162850 + 0 - 16350
Net factory cost + op FG - C.F.G.	146500 + 0 - 14650
COGS + Admin exp (General) + delivery exp	131850 + 14000 + 13000
Cost of sales	158850

$$CIRM = \frac{96600 \times 2}{12} = 16100$$

$$284000 \begin{matrix} \swarrow 90\% \text{ sold} \\ \searrow 10\% \text{ C.F.G.} \end{matrix}$$

$$75600 + 8400 + 218600$$

$(84000 \times 15\% \times 100\%)$
COWIP

$$262500 \begin{matrix} \swarrow 90\% \\ \searrow 10\% \end{matrix}$$

$$56250 + 6250 + 3750$$

$(62500 \times 15\% \times 40\%)$

$$\frac{14650}{C.F.G.} \quad \frac{16350}{COWIP}$$

20% cash sale

80% credit sales

$$127080$$

Main SectionStatement for WC estimationAssetsAmount (₹)CA

Stock of RM	16,100
Stock of WIP	16,350
Stock of FG	14,650
Debtors = $(\text{Cost of credit sales} \times \frac{2}{12})$ = $(127080 \times \frac{2}{12})$	21,180
Cash in hand	8000
Prepaid expenses:-	
• wages $(66250 \times \frac{1}{12})$	5521
• Admin exp $(14000 \times \frac{1}{12})$	1167
• Selling exp $(13000 \times \frac{1}{12})$	1083
• Advance Income tax $(19000 \times 70\% \times \frac{3}{12})$	1750
Total CA (A)	85801

CL

creditors $(112700 \times \frac{1.5}{12})$	14088
Provision for Tax $(19000 \times 30\%)$	3000
Total CL (B)	17088
Excess of CA over CL (A - B)	68,713
+10% unforeseen contingencies reserve	6871
Net WC	75,584

Q.20

$$\begin{aligned} \text{Debtors} &= 40L \times 90/360 = ₹10,00,000 \\ \text{less Commission} &= 10L \times 3\% = - ₹30,000 \\ \text{less Reserves} &= 10L \times 10\% = - ₹1,00,000 \\ \text{Amt available for Advance} &= ₹8,70,000 \\ \text{less Interest} &= \left(₹8,70,000 \times 18\% \times \frac{90}{360} \right) = - ₹39,150 \\ \text{Net Advance Amount} &= ₹8,30,850. \end{aligned}$$

Statement for evaluation of factoring proposal.

Instructions	Amount (₹)
<u>Benefits</u>	
Savings in collection cost	₹1,00,000
Savings in Bad Debt (3% x 40L)	₹1,20,000
Total Benefits (A)	₹2,20,000
<u>Costs</u>	
Commission (30,000 x 360/90)	₹1,20,000
Interest (39,150 x $\frac{360}{90}$)	₹1,56,600
Total costs (B)	₹2,76,600
Net cost of factoring (B) - (A)	₹56,600.

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

As effective factoring rate 6.81% < RoI (opportunity cost) 15%

∴ 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
① Estimated Profit	13,50,000	15,00,000	15,75,000
less			
② Int cost on Debtors cost (W.N.)	- 1,75,000	- 2,80,000	- 3,93,750
Net Benefit ①-②	11,75,000	12,20,000	11,81,250

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

W.N. ①

Calculation of ACP

$\text{Debtors} = \frac{\text{Sales} \times \text{ACP}}{12}$ $\text{ACP} = \left(\frac{\text{Debtors} \times 12}{\text{Sales}} \right)$	$\frac{12.5L \times 12}{50L}$ 3 months	$\frac{20L \times 12}{60L}$ 4 months	$\frac{28.125L \times 12}{67.5L}$ 5 months
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W.N. ②

Int Cost on Debtors cost

VC $35L \times \frac{3}{12} \times 20\%$ ₹ 1,75,000	VC $42L \times \frac{4}{12} \times 20\%$ ₹ 2,80,000	VC $47.25L \times \frac{5}{12} \times 20\%$ ₹ 3,93,750
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Sol 23

Cash - Budget

Particulars	April	May	June	July	Aug	Sept.
Opening Cash	20,000	29,000	20,000	29,000	29,000	29,000
Cash Receipts						
Cash Sale 20%	16,000 (A)	12,000 (M)	16,000 (S)	20,000 (S)	16,000 (A)	12,000 (S)
Debtors 1M 60%	84,000 (M)	48,000 (A)	36,000 (M)	48,000 (S)	60,000 (S)	48,000 (A)
Debtors 2M 20%	24,000 (F)	28,000 (M)	16,000 (A)	12,000 (M)	16,000 (S)	40,000 (S)
Total Cash Receipts (A)	1,44,000	1,08,000	88,000	1,09,000	1,12,000	1,09,000
Payments						
Creditors Paid (80% Purchase)	48,000 (M)	64,000 (S)	89,000 (S)	64,000 (A)	48,000 (S)	89,000 (A)
Int Paid	3,000	—	—	3,000	—	—
wages	9,000	8,000	19,000	19,000	9,000	9,000
Admin & Tax	—	—	—	5,000	—	—
Total Payment (B)	60,000	72,000	99,000	89,000	57,000	89,000
Closing Cash (C)	84,000	36,000	20,000	18,000	55,000	11,000
- Temp Invest	-64,000	-16,000			-35,000	
+ Self Investment			22,000	2,000		+9,000
Net Closing Cash	20,000	29,000	20,000	20,000	29,000	20,000

WNO Int on Debtors = $1,20,000 \times 1\% = ₹12,000$

WNO Collection from Sales = 100%

20% Cash Sale
(Same Month as Sales)

80% Credit Sales
 $80\% \times 75\% = 60\%$ (1M)
 $80\% \times 25\% = 20\%$ (2M)

Qol 23

$$K_e = 16\%$$
$$r = RoI = 20\%$$

$$\begin{aligned} \text{PAT (Net Profit)} &= ₹ 30,00,000 \\ - \text{Pref Dividend} &= - ₹ 12,00,000 \\ & \quad (₹ 100L \times 12\%) \end{aligned}$$

$$\begin{aligned} \text{EAFS} &= ₹ 18,00,000 \\ \div \text{No of Equity shares} &\div 3,00,000 \\ \text{EPS} &= ₹ 6/\text{share} \end{aligned}$$

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

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

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

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

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

$$0.25D = 7.5 - 6.72$$

$$D = 3.12$$

$$\therefore \text{desired dividend payout} = \frac{3.12}{6} = \boxed{52\%}$$

Sol 23(2)

If desired share price = ₹30

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

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

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

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

$$0.25D = 7.5 - 4.8$$

$$D = \frac{2.7}{0.25} = \boxed{₹10.8}$$

$$\therefore D = ₹10.8$$

$$\therefore \text{Desired Dividend Payout} = \frac{10.8}{6} = \boxed{18\%}$$

Qd24

$$\begin{aligned}\text{Earnings} &= ₹1,00,000 & , \text{EPS} &= ₹5 \\ \text{Dividends} &= ₹6,00,000 & , \text{DPS} &= ₹3 \\ \text{Number of Shares} &= ₹2,00,000 \\ \text{RO.I} &= r = 20\%\end{aligned}$$

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

(a) Price of Shares as per Walter Model.

$$P = \frac{D + \frac{(E-D) \times r}{K_e}}{K_e} = \frac{3 + \frac{(5-3) \times 20\%}{10\%}}{10\%} = ₹70$$

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

(c) $r = 20\%$, As per Walter's model,
 $K_e = 10\%$, optimal Dividend = 0%
($r > K_e$)

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 = $n = \frac{₹1000000}{₹100} = 10,000 \text{ Shares}$

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

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

$$₹100 = \frac{0 + P_1}{(1 + 12\%)}$$

$$₹112 = P_1$$

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

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

$$₹100 = \frac{10 + P_1}{(1 + 12\%)}$$

$$112 = 10 + P_1$$

$$102 = P_1$$

(iii) If company paid Dividend.

$$\begin{cases} D_1 = ₹10 \\ P_1 = ₹102 \end{cases}$$

Earnings = ₹5,00,000

Investment = ₹10,00,000

To find Δn = change in number of shares.

$$\begin{array}{rcl} \text{Earnings} & = & ₹5,00,000 \\ \text{less Dividend} = 10000 \times ₹10 & = & - ₹1,00,000 \end{array}$$

$$\begin{array}{rcl} \text{less Investment} & = & - ₹10,00,000 \\ \hline \text{Amount to be raised} & = & (₹6,00,000) \end{array}$$

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

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

Number of new shares to be issued = 5882

To verify MM approach.

Value of firm before = Value of firm after dividend.

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

LHS

$$\begin{array}{l} 10000 \times ₹100 \\ ₹10,00,000 \end{array}$$

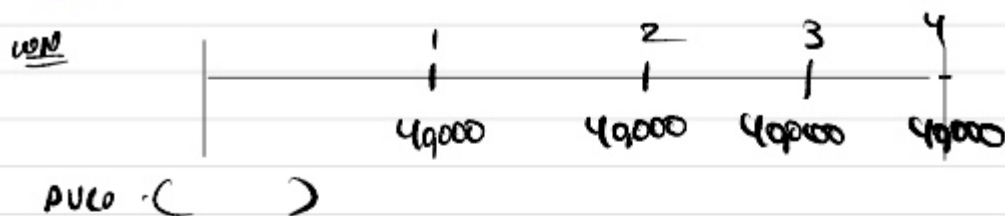
RHS

$$\frac{(10000 + 5882) \times 102 - 10,00,000 + 5,00,000}{(1 + 12\%)}$$

$$\Rightarrow ₹9,99,68 \text{ (approx)}$$

verified

Sol 26



Step ① At $IRR = 15\%$, $NPV = 0$.

	year	Ref ^{15%}	Amount	PV
Outflow Cost of Project	0	1	x	(x)
Inflow CFAT	1-4	2.855	40,000	1,14,200
			<u>NPV =</u>	<u>0</u>

$$\therefore, (x) + 1,14,200 = 0$$

$$(x = 1,14,200)$$

$$\therefore, \text{Cost of Project} = PVCO = ₹ 1,14,200$$

step 2 Now calculate NPV at 2% (cost of capital).
So, that $PI = 1.064$

Particulars	year	PV factor	Amt	PV
outflow	0	1	1,14,200	(1,14,200)
Inflow				<u>PV10</u>
CFA T	1-4	3.038	40,000	40,000 a
				<u>PVCI</u>

$$PI = \frac{PVCI}{PV10}$$

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

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

$$3.03772 = a$$

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

Fair Calculation

Cost of Capital = Discounting rate = 12%

		Discount At 12%		
outflow & Inflow &	0	1	1,14,200	(1,14,200)
CFA T	1-4	3.038	40,000	121,520
			<u>NPV</u>	<u>7320</u>

$$PBP = \frac{\text{Initial outflow}}{\text{Annual inflow}} = \frac{21,14,200}{40000} = 2.85 \text{ years.}$$

PBP

Sol 27

on B

Particulars

X

Y

Income

Saving in labour
+ saving in shop

- Maintenance
- Indirect material
- Depreciation

9,000

1,000

- 7,000

- 6,000

- 12,000

12,000

15,000

- 11,000

- 8,000

- 16,000

- Dep

$\left(\frac{15,000 - 0}{5}\right) = -3,000$

$\left(\frac{24,000 - 0}{6}\right) = -4,000$

PBT

4,500

6,000

- Tax 30%

- 1,350

- 1,800

PAT

3,150

4,200 ✓

+ Dep

+ 3,000

+ 4,000

CFAT

6,150

8,200.

$$\text{① } \text{ARR} = \frac{\text{Average PAT}}{\text{Average Investment}}$$

$$\text{or } \frac{\text{Average PAT}}{\text{Initial Investment}}$$

$$\text{for machine X} = \frac{3,150}{\left(\frac{15,000 + 0}{2}\right)} \Rightarrow 42\%$$

$$\text{or } \frac{3,150}{15,000} = 21\%$$

$$\text{for machine Y} = \frac{4,200}{\left(\frac{24,000 + 0}{2}\right)} = 35\%$$

$$\text{or } \frac{4,200}{24,000} = 17.5\%$$

(ii)

Particulars	Yr	Factor 10%	X		Y	
			Am't	PV	Am't	PV
outflow	0	1	15900	(1,59,000)	2,49,000	(2,49,000)
			PVCO @	1,59,000	PVCO @	2,49,000
Inflow	1-5	3.791	61,500	233147		
	1-6	4.355			82,000	357110
			PVCI @	233147	PVCI @	357110
				83,147		117,110
				÷ 3.791		÷ 4.355
			Equivalent Annual NPV	21933		26891

NPV

÷ Cumulative PV factor of life

÷ 3.791

÷ 4.355

$$PI = \frac{PVC I}{PVC O}$$

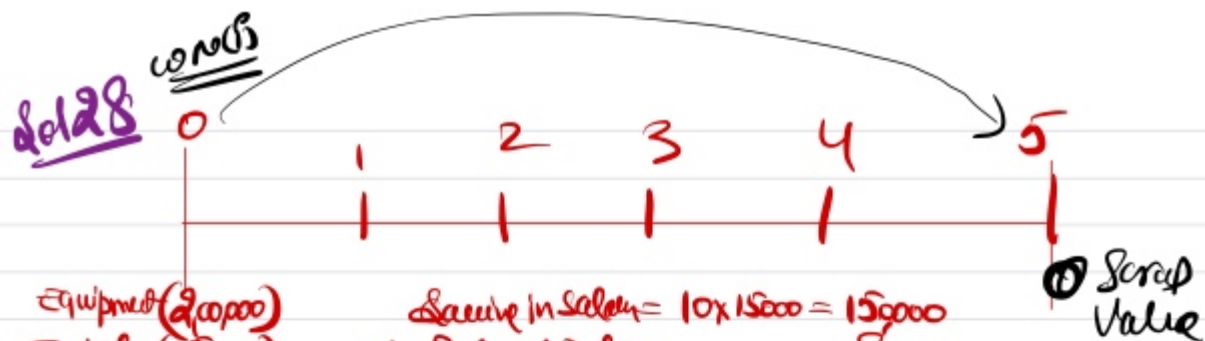
$$\rightarrow \frac{233147}{159000} = 1.55$$

$$\frac{357110}{249000} = 1.488$$

$$NPV \text{ Index} = \frac{NPV}{PVC O}$$

$$\frac{83147}{159000} = 0.55$$

$$\frac{117110}{249000} = 0.488$$



Equipment (20000)
Initial (5000)
8,5000

Savings in Sales = $10 \times 15000 = 150000$
 + Reduced Delay 8000
 + RM Savings = 12,000
 + Billing Savings = 3,000
Total Savings = 173,000 P.a

- Computer operator (2 x 40000) - 80,000
 - Maintenance - 12,000
 - Dep $\left(\frac{250000-0}{5}\right)$ - 50,000

PAT 31,000
 - Tax 40% - 12,400
 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 & PI

Particulars	Yr	PV factor	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	2,47,303
Scrap Value	5	0.567	0	0
			PVCI (B)	2,47,303

$$NPV = PVCI - PVCO = ₹ 697$$

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

(v) Calculation of Payback Period

Initial Investment = ₹ 2,50,000

Annual Inflow (CFAT) = ₹ 68,600

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

$$\begin{aligned} & \text{or} \\ & = 3 \text{ years} + 0.64 \times 12 \\ & = 3 \text{ years 8 months} \\ & \quad (\text{approx}) \end{aligned}$$

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

• Initial Investment = $2,10,000 + 5,000 = \text{₹}2,15,000$

• Annual CFAT

Savings in labour	=	1,59,000
+ Savings in Prod ⁿ delay		8,000
+ Savings in Stockout		12,000
+ Savings in Billing		3,000
Total Savings		1,73,000

- Salary (ex 4,000)	-	89,000
- Maintenance	-	12,000
- Dep ($\frac{2,50,000 - 0}{5}$)	-	50,000

SI
- Dep ($\frac{2,50,000 - 25,000}{5}$)

PBT	31,000
- Tax	- 12,400
PAT	18,600
+ Dep	50,000
CFAT	68,600

• At end

Sale of Asset = 25,000
- $WDV = 0$
CG = 25,000

CG Tax 25,000
 $\times 40\% = 10,000$

Sale = 25,000
- Tax 10,000
Cash inflow 15,000

Calculation of NPV

outflow	0	1	2,59,000	(2,59,000)
CFAT	1-5	3.605	68,600	2,47,303
Scrap Sale	5	0.567	15,000	8,505
			NPV	5,808

(V1P) Initial Investment = ₹ 2,50,000.

• CFAT Annual

Savings	173000
- Salary	-89000
- Maintenance	-12,000

$$- \text{Dep} \left(\frac{250000 - 20000}{5} \right) = -46000$$

PBT	35000
- Tax 90%	-14000
PAT	21000
+ Dep	+ 46000
CFAT	67,000

• At end

$$\begin{aligned} \text{Sale of Asset} &= 0 \\ - \text{WDV} &= -20000 \\ \text{Capital loss} &= -20,000 \end{aligned}$$

$$\text{Tax saving on loss} = 20000 \times 40\% = \boxed{8000}$$

$$\begin{aligned} \text{Cash Sale} &= 0 \\ + \text{Tax saving} &+ 8000 \\ \text{Terminal Value} &= 8000 \end{aligned}$$

Calculation of NPV

	0	1		
outflow			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	$(81,000 \times 1.5) = 27,000$
		<u>10,00,000</u>	<u>203,000</u>

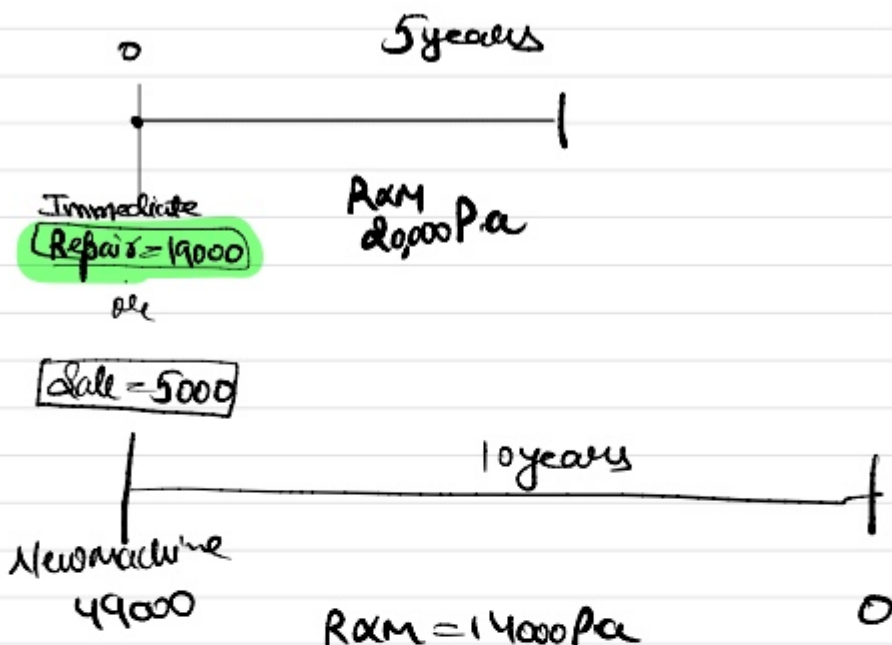
(iii) If Projects are not divisible

Combination ①			Combination ②			Combination ③		
Project	PVCo	NPV	Project	PVCo	NPV	Project	PVCo	NPV
3	3,50,000	70,000	1	3,00,000	60,000	3	3,50,000	70,000
4	4,50,000	80,000	3	3,50,000	70,000	5	2,00,000	40,000
5	2,00,000	40,000	5	2,00,000	40,000	6	4,00,000	20,000
	<u>10,00,000</u>	<u>1,91,000</u>		<u>8,50,000</u>	<u>170,000</u>		<u>9,50,000</u>	<u>1,30,000</u>
					Rejected			Rejected

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

Sol 30

contd)



Case 1)

If we repair & use old machine

Particulars	Yr	PV factor	amt	PV
<u>Outflows</u>				
Immediate Repair 19000 (1-50%)	0	1	9500	9500
Annual RAM 20,000 (1-50%)	1-5	3.791	10,000	37910
			PVCO	47410
		÷ Cumulative 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	<u>-5000</u>	44000
Annual RdM 14000 (1-50%)	1-10	6.145	7000	43015
Tax Savings on Dep dep $\times$ tax rate $\left(\frac{49000-0}{10}\right) \times 50\%$	1-10	6.145	2450	(15055.25)
			PVCO	71959.75
		$\div$ Cumulative PV factor		$\div 6.145$
Equivalent Annual PVCO				11710

Advice: The Company should buy new machine, because it has lower Equivalent Annual PVCO.

Ques 31

Income Statement

Particulars	Situation A Plan XY	Situation A Plan XM	Situation B Plan XY	Situation B Plan XM
Sales 6000×30				
- VC 6000×20				
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 ($40,000 \times 12\%$) XM ($10,000 \times 12\%$)	-4800	-1200	-4800	-1200
EBT	35,200	38,800	30,200	33,800
DOL = $\frac{\text{Cont}}{\text{EBIT}}$	1.50	1.50	1.71	1.71
DFL = $\frac{\text{EBIT}}{\text{EBT}}$	1.14	1.03	1.16	1.04

Note:

Measure of Risk

Debt

Internal Risk



Beta

External Risk

(Stock market point of view)

AFM

Debt & Beta are directly related.

Q232

Statement for Estimation of operating leverage

Particulars	<u>(i)</u> $DOL = \frac{\% \Delta \text{ in EBIT}}{\% \Delta \text{ in Sales}}$	Beta
PAR	$DOL = \frac{25\%}{27\%} = 0.93$	1.00
AST	$DOL = \frac{32\%}{25\%} = 1.28$	1.15
TUV	$DOL = \frac{36\%}{23\%} = 1.565$	1.30
WXY	$DOL = \frac{40\%}{21\%} = 1.904$	1.40

(ii) Comment $\rightarrow$ DOL is measure of operating risk.
Higher the DOL higher is operating risk.

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

(ii) 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: PAR) has lower DOL
it will have lower Beta also.

• If a company has higher DOL, it will have
higher Beta also.

$$\text{Margin of safety} = \frac{1}{DOL}, \quad DOL = \frac{1}{MOS}$$

Ques 33

	P	Q
①	EBTP	EBTQ
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 - $\frac{1}{3} \times 1,50,000$ Int _Q = ₹1,00,000
④	DFLP = 4 Times	DFL _Q = 75% × 4 = 3 Times

Main Solution
Particulars

Income Statement

	P	Q
Sales	₹40,00,000	₹18,00,000
- VC	- ₹30,00,000	- ₹12,00,000
Contribution	₹10,00,000	₹6,00,000
- FC	(BIS) - ₹8,00,000	- ₹4,50,000
EBIT	₹2,00,000	₹1,50,000
- Interest	- ₹1,50,000	- ₹1,00,000
EBT	₹50,000	₹50,000
- Tax	- ₹22,500	- ₹22,500
EAT	₹27,500	₹27,500

WN ① $DFL = \frac{EBIT}{EBIT - Int}$

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

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

$$3x = 6,00,000$$

$$x = 2,00,000$$

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

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

$$2y = 3,00,000$$

$$y = 1,50,000$$

WN ②

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

$$5 = \frac{Cont_P}{2,00,000}$$

$$₹10,00,000 = Cont_P$$

$$4 = \frac{Cont_Q}{1,50,000}$$

$$₹6,00,000 = Cont_Q$$

Sol 34

B S	
prop funds x	FA $0.75x$
CL	CA

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

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

$$[FA = 0.75x]$$

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

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

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

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

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

$$[x = 24,00,000]$$

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

$$FA = 0.75x = ₹18,00,000$$

$$\textcircled{1} \text{ coverage ratio} = \frac{\text{Funds available before paying}}{\text{Amount to be paid}}$$

$$\textcircled{A} \text{ Int Coverage ratio} = \frac{\text{EBIT}}{\text{Interest}} = \frac{767}{162}$$

4.73 Times

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

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

2.34 Times

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

Sol 36

Forecasted Balance sheet (31/3/08)

<u>Share Capital</u>		<u>FA</u>	
14% PSC	1,00,000	Cost $5,00,000 + 1,00,000$	3,95,000
ESC	2,00,000	- Acc dep. $(1,60,000 + 45,000)$	
General Reserves $(40,000 + 44,000)$ ^{RE}	44,400	<u>CA</u>	1,33,750
12% Debentures $(60,000 + 50,000)$	1,10,000	Stock	33,750
		Debtors	1,00,000
<u>CL</u>			
Creditors	72,000		
BANK O/D (B/L)	2,350		
	<u>5,28,750</u>		<u>5,28,750</u>

WN ① FA Turnover Ratio = 1.5

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

$$\frac{\text{Sales}}{60,000} = \frac{1.5}{1}$$

$$\boxed{\text{Sales} = ₹ 9,00,000}$$

WN ② $QTR = \frac{\text{COGS}}{\text{AV Stock}}$

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

★ $\text{Cl Stock} = ₹ 33,750$ ★

WN ③

Material 40%
Labour 25%
Man. exp 10%

$$\left\{ \begin{array}{l} ₹ 3,60,000 \\ ₹ 2,25,000 \\ ₹ 90,000 \end{array} \right\} \Rightarrow \text{COGS} = ₹ 6,75,000$$

office exp 10%
Dep 5%

₹ 90,000
₹ 45,000

Total Cost 90%
+ Profit 10%

₹ 8,10,000
+ 90,000

Sales 100%

9,00,000

WN ④ EBIT = 90,000

- Interest - 13,200

$(60,000 + 50,000) \times 12\%$

EBT 76,800

- Tax 50% = - 38,400

EAT = 38,400

- Pref Div $(1,00,000 \times 14\%)$ - 14,000

EAFS 24,400

- Equity Div $(2,00,000 \times 10\%)$ - 20,000

Retained Earning 4,400

WN 5 Debtors = $\frac{1}{9}$ Sales = $\frac{1}{9} \times 9,09,000 = ₹ 1,00,000$

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%
	<u>₹18,50,000</u>		WACC $\Rightarrow$	<u>12.52%</u>

WN 1 Kd, $FV = ₹100$, $MP = ₹110$, $RV = ₹100$, flotation cost = 2%,
 $Int = ₹10$, $n = 10 \text{ years}$, $t = 30\%$

$$NP = ₹110 - 2\% = ₹107.8$$

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

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

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

WN 2 For KP $FV = ₹100$, $RV = ₹100$, flotation cost = 3%, $MP = ₹108$,
 $n = 10 \text{ years}$, $P_d = 12\% \times 100 = ₹12$.
 $NP = 108 - 3\% = 104.76$

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

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

WN 3 For Ke, $g = 5\%$, $D_1 = ₹2$, $MP = 25$, Flotation cost = ₹4

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

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

Sol 38

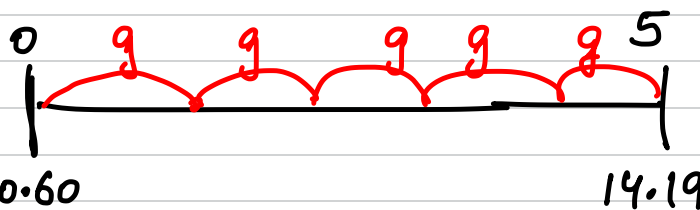
Statement of WACC (Book Value weights)

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%	
	<u>195L</u>		WACC	17.29%

Statement of WACC (Market Value weights)

Source	Market Value	(A) weight	(B) Rate	(A) x (B)
ESC	$200L \times \frac{4}{5} = 160L$	$\frac{160}{244.15}$	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%	
	<u>244.15</u>		WACC	17.51%

WNO



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

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

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

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

$$g = 1.0600 - 1$$

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

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

Step ① Type 'x', Press '√' 12 Times

Step ② $-1 =$ Step ③ $\div n =$ Step ④ $+1 =$

Step ⑤ 'x' = 12 Times

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

$K_{ue} = \text{Old } K_e$

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

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

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

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 $K_p = \frac{Pd}{NP} = \frac{₹15}{₹105} \times 100 = 14.29\%$

wn ③

one Debenture
Face value = ₹100

$$\text{Int} = ₹15$$

$$MP = ₹x$$

Other Debentures

Face value = ₹100

$$\text{Int} = ₹16$$

$$MP = ₹100$$

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

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

$$\therefore, MP \text{ of one Debentures} = ₹93.75$$

$$NP = MP - \text{flotation cost} = 93.75 - 2\% = 91.875$$

$$= 93.75 - (2\% \times 100) = ₹91.75$$

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

$$K_d \Rightarrow 10.95\%$$

Q39

Statement for WACC

Source	Book Amount	Weight (A)	Rate (B)	(A) x (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	$15/50 = 0.3$	$\frac{(0.75x+1)}{98.5}$	$0.3 \left(\frac{0.75x+1}{98.5} \right)$
	<u>50L</u>	<u>1</u>		
WACC $\Rightarrow$				<u>0.15</u>

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

Term loan

Int rate = 1.5x%
n = 5 yrs

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

$$= \frac{1.05x(0.75) + 0}{100}$$

$$K_{d_2} = \frac{1.0128x}{100} = 0.01128x$$

Debenture

Int rate = x%
n = 3 years

MP = 297

FV = 100 = RV

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

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

$$K_{d_1} \Rightarrow \frac{0.75x + 1}{98.5}$$

WN ③ $K_e = \frac{1}{P/E} = \frac{1}{5} \times 100 = 20\%$

$$K_{rel} = K_e = 20\%$$

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

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

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

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

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

$$0.446625x + 0.3 = 4.925$$

$$0.446625x = 4.625$$

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

$$x = 10.36\%$$

∴, Int rate of Debenture = $x = 10.36\%$

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

sol 40

WN 1

$$\text{Sales} = ₹ 40 (100,000 + 50\%) = ₹ 60,00,000$$

$$- \text{VC} = 17 \times (150,000) = ₹ 25,50,000$$

$$\text{Contribution} = ₹ 34,50,000$$

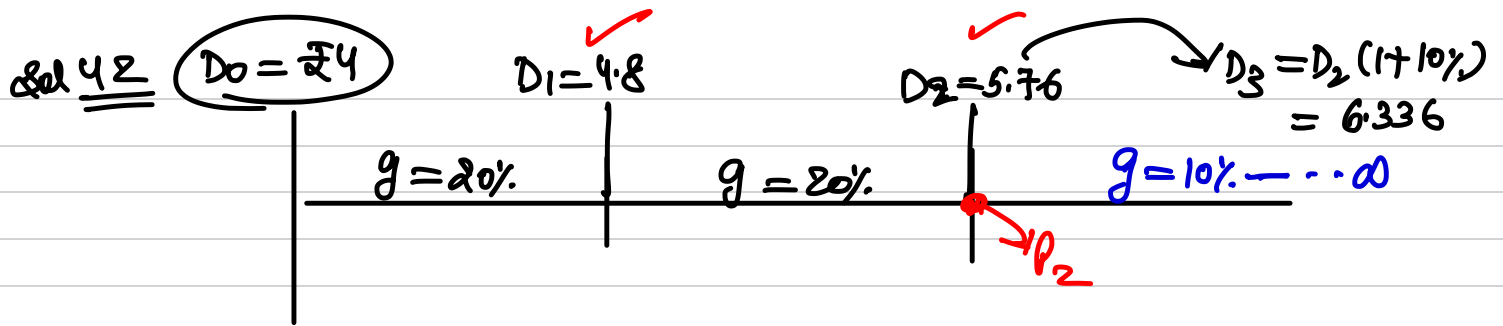
$$- \text{FC} = ₹ 15,00,000$$

$$\text{EBIT} = ₹ 19,50,000$$

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			
• Int 5L x 10%	- 50,000	- 50,000	- 50,000
• Int 5L x 15%	x	- 75,000	- 75,000
• Int 4L x 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 & PAT	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 provides highest EPS.



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

Intrinsic value of share today = ₹104.34

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

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

Qol 41

Statement for EPS Estimation

Particulars	Proposal P	Q	R
<u>Capital Structure</u>			
ESC	$₹20 \times 2,00,000 = ₹40L$	$₹20 \times 1,00,000 = ₹20L$	$₹20 \times 1,00,000 = ₹20L$
10% Debt	X	(Int rate = 10%) ₹20L	X
10% PSC	X	X	(Pref Div 10%) = ₹20L
EBIT	18,00,000	18,00,000	18,00,000
- Interest (10% x 40L)	X	- 2,00,000	X
EBT	16,00,000	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	X	X	- 2,00,000
EAT	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 BCF			
$\left(\frac{\text{Int} + \text{Pref Div}}{(1-t)} \right)$	0 + 0 = 0	2,00,000	$0 + \frac{2,00,000}{(1-50\%)} = ₹ 4,00,000$

(iii) Indifference level of EBIT

$$EPS_1 = EPS_2$$

$$\frac{(EBIT - \text{Int}_1)(1-t) - P_1}{n_1} = \frac{(EBIT - \text{Int}_2)(1-t) - P_2}{n_2}$$

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

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

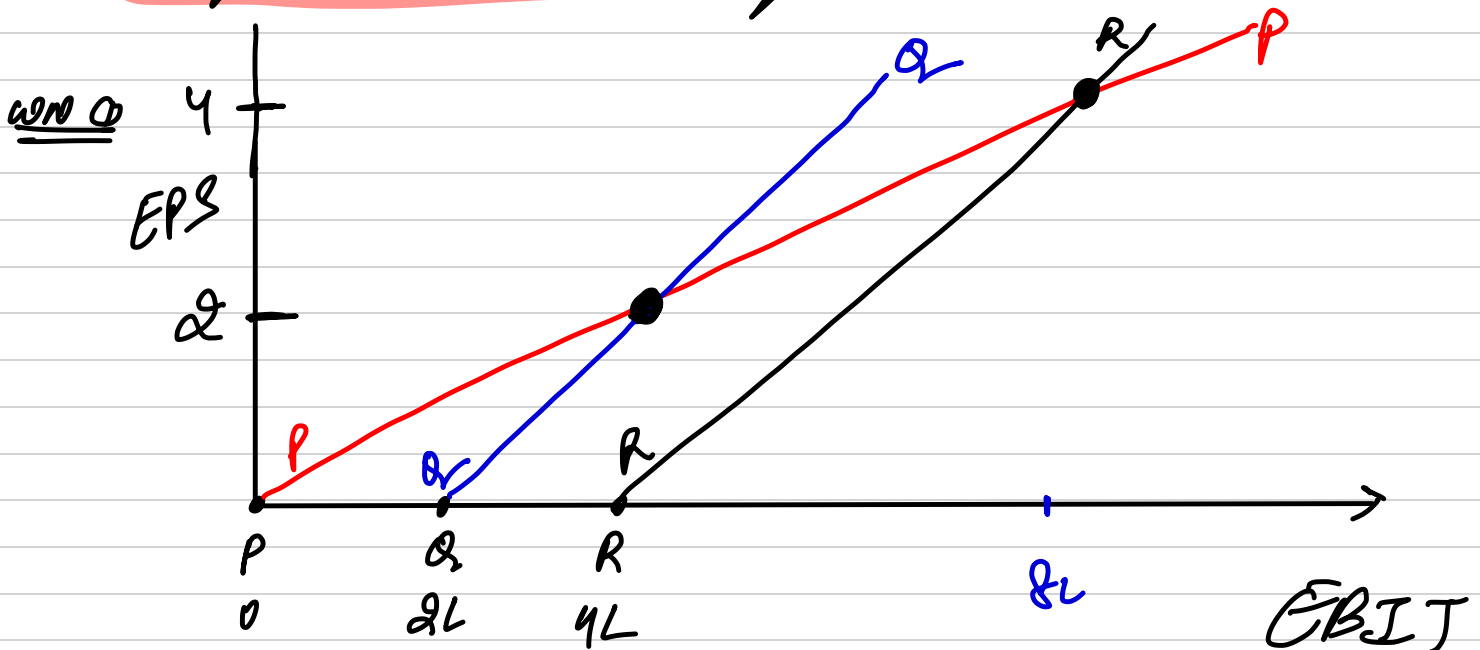
Indiff level EBIT = ₹ 8,00,000

Indiff level EPS = ₹ 2 per share

Between Q & A

Not possible.

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



Range

EBIT $\leq$ 4L, select Proposal P gives highest result.

EBIT = 4L, Indiff point

EBIT $>$ 4L select Proposal Q, gives highest EPS.

sol ② WN ① $D_0 = \frac{\text{₹}3 \text{ per share}}{\text{Qtr}} \times \frac{4}{\text{Qtr}} = \text{₹}12 \checkmark$

WN ②

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

21% ✓ Expected RO I

WN ③ Average Retention rate = $\left(\frac{40\% + 65\% + 50\% + 45\% + 30\%}{5} \right)$
 $b = 46\%$

WN ④ $g = b \times r = 46\% \times 21\% = 0.46 \times 21\% = 9.66\%$

WN ⑤ $K_e = R_f + \beta (E R_m - R_f)$
 $= 4.5\% + 1.3 (12.5\% - 4.5\%)$

$K_e = 14.9\%$

Gordon model

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

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

$P_0 = \text{₹}251.1$

Walter model

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

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

$P = \text{₹}177.21$

WN $EPS (1 - b) = DPS$
 $EPS (1 - 0.46) = 12$
 $EPS \times 0.54 = 12$
 $EPS = \frac{12}{0.54} = 22.22$

Sol (A)

$$D_0 = 2.5 \times 4 = \text{£}10 \text{ p.a.} \checkmark$$

per qtr qtrs

Situation	Retention rate	Prob.	$b \times \text{Prob}$
A	50%	30%	0.15
B	60%	40%	0.24
C	50%	30%	0.15

$0.54 = \text{Expected } b'$
(Expected Retention ratio)

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

$$(E R_m - R_f) = 4.25\%, \quad R_f = 3.75\%$$

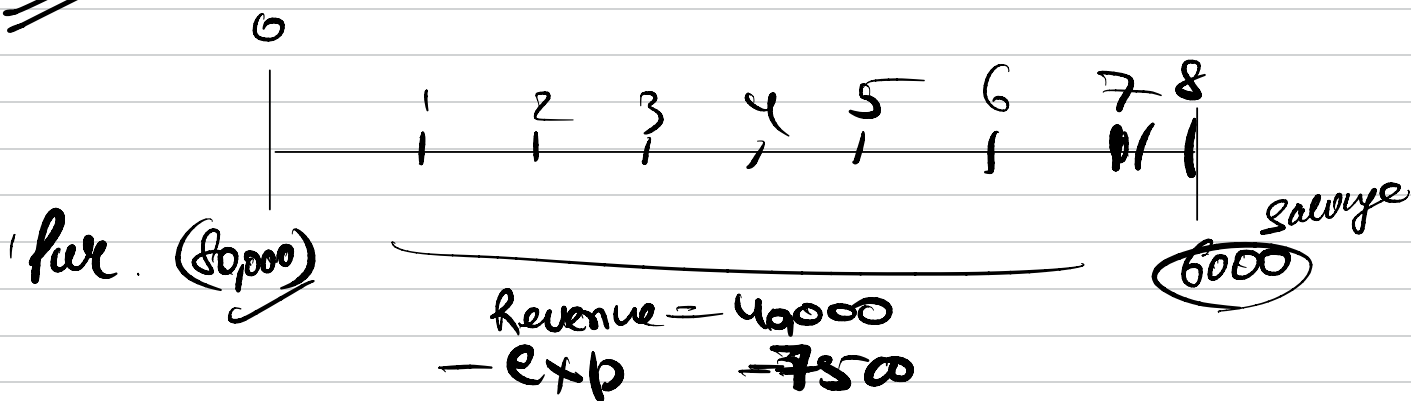
$$K_e = R_f + \beta (E R_m - R_f)$$

$$K_e = 3.75\% + 1.2 \times 4.25\% = 8.85\% \checkmark$$

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

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

Sol (45)



If Commission is Before Tax

Sales =	40000
- exp =	- 7500
- Commission =	- 12000
- Dep $\left(\frac{80-6}{8}\right)$ =	- 9250
PBT	11250
- 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	Pv factor	(i) If Commission before Tax		(ii) If Commission after Tax	
			Amnt	PV	Amnt	PV
Purchase of mach	0	1	80000	80000	80000	80000
			PVCO	80000	PVCO	80000
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 $\Rightarrow$	14146.75		(50556.5)

A (5yrs)

B (6yrs)

$\div$ NPV
Cumulative PV
factor of life
(PVIFA)

$\div 4.443$

$\div 5.218$

Equivalent Annual NPV

A

$\Rightarrow$

B

only outflows

PVCO

$\div$ Cumulative PV factor of life

A (5yrs)

$\div 5$
PVIFA

B (8yrs)

$\div 8$
PVIFA

Equivalent PVCO

✓

✓

lower selected

Format for question having only outflows.

Particulars	year	Pv factor	Amt	PV
Purchase of machine	0	1	1,00,000	1,00,000
Running exp $\frac{\text{Exp}(1-t)}{(1-30\%)}$ 1,00,000	1-5	✓	70,000	✓
less Tax saving on Dep (Depreciation $\times$ tax rate) (2,00,000 $\times$ 30%) (60,000)	1-5	✓	(60,000)	(60,000)✓
			PV Co	✓✓

Sol (16)

	Machine I	Machine II
Cost	₹10,00,000	₹15,00,000
Dep = $\frac{(10,00,000 - 0)}{5 \text{ years}}$	₹2,00,000	Dep = $\frac{(15,00,000 - 0)}{6} = ₹2,50,000$
PBTAD	₹3,45,000	PBTAD ₹4,55,000
- Dep	- ₹2,00,000	- Dep - ₹2,50,000
PBT	1,45,000	PBT ₹2,05,000
- Tax 30%	- 43,500	- Tax 30% - 61,500
PAT	1,01,500	PAT 1,43,500
+ Dep	+ 2,00,000	+ Dep + 2,50,000
CFAT	3,01,500	CFAT 3,93,500
	P.a	P.a

(ii) Statement of NPV

Particulars	yr	PV factor (12%)	Machine I (5 yrs)	Machine II (6 yrs)
			Amount	Amount
outflow	0	1	10,00,000	15,00,000
CFAT	1-5	3.605	3,01,500	3,93,500
	1-6	4.111		
			NPV	NPV
			86,908	1,17,679
÷ Cumulative PV factor			÷ 3.605	÷ 4.111
Equivalent Annual NPV			24,108	28,625

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

sol 47 (A) without Tax Statement for Equivalent Annual PVCo

Particulars	yr	N factor (10%)	Machine A (3yr)		Machine B (2yr)	
Purchase Inv	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	2,49,480		2,04,160
÷ Cumulative PV for life				÷ 2.487		÷ 1.736
Equivalent Annual PVCo				100,314		1,17,603

sol 47 (B) with 30% Tax Statement for Equivalent Annual PVCo

Particulars	yr	N factor (10%)	Machine A (3yr)		Machine B (2yr)	
Purchase Inv	0	1	1,50,000	1,50,000	1,00,000	1,00,000
Running exp (1-t)	1-3	2.487	40,000 = 28,000 (1-30%)	69,636	60,000 = 42,000 (1-t)	72,912
- Tax Saving on Dep (Dep x tax rate)	1-3	2.487	(50,000 x 30%) = 15,000	(37,305)	-15,000	(26,040)
	1-2	1.736				
			PVCo	1,82,331		1,46,872
÷ Cumulative PV for life				÷ 2.487		÷ 1.736
Equivalent Annual PVCo				73,314		84,604

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

Ques 48

Statement for WC estimation particulars

(Cash Cost Basis)

	Amount (£)
<u>C.A</u>	
Stock of RM (9,00,000 x 1/12)	75,000
Stock of FG (29,40,000 x 1/12)	2,45,000
Debtors - Domestic (20,23,448 x 1/12)	168621
• Exporters (100,65,52 x 3/12)	251638
Prepaid selling exp (1,50,000 x 3/12)	37,500
Cash (250,000 - 75,000)	1,75,000
Total CA (A)	9,52,759
<u>CL</u>	
Creditors (9,00,000 x 2/12)	1,50,000
o/s wages (72,000 x 0.5/12)	39,000
o/s Man. exp (10,80,000 x 4/12)	90,000
o/s Admin exp (240,000 x 1/12)	20,000
Income Tax Payable (225,000 x 1/4)	56,250
Total CL (B)	3,46,250
Excess of CA over CL	
+ Reserves for Contingency 12%	
<u>Total WC requirement</u>	

Cost Sheet

		Particulars	Domestic	Export	Total
RM	9,00,000	Actual Sales	24,00,000	10,80,000	
Labour	7,20,000				
Man. exp	10,80,000				
works at				Regular = 12,00,000 S&P	
+ Admin exp	240,000	- 40 29%	- 4,80,000	- 240,000	
Cost of Prod	29,40,000	Costs	19,20,000	9,60,000	
+ selling exp	1,50,000	+ selling exp	+ 103448	+ 46552	
Cost of Sales	30,90,000	Cost of Sale	20,23,448	10,06,552	

(10,80,000 / 90 x 100)

$$\text{Selling exp} = ₹1,50,000$$

$$\begin{array}{ccc} \downarrow & & \downarrow \\ \text{Domestic} & & \text{Export} \\ ₹24,00,000 & & ₹10,80,000 \end{array}$$

$$\frac{1,50,000 \times ₹24,00,000}{34,80,000}$$

×

$$\frac{1,50,000 \times ₹10,80,000}{34,80,000}$$

$$₹1,03,448$$



$$₹46,552$$



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

$$SP = ₹3$$

$$VC = ₹2$$

$$VC = \frac{2}{3} \text{ of } SP$$

Proposed

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.

Working Notes:

(i) Calculation of Fixed Cost = [Average Cost per unit - Variable Cost per unit] × No. of Units sold
 $= [2.25 - 2.00] \times (6,00,000/3)$
 $= 0.25 \times 2,00,000 = 50,000$

(ii) Calculation of Opportunity Cost of Average Investments

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

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

opportunity cost of Debtors Cost

Sales
 - VC
 - FC
 - Bad Debt

PBT
 - Tax (if given)
 PAT

Opportunity Cost (Post Tax)

Int. cost on Debtors Cost

$$(VC + FC) \times \frac{ACP}{\text{Total sales}} \times \text{Int. rate} =$$

80150

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)	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)	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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