

PAPER – 4 : COST ACCOUNTING AND FINANCIAL MANAGEMENT

Question Nos. 1 and 6 are compulsory

Working notes should form part of the answer

Question 1

- (a) LM Company Limited manufactures three products – 'N', 'O' and 'P'. The company furnishes the following particulars for the year ending 31st March, 2009:

	N	O	P
Output and Sales (units)	15,000	12,000	5,000
Selling Price per unit (Rs.)	180	130	95
Direct Material per unit (Rs.)	60	40	35
Direct Labour per unit (Rs.) (@ Rs.20 per hr)	80	60	40
No. of purchase orders placed	200	150	40
No. of stores deliveries	250	160	110
No. of inspections	260	150	140

The above three products are similar and usually produced in production runs of 50 units. The manufacturing overheads are currently absorbed by using a blanket overhead rate on the basis of direct labour hours for analyzing the whole factory. Now the company plans to use activity based costing system for the profitability of its products. The activity analysis and total overheads for the year of LM Company Ltd. are as under:

Activity Area	Total Overheads (Rs.)	Cost Driver
Material handling	92,040	No. of stores deliveries
Set-up	1,22,240	No. of production runs
Quality Control	1,23,200	No. of inspections
Material purchase ordering	89,700	No. of orders placed
Factory Control	1,82,320	Direct labour hours worked

You are required to:

- Calculate the total cost and profit of each product by using direct labour hour rate method for absorption of manufacturing overheads.
 - Calculate the total cost and profit of each product by using activity based costing system for absorption of manufacturing overheads. (12 Marks)
- (b) What are the assumptions involved in the definition of cost reduction? (2 Marks)
- (c) State the objectives of uniform costing. (4 Marks)

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Answer

1. (a) (i) Statement showing Total Cost and Profit on Direct Labour Hour Rate Basis

	<i>Product</i>		
	<i>N</i>	<i>O</i>	<i>P</i>
Output and Sales (Units)	<u>15,000</u>	<u>12,000</u>	<u>5,000</u>
	<i>Rs.</i>	<i>Rs.</i>	<i>Rs.</i>
Direct Materials	9,00,000	4,80,000	1,75,000
Direct Labour	<u>12,00,000</u>	<u>7,20,000</u>	<u>2,00,000</u>
Prime Cost	21,00,000	12,00,000	3,75,000
Manufacturing Overheads			
@Rs.5.75 per Labour			
Hour	<u>3,45,000</u>	<u>2,07,000</u>	<u>57,500</u>
Total Cost	24,45,000	14,07,000	4,32,000
Profit	<u>2,55,000</u>	<u>1,53,000</u>	<u>42,500</u>
Sales	27,00,000	15,60,000	4,75,000

Computation of Direct Labour Hour Rate:

Total Manufacturing Overheads

$$= \text{Rs.}92,040 + \text{Rs.}1,22,240 + \text{Rs.}1,23,200 + \text{Rs.}89,700 + \text{Rs.}1,82,320$$

$$= \text{Rs.}6,09,500$$

Total Labour Hours

$$\text{Product 'N' : } (80 \div 20) \times 15,000 = 60,000 \text{ hrs.}$$

$$\text{Product 'O' : } (60 \div 20) \times 12,000 = 36,000 \text{ hrs.}$$

$$\text{Product 'P' : } (40 \div 20) \times 5,000 = \underline{10,000} \text{ hrs.}$$

$$\text{Total} = \underline{1,06,000} \text{ hrs.}$$

$$\text{Direct Labour Hour Rate} = \frac{6,09,500}{1,06,000}$$

$$= \text{Rs.}5.75 \text{ per hour}$$

(ii) Workings:

1. No. of production runs:

$$\text{'N'} 15,000 \div 50 = 300$$

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'O' $12,000 \div 50 = 240$

'P' $5,000 \div 50 = 100$

Total = 640 runs

2. **Statement of Calculation of Cost Driver Rates**

Material handling Costs	Rs.92,040 $\div$ 520	Rs.177 per delivery
Setup Costs	Rs.1,22,240 $\div$ 640	Rs.191 per production runs
Quality Control Costs	Rs.1,23,200 $\div$ 550	Rs.224 per inspection
Ordering Costs	Rs.89,700 $\div$ 390	Rs.230 per order
Factory Control Costs	Rs.1,82,320 $\div$ 1,06,000	Rs.1.72 per labour hour

3. **Statement of Calculation of Product-wise Overheads**

	<i>N</i> Rs.	<i>O</i> Rs.	<i>P</i> Rs.
Material Handling Costs	44,250 (250 $\times$ 177)	28,320 (160 $\times$ 177)	19,470 (110 $\times$ 177)
Set-up Costs	57,300 (300 $\times$ 191)	45,840 (240 $\times$ 191)	19,100 (100 $\times$ 191)
Quality Control Costs	58,240 (260 $\times$ 224)	33,600 (150 $\times$ 224)	31,360 (140 $\times$ 224)
Ordering Costs	46,000 (200 $\times$ 230)	34,500 (150 $\times$ 230)	9,200 (40 $\times$ 230)
Factory Control Costs @Rs.1.72 per labor hour for 60,000, 36,000 & 10,000 hours	1,03,200	61,920	17,200
Total	3,08,990	2,04,180	96,330

Statement Showing Total Cost and Profit on the Basis of ABC System

	<i>Product</i>		
	<i>N</i>	<i>O</i>	<i>P</i>
Output and Sales (Units)	<u>15,000</u>	<u>12,000</u>	<u>5,000</u>
	Rs.	Rs.	Rs.
Direct Materials	9,00,000	4,80,000	1,75,000
Direct Labour	<u>12,00,000</u>	<u>7,20,000</u>	<u>2,00,000</u>
Prime Cost	21,00,000	12,00,000	3,75,000

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Manufacturing Overheads	<u>3,08,990</u>	<u>2,04,180</u>	<u>96,330</u>
Total Cost	24,08,990	14,04,180	4,71,330
Profit	<u>2,91,010</u>	<u>1,55,820</u>	<u>3,670</u>
Sales	27,00,000	15,60,000	4,75,000

- (b) The threefold assumptions involved in the definition of cost reduction may be summarized as under:
- (1) There is a saving in unit cost.
 - (2) Such saving is of permanent nature.
 - (3) The utility and quality of goods and services remain unaffected, if not improved.
- (c) The main objectives of uniform costing are as follows:
- (1) To facilitate the comparison of costs and performances of different units in the same industry.
 - (2) To eliminate unhealthy competition among the different units of an industry.
 - (3) To improve production capacity level and labour efficiency by comparing the production costs of different units with each other.
 - (4) To provide relevant cost information/data to the Government for fixing and regulating prices of the products.
 - (5) To bring standardization and uniformity in the operation of participating units.
 - (6) To reduce the different types of costs.

Question 2

- (a) *At the end of first year on 31st March, 2009, in the books of ABC Constructions Ltd. the Bridge Contract Account stands debited with the cost of material issued, labour, overheads expended and plant issued and its stands credited with material at site Rs.25,000; material returned Rs.15,000 and plant at site Rs.4,76,000 after charging depreciation at 15 percent. The material issued, labour, overheads and plant issued debited to the contract account, are in the ratio of 5 : 4 : 2 : 4. 75 percent of the contract had been certified by the contractee's architect as completed at the end of the year and 90 percent of the certified work value had been received in cash Rs.16,20,000. The accounts department informs that 2/3 of the profit on cash basis credit to Profit and Loss account on the contract is Rs.2,13,600.*

You are required to prepare:

- (i) *The Bridge Contract Account showing the cost of work done but uncertified.*
- (ii) *Work-in-progress Account.*
- (iii) *Contractee's Account.*

(6+1+1=8 Mark)

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(b) State the appropriate 'Cost Unit' for the following industries:

(i) Steel

(ii) Bricks making

(iii) Sugar

(iv) Power

(2 Marks)

(c) What do you mean by abnormal loss and abnormal gain in process costing? How are these dealt with in cost accounting? (4 Marks)

Answer

(a) (i)

**Bridge Contract Account
For the year ending 31st March, 2009**

Dr.		Cr.	
Particulars	Amount	Particulars	Amount
To Material issued	7,00,000	By Material at site	25,000
" Labour	5,60,000	" Material returned	15,000
" Overheads	2,80,000	" Plant at site	4,76,000
" Plant issued	5,60,000	" Work-in-progress A/c	
" Notional Profit c/d	3,56,000		
		Rs.	
		Value of WC*	18,00,000
		Cost of WUC**	<u>1,40,000</u>
		(Balancing Figure)	19,40,000
	24,56,000		24,56,000
To Profit & Loss A/c	2,13,600	By Notional Profit b/d	3,56,000
To W.I.P A/c (Reserve)	1,42,400		
	3,56,000		3,56,000

* WC = Work Certified

** WUC= Work Uncertified

Workings:

1. Calculation of the amount of Material issued, Labour, Overheads and Plant issued:

(i) Cost of Plant issued:

$$= \text{Rs.} 4,76,000 \times \frac{100}{85} = \text{Rs.} 5,60,000$$

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- (ii) The ratio of Materials issued, Labour, Overheads and Plant issued had been given 5:4:2:4. So, that the element wise amount would be:

$$\text{Materials issued} : \text{Rs.5,60,000} \times \frac{5}{4} = \text{Rs.7,00,000}$$

$$\text{Labour} : \text{Rs.5,60,000} \times \frac{4}{4} = \text{Rs.5,60,000}$$

$$\text{Overheads} : \text{Rs.5,60,000} \times \frac{2}{4} = \text{Rs.2,80,000}$$

2. Calculation of amount of Notional Profit:

$$\text{Profit of P/L A/c} = \text{Notional Profit} \times \frac{2}{3} \times \frac{\text{Cash Received}}{\text{Work Certified}}$$

$$\text{Rs.2,13,600} = \text{Notional Profit} \times \frac{2}{3} \times \frac{90}{100}$$

$$\text{Notional Profit} = \text{Rs.2,13,600} \times \frac{3}{2} \times \frac{100}{90} = \text{Rs.3,56,000}$$

3. Value of work certified:

$$\text{Rs.16,20,000} \times \frac{100}{90} = \text{Rs.18,00,000}$$

(ii) Work-in-Progress Account

<i>Particulars</i>	<i>Rs.</i>	<i>Particulars</i>	<i>Rs.</i>
To Contract A/c		By Contract A/c	1,42,400
Value of Work Certified	18,00,000	(Reserve)	
Cost of Work	1,40,000	By Balance c/d	17,97,600
Uncertified			
	19,40,000		19,40,000

(iii) Contractee's Account

<i>Particulars</i>	<i>Rs.</i>	<i>Particulars</i>	<i>Rs.</i>
To Balance c/d	16,20,000	By Bank A/c	16,20,000

- (b)**
- | | | |
|-----|---------------|-----------------|
| | Industry | Cost Unit |
| (1) | Steel | Per tonne |
| (2) | Bricks making | Per 1000 bricks |

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- | | | |
|-----|-------|------------------------|
| (3) | Sugar | Per quintal or 100 kg. |
| (4) | Power | Kilo-watt hour |

- (c) Abnormal process loss is defined as the loss in excess of the pre-determined loss. This type of loss may occur due to the carelessness of workers, a bad plant design or operation etc. The cost of an abnormal process loss unit is equal to the cost of a good unit. The total cost of abnormal process loss is credited to the process account from which it arises and it is debited to costing profit and loss account.

$$\text{Cost of abnormal loss} = \frac{\text{Total cost} - \text{Value of normal loss}}{\text{Normal output (in units)}} \times \text{abnormal losses units}$$

Abnormal gain is the reverse of the abnormal loss. Sometimes, loss under a process is less than the anticipated normal figure. Under such a situation the difference between actual and expected loss is known as abnormal gain. The process account under which abnormal gain arises is debited with the abnormal gain and it is credited to costing profit and loss account. The amount of abnormal gain is computed on the basis of cost of each good unit.

Question 3

- (a) 2 hours allowed to a worker to produce 5 units and wages has been paid @ Rs.25 per hour. In a 48 hours week the worker produced 170 units.

You are required to calculate the total earnings and effective hourly rate of earnings of the worker under the following incentive wage systems:

- (i) Halsey 50 percent system
 - (ii) Rowan system
 - (iii) Emerson's efficiency system
 - (iv) Barth system. (8 Marks)
- (b) State the essential factors for installing a cost accounting system. (4 Marks)
- (c) The following information is available:

	1 st April, 2008 to 30 th June, 2008	1 st July, 2008 to 31 st March, 2009
Output	10,000 units	35,000 units
Total overheads	Rs.40,000	Rs.1,35,000

You are required to calculate the amount of variable overhead per unit and amount of total fixed overheads for whole the year 2008-09. (2 Marks)

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Answer

(a) Standard output for a week $= \frac{48}{2} \times 5 = 120$ units

Actual output of a week $= 170$ units

Time allowed for actual output $= \frac{170 \times 2}{5} = 68$ hours

Time saved $= 68 - 48 = 20$ hours

(i) Halsey 50% System:

$$\begin{aligned}\text{Total Earnings} &= (\text{Hrs. worked} \times \text{Hourly rate}) + \text{Time saved} \times 50\% \times \text{Hourly rate} \\ &= (48 \times \text{Rs.}25) + (20 \times \frac{50}{100} \times \text{Rs.}25) \\ &= \text{Rs.}1,450\end{aligned}$$

Effective hourly rate of earnings:

$$\text{Rs.}1,450 \div 48 = \text{Rs.}30.21 \text{ per hour}$$

(ii) Rowan System:

$$\begin{aligned}\text{Total Earnings} &= (\text{Hrs. Worked} \times \text{Hourly rate}) + \frac{\text{Time Taken}}{\text{Time Allowed}} \times \text{Time saved} \times \text{Hourly Rate} \\ &= (48 \times 25) + (\frac{48}{68} \times 20 \times \text{Rs.}25) \\ &= \text{Rs.}1,552.94\end{aligned}$$

$$\begin{aligned}\text{Effective hourly rate} &= \frac{\text{Rs.}1,552.94}{48} \\ &= \text{Rs.}32.35 \text{ per hour}\end{aligned}$$

(iii) Emerson's Efficiency System:

$$\begin{aligned}\text{Efficiency Percentage} &= \frac{\text{Actual Output}}{\text{Standard Output}} \times 100 \\ &= \frac{170}{120} \times 100 \\ &= 141.67\%\end{aligned}$$

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Total Earnings:

Time wages = $48 \times \text{Rs.}25$ Rs. 1,200

Bonus

{100% @ (20% + 41.67%) or 61.67% of 1,200} Rs. 740.04

Total Earnings Rs.1,940.04

Effective hourly rate = $\frac{\text{Rs.}1,940.04}{48}$

= Rs.40.42 per hour

(iv) Barth System:

Total Earnings = Hourly rate $\times \sqrt{\text{Standard hours} \times \text{Actual hours}}$

= $\text{Rs.}25 \times \sqrt{68 \times 48}$

= Rs.1,428.28

Effective hourly rate of earnings = $\frac{\text{Rs.}1,428.28}{48} = \text{Rs.}29.76$ per hour

(b) Essential factors for installing a Cost Accounting System:

- (1) The objective of costing system.
- (2) The areas of operation of business where in the managements' action will be most beneficial.
- (3) The general organisation of the business, with a view of finding out the manner in which the system of cost control could be introduced without altering or extending the organisation appreciably.
- (4) The technical aspects of the concern and the attitude and behaviour that will be successful in winning sympathetic assistance or support of the supervisory staff and workers.
- (5) The manner in which different variable expenses would be affected with expansion or cessation of different operations.
- (6) The manner in which cost and financial accounts could be inter-locked.
- (7) How the accuracy of the data collected can be verified?
- (8) The manner in which the benefits of introducing cost accounting could be explained to various persons in the concern.

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- (c) Let, Variable Overhead per unit is 'x' and Fixed Overhead per month is 'y'.

Total Overheads:

$$\begin{array}{llll}
 \text{For first 3 months:} & 10,000x + 3y = & 40,000 & \dots(i) \\
 \text{For last 9 months:} & 35,000x + 9y = & 1,35,000 & \dots(ii) \\
 \text{(i) multiply by 3 and minus from (ii):} & \underline{30,000x + 9y = 1,20,000} & & \dots(iii) \\
 & 5,000x & = & 15,000 \\
 & \text{Or } x & = & \text{Rs.3} \\
 & y & = & \frac{40,000 - 10,000 \times 3}{3} \\
 & & = & \frac{\text{Rs.10,000}}{3}
 \end{array}$$

Thus, the Variable Overhead per unit is Rs.3.

$$\text{Total Fixed overhead for the year is } \frac{\text{Rs.10,000}}{3} \times 12 = \text{Rs.40,000}$$

Question 4

- (a) SK Engineering Company Limited manufactures two types of auto bearing – type 'XD' and type 'XE'. The company's records show the following particulars for those bearings for the month of May, 2009 :

	(Rs.)
Direct Materials	38,10,000
Direct labour	20,10,000
Production overheads	6,03,000
Office Overheads	6,42,300

There was no work-in-progress at the beginning or at the end of the month. It was ascertained that:

- (i) Direct material cost per bearing for type 'XD' was 160 percent of those for type 'XE'.
- (ii) Direct labour cost per bearing for type 'XE' was 40 percent of those for type 'XD'.
- (iii) Production overheads were absorbed on the basis of direct labour cost.
- (iv) Office overheads were absorbed on the basis of factory cost.
- (v) Selling and distribution overheads were Rs.2 per bearing sold for each type.
- (vi) Stock of finished bearing on 1st May, 2009 was 15,000 bearings @ Rs.15 of type 'XD' and 20,000 bearings @ Rs.8 of type 'XE'.

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- (vii) Production during the month of May, 2009 was 2,70,000 bearings of type 'XD' and 3,30,000 bearings of type 'XE' and out of May's output 25,000 bearings of type 'XD' and 40,000 bearings of type 'XE' would be remains in stock on 31st May, 2009 which valued at cost of production.

You are required to:

- (i) Prepare a statement showing cost of production each type of bearings.
 - (ii) Prepare a statement showing the selling price at which the bearings would be marketed, if the company desires @ 20 percent profit on selling price. (9 Marks)
- (b) ML Manufacturing Ltd. is required 1,000 units of material 'EX' on an average for a week which is purchased at a price of Rs.30 per unit. The ordering cost is Rs.150 per purchase order and inventory carrying cost per unit amounted to Rs.0.06 per week. The re-order period is 1 to 3 weeks and the weekly usage of material 'EX' varies from 750 to 1,250 units.

You are required to compute:

- (i) The Economic order Quantity
- (ii) Re-order Stock Level, Minimum Stock Level and Maximum Stock Level.

(2+3=5 Mark)

Answer

- (a) (i) **Statement showing Cost of Production for the month of May, 2009**

Output: XD – 2,70,000 bearings

XE – 3,30,000 bearings

Particulars	Type 'XD' Rs.	Type 'XE' Rs.
Direct Materials	21,60,000	16,50,000
Direct Labour	13,50,000	6,60,000
Prime Cost	35,10,000	23,10,000
Production Overheads @ 30% on Direct Labour	4,05,000	1,98,000
Factory Cost	39,15,000	25,08,000
Office Overheads @ 10% on Factory Cost	3,91,500	2,50,800
Cost of Production	43,06,500	27,58,800
Cost of Production per unit	15.95	8.36

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Workings:

1. Apportionment of Cost:

(a) Direct Material:

Ratio 'XD' 2,70,000 × 1.6 : 'XE' 3,30,000 × 1

Or 4,32,000 : 3,30,000

Direct material for 'XD' = Rs.21,60,000

Direct material for 'XE' = Rs.16,50,000

(b) Direct Labour -

Ratio 'XD' 2,70,000 × 1 : 'XE' 3,30,000 × 0.40

Or 2,70,000 : 1,32,000

Direct Labour for 'XD' = Rs.13, 50,000

Direct labour for 'XE' = Rs.6, 60,000

2. Absorption of production overheads:

$$\frac{\text{Rs.6,03,000}}{\text{Rs.20,10,000}} \times 100 = 30\% \text{ on direct wages/labour}$$

3. Absorption of office overheads:

$$\frac{\text{Rs.6,42,300}}{\text{Rs.64,23,000}} \times 100 = 10\% \text{ on Factory Cost.}$$

(ii)

Statement showing Selling Price

<i>Particulars</i>	<i>Type 'XD'</i>		<i>Type 'XE'</i>	
	<i>Units</i>	<i>Amount (Rs.)</i>	<i>Units</i>	<i>Amount (Rs.)</i>
Cost of Production	2,70,000	43,06,500	3,30,000	27,58,800
Add: Opening Stock (XD@Rs.15 & XE@Rs.8)	15,000	2,25,000	20,000	1,60,000
	2,85,000	45,31,500	3,50,000	29,18,800
Less: Closing Stock (XD@Rs.15.95&XE@Rs.8.36)	25,000	3,98,750	40,000	3,34,400
Cost of goods sold	2,60,000	41,32,750	3,10,000	25,84,400
Add: Selling and distribution overheads@Rs.2 per sold bearing		5,20,000		6,20,000
Cost of sales	2,60,000	46,52,750	3,10,000	32,04,400

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Add: Profit@20% on sales or 25% on cost		11,63,188		8,01,100
Sales	2,60,000	58,15,938	3,10,000	40,05,500
Selling price per bearing		22.37		12.92

$$\begin{aligned}
 \text{(b) (i) EOQ} &= \sqrt{\frac{2AS}{C}} \\
 &= \sqrt{\frac{2 \times 52,000 \times 150}{3.12}} \\
 &= 2236 \text{ units}
 \end{aligned}$$

- Annual requirement of EX = 1,000 × 52 = 52,000 units
- Annual carrying cost per unit = 0.06 × 52 = Rs.3.12

(ii) Stock Levels:

$$\begin{aligned}
 \text{Re-order Level} &= \text{Max Re-order Period} \times \text{Max. Usage} \\
 &= 3 \text{ weeks} \times 1250 \text{ units} \\
 &= 3750 \text{ units}
 \end{aligned}$$

$$\begin{aligned}
 \text{Minimum Level} &= \text{Re-order level} - \{ \text{Average (Normal) Re-order Period} \times \\
 &\quad \text{Average (Normal) Usage} \} \\
 &= 3750 \text{ units} - (2 \text{ weeks} \times 1000 \text{ units}) = 1750 \text{ units}
 \end{aligned}$$

$$\begin{aligned}
 \text{Maximum Level} &= \text{Re-order Level} + \text{Re-order Quantity} - (\text{Min. Re-order period} \times \\
 &\quad \text{Min. usage}) \\
 &= 3750 + 2236 - (1 \times 750) = 5236 \text{ Units}
 \end{aligned}$$

Question 5

(a) The following information is available in the financial accounts of a manufacturing company for the year ending 31st March, 2009:

	Rs.
Direct Material consumption	3,55,000
Direct wages	3,60,000
Manufacturing expenses	2,4,5000
Office and administrative expenses	2,40,000

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<i>Selling and distribution expenses</i>	<i>2,00,000</i>
<i>Donation and charity</i>	<i>20,000</i>
<i>Interest on debentures</i>	<i>48,000</i>
<i>Preliminary expenses (written off)</i>	<i>20,000</i>
<i>Provision for income-tax</i>	<i>75,000</i>
<i>Interest received on deposits</i>	<i>25,000</i>
<i>Sales : 1,80,000 units</i>	<i>16,20,000</i>
<i>Closing stock of finished goods : 30,000 units</i>	<i>1,50,000</i>

The Cost accounts reveals:

- (i) Manufacturing overheads recovered at 80 percent on direct wages.
- (ii) Office and administrative overheads recovered at 25 percent on factory cost.
- (iii) Selling and distribution overheads at Re. 1.00 per unit sold.
- (iv) Closing stock of finished goods valued at cost of production.

You are required to:

- (i) Prepare profit and loss account showing net profit in financial accounts.
- (ii) Prepare a statement showing profit in the cost accounts.
- (iii) Prepare a statement reconciling the profits disclosed as per above (i) and (ii).

(2+3+5=10 Marks)

(b) Explain the followings:

- (i) Two Bin System
- (ii) Multiple Costing

(2+2=4 Marks)

Answer

(a) (i) Profit and Loss Account in Financial Accounts
(for the year ending 31st March, 2009)

<i>Dr.</i>		<i>Cr.</i>	
<i>Particulars</i>	<i>Rs.</i>	<i>Particulars</i>	<i>Rs.</i>
To Direct Material	3,55,000	By Sales	16,20,000
To Direct Wages	3,60,000	By Interest on deposits	25,000
To Manufacturing Exp.	2,45,000	By Closing Stock	1,50,000
To Office & Adm. Exp.	2,40,000		
To Selling & Dist. Exp.	2,00,000		

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To Donation & Charity	20,000		
To Interest on Debentures	48,000		
To Preliminary Exp.	20,000		
To Provision for Income Tax	75,000		
To Net Profit	2,32,000		
	17,95,000		17,95,000

(ii) Statement showing Profit in Cost Accounts

Output : 1,80,000 + 30,000 = 2,10,000 units

		Rs.
Raw Material Consumed		3,55,000
Direct Wages		3,60,000
	Prime Cost	7,15,000
Manufacturing overheads @ 80% on direct wages		2,88,000
	Factory Cost	10,03,000
Office & Adm. Overheads @ 25% on Factory Cost		2,50,750
	Cost of Production	12,53,750
Less: Closing stock - $\frac{12,53,750}{2,10,000} \times 30,000$		1,79,107
	Cost of Goods Sold	10,74,643
Selling & Dist. Overheads @ Re.1 per unit sold		1,80,000
	Cost of sales	12,54,643
Profit		3,65,357
Sales		16,20,000

(iii) Reconciliation Statement as on 31.3.09

	Rs.	Rs.
Profit as per Cost Accounts		3,65,357
Add: Over recovery of manufacturing overheads	43,000	
Over recovery of office & Adm. Overheads	10,750	
Interest on deposit credit only in financial books	25,000	78,750
		4,44,107
Less: Over valuation of Closing Stock	29,107	
Under recovery of selling and dist. overheads	20,000	
Expenses included only in financial books:		
Donation and Charity	20,000	
Interest on Debentures	48,000	

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Preliminary expenses	20,000	
Provision for Income Tax	75,000	2,12,107
Profit as per Financial Accounts		2,32,000

- (b) (i) *Two Bin System*: Under this system each bin is divided into two parts – one, smaller part, should stock the quantity equal to the minimum stock or even the re-ordering level, and the other to keep the remaining quantity. Issues are made out of the larger part; but as soon as it becomes necessary to use quantity out of the smaller part of the bins fresh order is placed. Two bin system is supplemental to the record of respective quantities on the bin card and the stores ledger card.
- (ii) *Multiple Costing*: It refers to the method of costing followed by a business wherein a large variety of articles are produced, each differing from the other both in regards to material required and process of manufacture. In such cases, cost of each article is computed separately by using, generally, two or more methods of costing.

Question 6

- (a) *MN Limited gives you the following information related for the year ending 31st March, 2009:*

(1) <i>Current Ratio</i>	2.5 : 1
(2) <i>Debt-Equity Ratio</i>	1 : 1.5
(3) <i>Return on Total Assets</i>	15%
(4) <i>Total Assets Turnover Ratio</i>	2
(5) <i>Gross Profit Ratio</i>	20%
(6) <i>Stock Turnover Ratio</i>	7
(7) <i>Current Market Price per Equity Share</i>	Rs. 16
(8) <i>Net Working Capital</i>	Rs. 4,50,000
(9) <i>Fixed Assets</i>	Rs. 10,00,000
(10) <i>60,000 Equity Shares of</i>	Rs. 10 each
(11) <i>20,000, 9% Preference Shares of</i>	Rs. 10 each
(12) <i>Opening Stock</i>	Rs. 3,80,000

You are required to calculate:

- (i) *Quick Ratio*
(ii) *Fixed Assets Turnover Ratio*
(iii) *Proprietary Ratio*
(iv) *Earnings per Share*
(v) *Price-Earning Ratio.*

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- (b) *What do you understand by desirability factor/profitability index?*
(c) *Explain with example the formula used for determining optimum cash balance according to Baumal's cash management model.*
(d) *State the main features of deep discount bonds.* (10 + 2 + 2 + 2 = 16 Marks)

Answer

(a) Workings Notes:

$$\begin{aligned} 1. \quad \text{Net Working Capital} &= \text{Current Assets} - \text{Current Liabilities} \\ &= 2.5 - 1 = 1.5 \end{aligned}$$

$$\begin{aligned} \text{Thus, Current Assets} &= \frac{\text{Net Working Capital} \times 2.5}{1.5} \\ &= \frac{\text{Rs. } 4,50,000 \times 2.5}{1.5} \\ &= \text{Rs. } 7,50,000 \end{aligned}$$

$$\begin{aligned} \text{Current Liabilities} &= \text{Rs. } 7,50,000 - \text{Rs. } 4,50,000 \\ &= \text{Rs. } 3,00,000 \end{aligned}$$

$$\begin{aligned} 2. \quad \text{Sales} &= \text{Total Assets Turnover} \times \text{Total Assets} \\ &= 2 \times (\text{Rs. } 10,00,000 + \text{Rs. } 7,50,000) \\ &= \text{Rs. } 35,00,000 \end{aligned}$$

$$\begin{aligned} 3. \quad \text{Cost of Goods Sold} &= 100 - 20 = 80\% \text{ of Sales} \\ &= 80\% \text{ of Rs. } 35,00,000 = \text{Rs. } 28,00,000 \end{aligned}$$

$$\begin{aligned} 4. \quad \text{Average Stock} &= \frac{\text{Cost of Good Sold}}{\text{Stock Turnover Ratio}} \\ &= \frac{\text{Rs. } 28,00,000}{7} \\ &= \text{Rs. } 4,00,000 \end{aligned}$$

$$\begin{aligned} \text{Closing Stock} &= (\text{Average Stock} \times 2) - \text{Opening Stock} \\ &= (\text{Rs. } 4,00,000 \times 2) - \text{Rs. } 3,80,000 \\ &= \text{Rs. } 4,20,000 \end{aligned}$$

$$\begin{aligned} \text{Quick Assets} &= \text{Current Assets} - \text{Closing Stock} \\ &= \text{Rs. } 7,50,000 - \text{Rs. } 4,20,000 \\ &= \text{Rs. } 3,30,000 \end{aligned}$$

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$$\begin{aligned}\text{Net Worth} &= \frac{\text{Total Assets (Debt + Equity)} \times 1.5}{(1 + 1.5)} \\ &= \frac{\text{Rs. } 17,50,000 \times 1.5}{2.5} \\ &= \text{Rs. } 10,50,000\end{aligned}$$

5. Profit after tax (PAT) = Total Assets × Return on Total Assets
= Rs. 17,50,000 × 15%
= Rs. 2,62,500

(i) Calculation of Quick Ratio

$$\begin{aligned}\text{Quick Ratio} &= \frac{\text{Quick Assets}}{\text{Current Liabilities}} \\ &= \frac{\text{Rs. } 3,30,000}{\text{Rs. } 3,00,000} \\ &= 1.1:1\end{aligned}$$

Quick Ratio = 1.1 : 1

(ii) Calculation of Fixed Assets Turnover Ratio

$$\begin{aligned}\text{Fixed Assets Turnover Ratio} &= \frac{\text{Sales}}{\text{Fixed Assets}} \\ &= \frac{\text{Rs. } 35,00,000}{\text{Rs. } 10,00,000} \\ &= 3.5\end{aligned}$$

Fixed Assets Turnover Ratio = 3.5

(iii) Calculation of Proprietary Ratio

$$\begin{aligned}\text{Proprietary Ratio} &= \frac{\text{Networth}}{\text{Total Assets}} \\ &= \frac{\text{Rs. } 10,50,000}{\text{Rs. } 17,50,000} \\ &= 0.6 : 1\end{aligned}$$

Proprietary Ratio = 0.6 : 1

(iv) Calculation of Earnings per Equity Share (EPS)

$$\text{Earnings per Equity Share} = \frac{\text{PAT} - \text{Preference Share Dividend}}{\text{Number of Equity Shares}}$$

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$$= \frac{\text{Rs. 2,62,500} - \text{Rs. 18,000}}{60,000}$$

$$= \text{Rs. 4.075 per share}$$

$$\text{Earnings per Equity Share} = \text{Rs. 4.08}$$

(v) Calculation of Price-Earning Ratio (P/E Ratio)

$$\text{P/E Ratio} = \frac{\text{Market Price of Equity Share}}{\text{EPS}}$$

$$= \frac{\text{Rs. 16}}{\text{Rs. 4.075}} = 3.926$$

$$\text{Price-Earning Ratio (P/E Ratio)} = 3.93$$

(b) Desirability Factor/Profitability Index

In certain cases we have to compare a number of proposals each involving different amount of cash inflows. One of the methods of comparing such proposals is to workout what is known as the 'Desirability factor' or 'Profitability index'. In general terms, a project is acceptable if its profitability index value is greater than 1.

Mathematically, the desirability factor is calculated as below:

$$\frac{\text{Sum of Discounted Cash inflows}}{\text{Initial Cash outlay or Total Discounted Cash outflow (as the case may be)}}$$

(c) Formula for Determining Optimum Cash Balance according to Baumol's Model

$$C = \sqrt{\frac{2UP}{S}}$$

Where,

C = Optimum cash balance

U = Annual cash disbursement

P = Fixed cost per transaction

S = Opportunity cost of one rupee p.a.

Example

A firm maintains a separate account for cash disbursement. Total disbursements are Rs.1,05,000 per month or Rs.12,60,000 per year. An Administrative and transaction cost of transferring cash to disbursement account is Rs. 20 per transfer. Marketable securities yield is 8% per annum.

Determine the optimum cash balance according to William J. Baumol model.

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Solution

$$\text{The optimum cash balance } C = \sqrt{\frac{2 \times \text{Rs. } 12,60,000 \times \text{Rs. } 20}{0.08}} = \text{Rs. } 25,100$$

(d) Main Features of Deep Discount Bonds

Deep discount bonds are a form of zero interest bonds. These bonds are sold at a discounted value and on maturity face value is paid to the investors. In such bonds, there is no interest payout during lock - in period. IDBI was the first to issue deep discount bonds in India.

Question 7

- (a) Following information is forecasted by the CS Limited for the year ending 31st March, 2010:

	Balance as at 1 st April, 2009 Rs.	Balance as at 31 st March, 2010 Rs.
Raw Material	45,000	65,356
Work-in-progress	35,000	51,300
Finished goods	60,181	70,175
Debtors	1,12,123	1,35,000
Creditors	50,079	70,469
Annual purchases of raw material (all credit)		4,00,000
Annual cost of production		7,50,000
Annual cost of goods sold		9,15,000
Annual operating cost		9,50,000
Annual sales (all credit)		11,00,000

You may take one year as equal to 365 days.

You are required to calculate:

- Net operating cycle period.
 - Number of operating cycles in the year.
 - Amount of working capital requirement.
- (b) Write short notes on the following:

- Cut - off Rate
- Floating Rate Bonds.

(8 + 4 = 12 Marks)

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Answer

(a) Working Notes:

1. Raw Material Storage Period (R)

$$= \frac{\text{Average Stock of Raw Material}}{\text{Annual Consumption of Raw Material}} \times 365$$

$$= \frac{\text{Rs. 55,178}}{\text{Rs. 3,79,644}} \times 365$$

$$= 53 \text{ days.}$$

$$\text{Average Stock of Raw Material} = \frac{45,000 + 65,356}{2} = 55,178$$

$$\begin{aligned} \text{Annual Consumption of Raw Material} &= \text{Opening Stock} + \text{Purchases} - \text{Closing Stock} \\ &= 45,000 + 4,00,000 - 65,356 \\ &= \text{Rs. 3,79,644} \end{aligned}$$

2. Work-in-Progress (WIP) Conversion Period (W)

$$\text{WIP Conversion Period} = \frac{\text{Average Stock of WIP}}{\text{Annual Cost of Production}} \times 365$$

$$= \frac{43,150}{\text{Rs. 7,50,000}} \times 365$$

$$= 21 \text{ days.}$$

$$\text{Average Stock of WIP} = \frac{35,000 + 51,300}{2} = 43,150$$

3. Finished Stock Storage Period (F)

$$= \frac{\text{Average Stock of Finished Goods}}{\text{Cost of Goods Sold}} \times 365$$

$$= \frac{\text{Rs. 65,178}}{\text{Rs. 9,15,000}} \times 365$$

$$= 26 \text{ days.}$$

$$\text{Average Stock} = \frac{60,181 + 70,175}{2}$$

$$= \text{Rs. 65,178.}$$

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4. Debtors Collection Period (D)

$$= \frac{\text{Average Debtors}}{\text{Annual Credit Sales}} \times 365$$

$$= \frac{\text{Rs. 1,23,561.50}}{\text{Rs. 11,00,000}} \times 365$$

$$= 41 \text{ days.}$$

$$\text{Average debtors} = \frac{1,12,123 + 1,35,000}{2} = \text{Rs. 1,23,561.50}$$

5. Creditors Payment Period (C)

$$= \frac{\text{Average Creditors}}{\text{Annual Net Credit Purchases}} \times 365$$

$$= \frac{60,274}{\text{Rs. 4,00,000}} \times 365$$

$$= 55 \text{ days.}$$

$$\text{Average Creditors} = \frac{50,079 + 70,469}{2} = 60,274$$

(i) Operating Cycle Period

$$= R + W + F + D - C$$

$$= 53 + 21 + 26 + 41 - 55$$

$$= 86 \text{ days}$$

$$\text{Operating Cycle Period} = 86 \text{ days}$$

(ii) Number of Operating Cycles in the Year

$$= \frac{365}{\text{Operating Cycle Period}}$$

$$= \frac{365}{86}$$

$$= 4.244$$

$$\text{Number of Operating Cycles in the Year} = 4.24$$

(iii) Amount of Working Capital Required

$$= \frac{\text{Annual Operating Cost}}{\text{Number of Operating Cycles}}$$

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$$= \frac{\text{Rs. } 9,50,000}{4.24}$$

$$= \text{Rs. } 2,24,057$$

Amount of Working Capital Required = Rs. 2,24,057

- (b) (i) **Cut-off Rate** : It is the minimum rate which the management wishes to have from any project. Usually this is based upon the cost of capital. The management gains only if a project gives return of more than the cut-off rate. Therefore, the cut-off rate can be used as the discount rate or the opportunity cost rate.
- (ii) **Floating Rate Bonds** : These are the bonds where the interest rate is not fixed and is allowed to float depending upon the market conditions. These are ideal instruments which can be resorted to by the issuers to hedge themselves against the volatility in the interest rates. They have become more popular as a money market instrument and have been successfully issued by financial institutions like IDBI, ICICI etc.

Question 8

- (a) *PR Engineering Ltd. is considering the purchase of a new machine which will carry out some operations which are at present performed by manual labour. The following information related to the two alternative models – 'MX' and 'MY' are available:*

	Machine 'MX'	Machine 'MY'
Cost of Machine	Rs. 8,00,000	Rs. 10,20,000
Expected Life	6 years	6 years
Scrap Value	Rs. 20,000	Rs. 30,000
Estimated net income before depreciation and tax:		
Year	Rs.	Rs.
1	2,50,000	2,70,000
2	2,30,000	3,60,000
3	1,80,000	3,80,000
4	2,00,000	2,80,000
5	1,80,000	2,60,000
6	1,60,000	1,85,000

Corporate tax rate for this company is 30 percent and company's required rate of return on investment proposals is 10 percent. Depreciation will be charged on straight line basis.

You are required to:

- (i) *Calculate the pay-back period of each proposal.*
- (ii) *Calculate the net present value of each proposal, if the P.V. factor at 10% is – 0.909, 0.826, 0.751, 0.683, 0.621 and 0.564.*

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(iii) Which proposal you would recommend and why?

- (b) The capital structure of a company consists of equity shares of Rs. 50 lakhs; 10 percent preference shares of Rs. 10 lakhs and 12 percent debentures of Rs. 30 lakhs. The cost of equity capital for the company is 14.7 percent and income-tax rate for this company is 30 percent.

You are required to calculate the Weighted Average Cost of Capital (WACC).

(9 +3 =12 Marks)

Answer

(a) Working Notes:

1. Annual Depreciation of Machines

$$\text{Depreciation of Machine 'MX'} = \frac{\text{Rs. 8,00,000} - \text{Rs. 20,000}}{6}$$

$$= \text{Rs. 1,30,000}$$

$$\text{Depreciation of Machine 'MY'} = \frac{\text{Rs. 10,20,000} - \text{Rs. 30,000}}{6}$$

$$= \text{Rs. 1,65,000}$$

2. **Calculation of Cash Inflows**

Machine 'MX'	Years					
	1	2	3	4	5	6
Income before Depreciation and Tax	2,50,000	2,30,000	1,80,000	2,00,000	1,80,000	1,60,000
Less: Depreciation	<u>1,30,000</u>	<u>1,30,000</u>	<u>1,30,000</u>	<u>1,30,000</u>	<u>1,30,000</u>	<u>1,30,000</u>
Profit before Tax	1,20,000	1,00,000	50,000	70,000	50,000	30,000
Less : Tax @ 30%	<u>36,000</u>	<u>30,000</u>	<u>15,000</u>	<u>21,000</u>	<u>15,000</u>	<u>9,000</u>
Profit after Tax (PAT)	84,000	70,000	35,000	49,000	35,000	21,000
Add: Depreciation	<u>1,30,000</u>	<u>1,30,000</u>	<u>1,30,000</u>	<u>1,30,000</u>	<u>1,30,000</u>	<u>1,30,000</u>
Cash Inflows	<u>2,14,000</u>	<u>2,00,000</u>	<u>1,65,000</u>	<u>1,79,000</u>	<u>1,65,000</u>	<u>1,51,000</u>

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Machine 'MY'	Years					
	1	2	3	4	5	6
Income before Depreciation and Tax	2,70,000	3,60,000	3,80,000	2,80,000	2,60,000	1,85,000
Less: Depreciation	<u>1,65,000</u>	<u>1,65,000</u>	<u>1,65,000</u>	<u>1,65,000</u>	<u>1,65,000</u>	<u>1,65,000</u>
Profit before Tax	1,05,000	1,95,000	2,15,000	1,15,000	95,000	20,000
Less : Tax @ 30%	<u>31,500</u>	<u>58,500</u>	<u>64,500</u>	<u>34,500</u>	<u>28,500</u>	<u>6,000</u>
Profit after Tax (PAT)	73,500	1,36,500	1,50,500	80,500	66,500	14,000
Add: Depreciation	<u>1,65,000</u>	<u>1,65,000</u>	<u>1,65,000</u>	<u>1,65,000</u>	<u>1,65,000</u>	<u>1,65,000</u>
Cash Inflows	<u>2,38,500</u>	<u>3,01,500</u>	<u>3,15,500</u>	<u>2,45,500</u>	<u>2,31,500</u>	<u>1,79,000</u>

(i) Calculation of Payback Period

	Cumulative Cash Inflows					
	Years					
	1	2	3	4	5	6
Machine 'MX'	2,14,000	4,14,000	5,79,000	7,58,000	9,23,000	10,74,000
Machine 'MY'	2,38,500	5,40,000	8,55,500	11,01,000	13,32,500	15,11,500

Pay-back Period for 'MX'

$$= 4 + \frac{(8,00,000 - 7,58,000)}{1,65,000}$$

$$= 4 + \frac{42,000}{1,65,000} = 4 + 0.25$$

$$= 4.25 \text{ years or, 4 years and 3 months}$$

Pay-back Period for 'MX' = 4.25 years or 4 years and 3 months

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Pay-back Period for 'MY'

$$= 3 + \frac{(10,20,000 - 8,55,500)}{2,45,500}$$

$$= 3 + \frac{1,64,500}{2,45,500} = 3 + 0.67$$

= 3.67 years or, 3 years and 8 months

Pay-back Period for 'MY' = 3.67 years or 3 years and 8 months

(ii) Calculation of Net Present Value (NPV)

Year	PV Factor	Machine 'MX'		Machine 'MY'	
		Cash Inflows Rs.	Present Value Rs.	Cash Inflows Rs.	Present Value Rs.
0	1.000	(8,00,000)	(8,00,000)	(10,20,000)	(10,20,000)
1	0.909	2,14,000	1,94,526	2,38,500	2,16,797
2	0.826	2,00,000	1,65,200	3,01,500	2,49,039
3	0.751	1,65,000	1,23,915	3,15,500	2,36,941
4	0.683	1,79,000	1,22,257	2,45,500	1,67,677
5	0.621	1,65,000	1,02,465	2,31,500	1,43,762
6	0.564	1,51,000	85,164	1,79,000	1,00,956
Scrap Value	0.564	20,000	11,280	30,000	16,920
Net Present Value (NPV)			4,807		1,12,092

Net Present Value of Machine 'MX' = Rs. 4,807

Net Present Value of Machine 'MY' = Rs. 1,12,092

(iii) Recommendation

	Machine 'MX'	Machine 'MY'
Ranking according to Pay-back Period	II	I
Ranking according to Net Present Value (NPV)	II	I

Advise: Since Machine 'MY' has higher ranking than Machine 'MX' according to both the parameters, i.e. Payback Period as well as Net Present Value, therefore, Machine 'MY' is recommended.

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(b) Calculation of Weighted Average Cost of Capital (WACC)

Source	Amount	Weight	Cost of Capital after tax	WACC
	Rs.			
Equity Capital	50,00,000	0.5556	0.147	0.0817
10% Preference Capital	10,00,000	0.1111	0.100	0.0111
12% Debentures	<u>30,00,000</u>	<u>0.3333</u>	0.084*	<u>0.0280</u>
Total	<u>90,00,000</u>	<u>1.0000</u>		<u>0.1208</u>

* Cost of Debentures (after tax) = $12 (1 - 0.30) = 8.4\% = 0.084$

Weighted Average Cost of Capital = 0.1208 = 12.08%

Question 9

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

You are required to:

- (i) Calculate the operating, financial and combined leverages and Earnings per Share (EPS).
 - (ii) Determine the likely level of EBIT, if EPS is (1) Rs. 4, (2) Rs. 2, (3) Rs. 0.
- (b) Describe the three principles relating to selection of marketable securities.
- (c) A doctor is planning to buy an X-Ray machine for his hospital. He has two options. He can either purchase it by making a cash payment of Rs. 5 lakhs or Rs. 6,15,000 are to be paid in six equal annual installments. Which option do you suggest to the doctor assuming the rate of return is 12 percent? Present value of annuity of Re. 1 at 12 percent rate of discount for six years is 4.111. (7 + 3 + 2 = 12 Marks)

Answer

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

Income Statement

	Rs.
Sales Revenue	90,00,000
Less: Variable Cost @ 60%	<u>54,00,000</u>
Contribution	36,00,000
Less: Fixed Cost other than Interest	<u>10,00,000</u>

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Earnings before Interest and Tax (EBIT)	26,00,000
Less: Interest (12% on Rs. 40,00,000)	<u>4,80,000</u>
Earnings before tax (EBT)	21,20,000
Less: Tax @ 30%	<u>6,36,000</u>
Earnings after tax (EAT)	<u>14,84,000</u>

1. Calculation of Operating Leverage (OL)

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

$$\text{Operating Leverage} = 1.38$$

2. Calculation of Financial Leverage (FL)

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

$$\text{Financial Leverage} = 1.23$$

3. Calculation of Combined Leverage (CL)

$$\begin{aligned}\text{Combined Leverage} &= \text{OL} \times \text{FL} \\ &= 1.38 \times 1.23 \\ &= 1.6974\end{aligned}$$

$$\text{Combined Leverage} = 1.70$$

4. Calculation of Earning per Share (EPS)

$$\begin{aligned}\text{Earnings per Share (EPS)} &= \frac{\text{EAT}}{\text{Number of Equity Shares}} \\ &= \frac{\text{Rs. 14,84,000}}{4,00,000} \\ &= 3.71\end{aligned}$$

$$\text{Earnings per Share (EPS)} = 3.71$$

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(ii) Calculation of likely levels of EBIT at Different EPS

$$\text{EPS} = \frac{(\text{EBIT} - I)(1 - T)}{\text{Number of Equity Shares}}$$

(1) If EPS is Rs. 4

$$4 = \frac{(\text{EBIT} - 4,80,000)(1 - 0.3)}{4,00,000}$$

$$\text{EBIT} - 4,80,000 = \frac{16,00,000}{0.70}$$

$$\text{EBIT} - 4,80,000 = 22,85,714$$

$$\text{EBIT} = \text{Rs. } 27,65,714$$

$$\text{EBIT if EPS is Rs. 4} = \text{Rs. } 27,65,714$$

(2) If EPS is Rs. 2

$$2 = \frac{(\text{EBIT} - 4,80,000)(1 - 0.3)}{4,00,000}$$

$$\text{EBIT} - 4,80,000 = \frac{8,00,000}{0.70}$$

$$\text{EBIT} - 4,80,000 = 11,42,857$$

$$\text{EBIT} = \text{Rs. } 16,22,857$$

$$\text{EBIT if EPS is Rs. 2} = \text{Rs. } 16,22,857$$

(3) If EPS is Rs. Zero

$$0 = \frac{(\text{EBIT} - 4,80,000)(1 - 0.3)}{4,00,000}$$

$$\text{EBIT} = \text{Rs. } 4,80,000$$

$$\text{EBIT if EPS is Rs. 0} = \text{Rs. } 4,80,000$$

(b) Three Principles Relating to Selection of Marketable Securities

The three principles relating to selection of marketable securities are:

- (i) **Safety:** Return and risk go hand-in-hand. As the objective in this investment is ensuring liquidity, minimum risk is the criterion of selection.
- (ii) **Maturity:** Matching of maturity and forecasted cash needs is essential. Prices of long-term securities fluctuate more with changes in interest rates and are, therefore, riskier.

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- (iii) **Marketability:** It refers to the convenience, speed and cost at which a security can be converted into cash. If the security can be sold quickly without loss of time and price, it is highly liquid or marketable.

(c) Advise to the Management

Option I: Cash Down Payment

Cash down payment= Rs.5,00,000

Option II: Annual Installment Basis

$$\text{Annual installment} = 6,15,000 \times \frac{1}{6} = \text{Rs. } 1,02,500$$

Present Value of 1 to 6 instalments @12%

$$= 1,02,500 \times 4.111$$

$$= \text{Rs. } 4,21,378$$

Advise: The doctor should buy X-Ray machine on installment basis because the present value of cash out flows is lower than cash down payment. This means Option II is better than Option I.