

PAPER – 4 : COST ACCOUNTING AND FINANCIAL MANAGEMENT

Question Nos. 1 and 6 are compulsory.

Attempt three questions out of the remaining Question Numbers 2, 3, 4 and 5 and attempt two questions from the remaining Question Numbers 7, 8, 9.

Question 1

- (a) ABC Limited manufactures two radio models, the Nova which has been produced for five years and sells for Rs. 900, and the Royal, a new model introduced in early 2004, which sells for Rs. 1,140. Based on the following Income statement for the year 2004-05, a decision has been made to concentrate ABC Limited's marketing resources on the Royal model and to begin to phase out the Nova model.

ABC Limited			
Income Statement for the year ending March 31, 2005			
	Royal Model	Nova Model	Total
	Rs.	Rs.	Rs.
Sales	45,60,000	1,98,00,000	2,43,60,000
Cost of Goods sold	31,92,000	1,25,40,000	1,57,32,000
Gross margin	13,68,000	72,60,000	86,28,000
Selling & Administrative Expenses	9,78,000	58,30,000	68,08,000
Net Income	3,90,000	14,30,000	18,20,000
Unit Produced and sold	4,000	22,000	
Net Income per unit sold	97.50	65	

The standard unit costs for the Royal and Nova models are as follows:

	Royal Model	Nova Model
	Rs.	Rs.
Direct materials	584	208
Direct Labour		
Royal (3.5 hrs x Rs. 12)	42	
Nova (1.5 hrs x Rs. 12)		18
Machine usage		
Royal (4 hrs x Rs. 18)	72	
Nova (8 hrs x Rs. 18)		144
Manufacturing overheads (applied on the basis of machine hours at a pre-determined rate of Rs. 25 per hour)	100	200
Standard Cost	798	570

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ABC Ltd.'s Controller is advocating the use of activity-based costing and activity-based cost management and has gathered the following information about the company's manufacturing overheads cost for the year ending March 31, 2005.

Activity centre (Cost driver)	Traceable Costs Rs.	Number of Events		
		Royal	Nova	Total
Soldering (Number of solder joints)	9,42,000	3,85,000	11,85,000	15,70,000
Shipments (Number of shipments)	8,60,000	3,800	16,200	20,000
Quality control (Number of Shipments)	12,40,000	21,300	56,200	77,500
Purchase orders (Number of orders)	9,50,400	1,09,980	80,100	1,90,080
Machine Power (Machine hours)	57,600	16,000	1,76,000	1,92,000
Machine setups (Number of setups)	<u>7,50,000</u>	14,000	16,000	30,000
Total Traceable costs	<u>48,00,000</u>			

Required:

- Prepare a Statement showing allocation of manufacturing overheads using the principles of activity-based costing.
 - Prepare a Statement showing product cost profitability using activity-based costing.
 - Should ABC Ltd. continue to emphasize the Royal model and phase out the Nova model ? Discuss. (4+4+2 = 10 Marks)
- Discuss the essentials of a good Cost Accounting system. (4 Marks)
 - Discuss ABC analysis as a technique of inventory control. (4 Marks)

Answer

- (a) (i) **Statement Showing Allocation of Manufacturing Overheads Using Principles of Activity Based Costing.**

Activity Center	Traceable cost Rs.	Cost allocation basis	Cost Allocation	
			Royal Rs.	Nova Rs.
Soldering	9,42,000	385:1185	2,31,000	7,11,000
Shipments	8,60,000	38:162	1,63,400	6,96,600
Quality control	12,40,000	213:562	3,40,800	8,99,200
Purchase orders	9,50,400	109980:80100	5,49,900	4,00,500

Machine lower	57,600	16:176	4,800	52,800
Machine set ups	7,50,000	14:16	3,50,000	4,00,000
	<u>48,00,000</u>		<u>16,39,900</u>	<u>31,60,100</u>

Units produced and sold		4,000	22,000
Manufacturing Overheads Cost per unit		Rs. 409.98	Rs. 143.64

(ii) Statement Showing Product Cost and Profitability using Activity Based Costing

	Royal Per Unit Cost Rs.	Nova Per Unit Cost Rs.	Total Rs.
Standard cost other than manufacturing OHs cost	698	370	
Manufacturing OHs using activity-based costing	409.98	143.64	
Cost	1,107.98	513.64	
Selling Price/unit	1,140	900	
Gross Margin / unit	32.02	386.36	
Gross Margin	1,28,080	84,99,920	86,28,000
Selling & Adm. Expenses	9,78,000	58,30,000	68,08,000
Net Income	(8,49,920)	26,69,920	18,20,000

(iii) Novo Model should continue to be bread and butter product and Royal model should not be over-emphasized; rather it's pricing is required to be corrected.

(b) Essentials of a Good Cost Accounting System

- (i) It should be tailor-made, practical, simple and capable of meeting the requirements of a business concern.
- (ii) The data to be used by the Cost Accounting System should be accurate; otherwise it may distort the output of the system.
- (iii) Necessary cooperation and participation of executives from various departments of the concern is essential for developing a good system of cost accounting.
- (iv) The cost of installing and operating the system should justify the results.
- (v) A carefully phased program should be prepared by using network analysis for the

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introduction of the system.

- (vi) Management should have faith in the costing system and should also provide a helping hand for its development and success.

(c) ABC Analysis as a technique of Inventory Control

It is a system of inventory control. It exercises discriminating control over different items of stores classified on the basis of investment involved. Usually they are divided into three categories according to their importance, namely, their value and frequency of replenishment during a period.

‘A’ category of items consists of only a small % i.e. about 10% of total items handled by the stores but require heavy investment about 70% of inventory value, because of their high prices or heavy requirement or both.

‘B’ category of items are relatively less important – 20% of the total items of material handled by stores and % of investment required is about 20% of total investment in inventories.

‘C’ category - 70% of total items handled and 10% of value.

For ‘A’ category items, stock levels and EOQ are used and effective monitoring is done.

For ‘B’ Category same tools as in ‘A’ category are applied.

For ‘C’ category of items, there is no need of exercising constant control. Orders for items in this group may be placed either after 6 months or once in a year, after ascertaining consumption requirements.

Question 2.

From the following Information for the month ending October, 2005, prepare Process Cost accounts for Process III. Use First-in-first-out (FIFO) method to value equivalent production.

<i>Direct materials added in Process III (Opening WIP)</i>	<i>2,000 units at Rs. 25,750</i>
<i>Transfer from Process II</i>	<i>53,000 units at Rs. 4,11,500</i>
<i>Transferred to Process IV</i>	<i>48,000 units</i>
<i>Closing stock of Process III</i>	<i>5,000 units</i>
<i>Units scrapped</i>	<i>2,000 units</i>
<i>Direct material added in Process III</i>	<i>Rs. 1,97,600</i>
<i>Direct wages</i>	<i>Rs. 97,600</i>
<i>Production Overheads</i>	<i>Rs. 48,800</i>

Degree of completion:

	<i>Opening Stock</i>	<i>Closing Stock</i>	<i>Scrap</i>
<i>Materials</i>	<i>80%</i>	<i>70%</i>	<i>100%</i>
<i>Labour</i>	<i>60%</i>	<i>50%</i>	<i>70%</i>
<i>Overheads</i>	<i>60%</i>	<i>50%</i>	<i>70%</i>

The normal loss in the process was 5% of production and scrap was sold at Rs. 3 per unit.
(14 Marks)

Answer

(a) **Process III** **Process Cost Sheet** **Period.....**
(FIFO Method)

Op. Stock : 2000 units

Introduced : 53000 units

Statement of Equivalent Production

Input		Output		Equivalent production					
Item	Units	Item	Units	Material A		Material B		Labour & OHs.	
Op stock	2,000	Work on op WIP	2,000	-	-	400	20	800	40
Process II transfer	53,000	Introduced & completed during the period (48,000 – 2000)	46,000	46,000	100	46,000	100	46,000	100
			48,000						
		Normal Loss (2000+53000 – 5000) x 5%	2,500	-	-	-	-	-	-
	55,000	CI WIP	5,000	5,000	100	3,500	70	2,500	50
			55,500	51,000		49,900		49,300	
		Ab. Gain	500	500	100	500	100	500	100
			55,000	50,500		49,400		48,800	

Statement of Cost for each Element

Element of cost	Cost (Rs.)	Equivalent Production.	Cost per unit Rs.
Material A			
Transfer from previous. Process	4,11,500		
Less: Scrap value of Normal Loss 2500 x Rs. 3	7,500		
	4,04,000	50,500	8
Material B	1,97,600	49,400	4
Wages	97,600	48,800	2
Overheads	48,800	48,800	1
	7,48,000		15

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Process Cost Sheet (in Rs)

Op WIP (for completion)	Mat B	400×Rs. 4	=	1,600
	Wages	800× Rs. 2	=	1,600
	OHs.	800× Re. 1	=	800
				4,000
Introduced and completely processed during the period		46000× Rs. 15	=	Rs. 6,90,000
Closing WIP	Mat A	5,000×8	=	40,000
	Mat B	3,500×4	=	14,000
	Wages	2,500×2	=	5,000
	OHs	2,500×1	=	2,500
				61,500
Abnormal Gain		500× Rs. 15	=	7,500

Process III A/c

	Units	Amount (Rs.)		Units	Amount (Rs.)
To bal b/d	2,000	25,750	By Normal Loss	2,500	7,500
To Process II A/c	53,000	4,11,500	By process IV A/c (6,90,000 + 4000 + 25,750)	48,000	7,19,750
To Direct Material		1,97,600	By bal C/d	5,000	61,500
To Direct Wages		97,600			
To Prodn. Ohs		48,800			
To Abnormal Gain	500	7,500			
	55,500	7,88,750		55,500	7,88,750

Question 3.

- (a) Discuss the circumstances under which a Cost Audit is ordered and the purpose of Cost Audit. (4 Marks)
- (b) The following is the Trading and Profit & Loss Account of Omega Limited:

Dr.		Cr.	
Particulars	Rs.	Particulars	Rs.
To Materials consumed	23,01,000	By Sales	
To Direct wages	12,05,750	(30,000 units)	48,75,000
To Production Overheads	6,92,250	By Finished goods	

To Administration Overheads	3,10,375	Stock (1,000 units)		1,30,000
To Selling and Distribution Overheads	3,68,875	By Work-in-progress:		
To preliminary Expenses written off	22,750	Materials	55,250	
To Goodwill written off	45,500	Wages	26,000	
To Fines	3,250	Production		
To Interest on Mortgage	13,000	Overheads	16,250	97,500
To Loss on Sale of machine	16,250	By Dividends received		3,90,000
To Taxation	1,95,000			
To Net Profit for the year	3,83,500	By Interest on bank deposits		65,000
	<u>55,57,500</u>			<u>55,57,500</u>

Omega Limited manufactures a standard unit.

The Cost Accounting records of Omega Ltd. Show the following:

- (i) Production overheads have been charged to work-in-progress at 20% on Prime cost.
- (ii) Administration Overheads have been recovered at Rs. 9.75 per finished Unit.
- (iii) Selling & distribution Overheads have been recovered at Rs. 13 per Unit sold.
- (iv) The Under- or Over-absorption of Overheads has not been transferred to costing P/L A/c.

Required:

- (i) Prepare a proforma Costing Profit & Loss account, indicating net profit.
- (ii) Prepare Control accounts for production overheads, administration Overheads and selling & distribution Overheads.
- (iii) Prepare a statement reconciling the profit disclosed by the cost records with that shown in Financial accounts. (3+3+4 = 10 Marks)

Answer

(a) Circumstances under which Cost Audit is ordered

- (i) **Price Fixation** – The need for fixation of retention price in case of materials of national importance like steel, cement etc., may cause a necessity for cost audit.
- (ii) **Cost variation within an industry:** Cost audit may be necessary to find reasons for such differences.
- (iii) **Inefficient Management** – Where a factory is run inefficiently and uneconomically,

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institution of cost audit may be necessary.

- (iv) **Tax assessment** – Where a duty or tax is levied on products based on cost of production, the levying authorities may ask for cost audit to determine the correct cost of production.

Purposes of Cost Audit

Protective purpose – To examine that there is no undue wastage or losses and the costing system brings out the correct cost of production or processing.

Constructive purpose – Cost Audit provides information to management useful in regulating production, choosing economical methods of operation and reducing operations cost.

(b) (i)

Costing Profit & Loss A/c

Materials		Rs. 23,01,000
Wages		12,05,750
	Prime Cost	35,06,750
	Production overheads (20% of Prime Cost)	7,01,350
		42,08,100
Less:	Work in Progress	97,500
	Manufacturing cost incurred during the period	41,10,600
Add:	Admn. Ohs (9.75 x 31000)	3,02,250
	Cost of Production	44,12,850
Less	Cl. Finished goods stock($4412850 \times \frac{1000}{31000}$)	1,42,350
	COGS	42,70,500
Add	Selling & distribution OHs (30,000x Rs. 13)	3,90,000
	Cost of Sales	46,60,500
	Profit	2,14,500
	Sales	48,75,000

(ii)

Production OH A/c

	Rs		Rs
To Gen ledger Adj. A/c	6,92,250	By WIP A/c	7,01,350
To Bal. C/d	9,100		
	7,01,350		7,01,350

Admn. OH A/c

	<i>Rs</i>		<i>Rs</i>
To Gen Ledger Adj. A/c	3,10,375	By Finished goods A/c	3,02,250
		By bal c/d	8,125
	3,10,375		3,10,375

Selling & Distribution OHs A/c

	<i>Rs</i>		<i>Rs</i>
To Gen. Ledger Adj A/c	3,68,875	By Cost of Sales A/c	3,90,000
To bal C/d	21,125		
	3,90,000		3,90,000

(iii) Reconciliation Statement

		<i>Rs</i>
	Profits as per cost accounts	2,14,500
<i>Add:</i>	Prodn. OHs over absorbed	9,100
	Selling & distribution OHs (Over absorbed)	21,125
	Dividend received	3,90,000
	Interest on bank deposits	65,000
		4,85,225
		6,99,725
<i>Less:</i>	Admn Ohs under-absorbed	8,125
	Preliminary exp. w/off	22,750
	Goodwill w/off	45,500
	Fines	3,250
	Interest on Mortgage	13,000
	Loss on sale of machinery	16,250
	Taxation	1,95,000
	Write-down of Finished stock	12,350
	(1,42,350 – 130,000)	3,16,225
	Profit as per Financial Accounts	3,83,500

Question 4.

- (a) A re-roller produced 400 metric tons of M.S. bars spending Rs. 36,00,000 towards materials and Rs. 6,20,000 towards rolling charges. Ten percent of the output was found to be defective, which had to be sold at 10% less than the price for good production. If the sales realization should give the firm an Overall profit of 12.5% on cost, find the selling price per metric ton of both the categories of bars. The scrap arising during the

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rolling process fetched a realization of Rs. 60,000. (6 Marks)

(b) The existing Incentive system of Alpha Limited is as under:

Normal working week	5 days of 8 hours each plus 3 late shifts of 3 hours each
Rate of Payment	Day work: Rs. 160 per hour Late shift: Rs. 225 per hour
Average output per operator for 49-hours week i.e. including 3 late shifts	120 articles

In order to increase output and eliminate overtime, it was decided to switch on to a system of payment by results. The following Information is obtained:

Time-rate (as usual)	: Rs. 160 per hour
Basic time allowed for 15 articles	: 5 hours
Piece-work rate	: Add 20% to basic piece-rate
Premium Bonus	: Add 50% to time.

Required:

(i) Prepare a Statement showing hours worked, weekly earnings, number of articles produced and labour cost per article for one operator under the following systems:

- (a) Existing time-rate
- (b) Straight piece-work
- (c) Rowan system
- (d) Halsey premium system

Assume that 135 articles are produced in a 40-hour week under straight piece work, Rowan Premium system, and Halsey premium system above and worker earns half the time saved under Halsey premium system. (2×4 = 8 Marks)

Answer

(a) Computation of Selling Price

	Rs.	
Cost of Materials	36,00,000	
Less: Scrap	60,000	Rs. 35,40,000
Rolling charges		<u>6,20,000</u>
Total cost		41,60,000
Add Profit (12.5% on cost)		<u>5,20,000</u>
Sales value		Rs. <u>46,80,000</u>

Output (effective)

$$360 \text{ tons} + \frac{9}{10} \times 40 \text{ tons} = 396 \text{ tons}$$

Selling price per MT of good output

$$= \text{Rs. } 46,80,000/396$$

$$= \text{Rs. } 11,818.18$$

Selling price of defective per MT

$$= 0.9 \times \text{Rs. } 11,818.18 = \text{Rs. } 10,636.36$$

(b) Table showing Labour Cost per Article

Method of Payment	Hours worked	Weekly earnings	Number of articles produced	labour cost per article
Existing time rate	49	Rs. 8,425	120	Rs. 70.21
Straight piece rate system	40	Rs. 8,640	135	Rs. 64
Rowan Premium System	40	Rs. 9,007.41	135	Rs. 66.72
Halsey Premium System	40	Rs. 8,600	135	Rs. 63.70

Working Notes:

Existing time rate

Weekly wages	40 hrs @ Rs160/hr	= Rs6,400
	9 hrs @ Rs225/hr	= Rs2,025
		<u>Rs8,425</u>

Piece Rate System

<i>Basic time:</i>	5 hour for 15 articles.	
	Cost of 15 articles at hourly rate of Rs160/hr	= Rs800
	Add 20%	= Rs160
		<u>Rs960</u>

$$\therefore \text{Rate per article} = \text{Rs}960 / 15$$

$$= \text{Rs}64$$

Earnings for the week

$$= 135 \text{ articles} \times \text{Rs}64$$

$$= \text{Rs.}8,640.$$

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Rowan Premium System

Basic Time : 5 hours for 15 articles
 Add : 50% to time
 7.5 hours for 15 articles
 Or 30 minutes per article

∴ Time allowed for 135 articles = 67.5 hours

Actual time taken for 135 articles = 40 hours

$$\begin{aligned} \text{Earnings} &= (\text{HW} \times \text{RH}) + \left[\frac{\text{TA} - \text{HW}}{\text{TA}} \times \text{HW} \times \text{RH} \right] \\ &= (40 \text{ hrs} \times \text{Rs}160) + \left(\frac{67.5 - 40}{67.5} \times 40 \times \text{Rs}.160 \right) \\ &= \text{Rs}9007.41 \end{aligned}$$

Halsey Premium System

$$\begin{aligned} \text{Earnings} &= \text{HW} \times \text{RH} + \frac{50}{100} (\text{TA} - \text{HW}) \times \text{RH} \\ &= 40 \times \text{Rs}160 + \frac{1}{2} (67.5 - 40) \times \text{Rs}160 \\ &= \text{Rs}8,600. \end{aligned}$$

Question 5.

From the details furnished below you are required to compute a comprehensive machine-hour rate:

Original purchase price of the machine (subject to depreciation at 10% per annum on original cost)	Rs. 3,24,000
Normal working hours for the month (The machine works to only 75% of capacity)	200 hours
Wages of Machineman	Rs. 125 per day (of 8 hours)
Wages for Helper (machine attendant)	Rs. 75 per day (of 8 hours)
Power cost for the month for the time worked	Rs. 15,000
Supervision charges apportioned for the machine centre for the month	Rs. 3,000
Electricity & Lighting for the month	Rs. 7,500

Repairs & maintenance (machine) including Consumable stores per month	Rs. 17,500
Insurance of Plant & Building (apportioned) for the year	Rs. 16,250
Other general expense per annum	Rs. 27,500

The workers are paid a fixed Dearness allowance of Rs. 1,575 per month. Production bonus payable to workers in terms of an award is equal to 33.33% of basic wages and dearness allowance. Add 10% of the basic wage and dearness allowance against leave wages and holidays with pay to arrive at a comprehensive labour-wage for debit to production.

(14 Marks)

Answer

Computation of Comprehensive Machine Hour Rate

	Per month(Rs)	Per hour(Rs)
Fixed cost		
Supervision charges	3,000	
Electricity and lighting	7,500	
Insurance of Plant and building (16,250×1/12)	1,354.17	
Other General Expenses (27,500×1/12)	2,291.67	
Depreciation (32,400×1/12)	2,700	
	16,845.84	112.31
Variable Cost		
Repairs and maintenance	17,500	116.67
Power	15,000	100.00
Wages of machine man		44.91
Wages of Helper		32.97
Machine Hour rate (Comprehensive)		Rs406.86

Effective machine working hour's p.m.

200 hrs. × 75% = 150 hrs.

Wages per machine hour

	Machine man	Helper
Wages for 200 hours (Rs. 125× 25)	Rs. 3,125	

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(Rs. 75× 25)		Rs. 1,875
D.A.	Rs. 1,575	Rs. 1,575
	Rs. 4,700	Rs. 3,450
Production bonus (1/3 of above)	1,567	1,150
	6,267	4,600
Leave wages (10%)	470	345
	6,737	4,945
Effective wage rate per machine hour (150 hrs in all)	Rs. 44.91	Rs. 32.97

Question 6

The following are the Balance Sheets of Gama Limited for the year ending March 31, 2004 and March 31, 2005:

<i>Balance Sheet</i>		
<i>As on March, 31</i>		
	<i>2004</i>	<i>2005</i>
	<i>Rs.</i>	<i>Rs.</i>
Capital and Liabilities		
Share Capital	6,75,000	7,87,500
General Reserves	2,25,000	2,81,250
Capital Reserve (Profit on Sale of investment)	-	11,250
Profit & Loss Account	1,12,500	2,25,000
15% Debentures	3,37,500	2,25,000
Accrued Expenses	11,250	13,500
Creditors	1,80,000	2,81,250
Provision for Dividends	33,750	38,250
Provision for Taxation	78,750	85,500
Total	16,53,750	19,48,500
Assets		
Fixed Assets	11,25,000	13,50,000
Less: Accumulated depreciation	2,25,000	2,81,250
Net Fixed Assets	9,00,000	10,68,750
Long-term Investments (at cost)	2,02,500	2,02,500
Stock (at cost)	2,25,000	3,03,750
Debtors (net of provision for doubtful debts of Rs.	2,53,125	2,75,625

45,000 and Rs. 56,250 respectively for 2004 and 2005 respectively)

Bills receivables	45,000	73,125
Prepaid Expenses	11,250	13,500
Miscellaneous Expenditure	16,875	11,250
	<u>16,53,750</u>	<u>19,48,500</u>

Additional Information:

- (i) During the year 2004-05, fixed assets with a net book value of Rs. 11,250 (accumulated depreciation, Rs. 33,750) was sold for Rs. 9,000.
- (ii) During the year 2004-05, Investments costing Rs. 90,000 were sold, and also Investments costing Rs. 90,000 were purchased.
- (iii) Debentures were retired at a Premium of 10%.
- (iv) Tax of Rs. 61,875 was paid for 2003-04.
- (v) During the year 2004-05, bad debts of Rs. 15,750 were written off against the provision for Doubtful Debt account.
- (vi) The proposed dividend for 2003-04 was paid in 2004-05.

Required:

Prepare a Funds Flow Statement (Statement of changes in Financial Position on working capital basis) for the year ended March 31, 2005. (16 Marks)

Answer

Computation of Funds from Operation

Profit and loss balance on March 31, 2005	Rs. 2,25,000
Add: Depreciation	90,000
Loss on Sale of Asset	2,250
Misc. Expenditure written off	5,625
Transfer to Reserves	56,250
Premium on Redemption of debentures	11,250
Provision for Dividend	38,250
Provision for Taxation	68,625
	<u>4,97,250</u>
Less: P/L balance on March 31, 2004	1,12,500
Funds from operations	<u>3,84,750</u>

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Accumulated Depreciation A/c			
To Fixed Asset A/c	33,750	By Bal. b/d	2,25,000
		By P/L A/c	90,000
To Bal. c/d	2,81,250	(Prov. for dep.) (Bal. fig.)	
	<u>3,15,000</u>		<u>3,15,000</u>

Fixed Assets A/c			
To Bal. b/d	11,25,000	By Accumulated Depreciation A/c	33,750
		By Cash	9,000
To Bank (Purchase of Fixed Asset) (Bal. fig.)	2,70,000	By P/L (Loss on sale)	2,250
		By Bal. c/d	13,50,000
	<u>13,95,000</u>		<u>13,95,000</u>

Provision for Tax A/c			
To Cash (tax paid)	61,875	By Bal. b/d	78,750
		By P/L A/c (Prov.)	
To Bal. c/d	85,500	(Bal. fig.)	68,625
	<u>1,47,375</u>		<u>1,47,375</u>

Statement of Changes in Working Capital				
	<i>March 31, 2004</i>	<i>March 31, 2005</i>	<i>Change in W/C</i>	
			+	-
<i>Current Assets</i>				
Stock	2,25,000	3,03,750	78,750	
Debtors	2,53,125	2,75,625	22,500	
Bills Receivables	45,000	73,125	28,125	
Prepaid Expenses	<u>11,250</u>	<u>13,500</u>	<u>2,250</u>	
	5,34,375	6,66,000	1,31,625	-
<i>Less: Current liabilities</i>				
Accrued Expenses	11,250	13,500	-	2,250
Creditors	<u>1,80,000</u>	<u>2,81,250</u>	-	<u>1,01,250</u>
	1,91,250	2,94,750	1,31,625	1,03,500
Working Capital	3,43,125	3,71,250	-	-
Increase in Working Capital				<u>28,125</u>
			<u>1,31,625</u>	<u>1,31,625</u>

Sources of Funds

	Rs.
Working Capital from Operations	3,84,750
Sale of Fixed Assets	9,000
Sale of Investments	1,01,250
Share Capital Issued	1,12,500
Total Funds Provided (A)	Rs. 6,07,500

Rs.

Purchase of Fixed Assets	2,70,000
Purchase of Investments	90,000
Payment of Debentures (at a premium of 10%)	1,23,750
Payment of Dividends	33,750
Payment of Taxes	61,875
Total Funds Applied (B)	5,79,375
Increase in Working Capital (A-B)	Rs. 28,125

Using the following data, complete the Balance Sheet given below:

Gross Profits	Rs. 54,000
Shareholders' Funds	Rs. 6,00,000
Gross Profit margin	20%
Credit sales to Total sales	80%
Total Assets turnover	0.3 times
Inventory turnover	4 times
Average collection period (a 360 days year)	20 days
Current ratio	1.8
Long-term Debt to Equity	40%

Creditors

.....

Cash

.....

Long-term debt

.....

Debtors

.....

Shareholders' funds

Inventory

.....

Fixed assets

.....

(12 Marks)

Answer

Gross Profits Rs. 54,000

Gross Profit Margin 20%

$$\begin{aligned}\therefore \text{Sales} &= \frac{\text{Gross Profits}}{\text{Gross Profit Margin}} \\ &= \text{Rs. } 54,000 / 0.20 \\ &= \text{Rs. } 2,70,000\end{aligned}$$

Credit Sales to Total Sales = 80%

$$\begin{aligned}\therefore \text{Credit Sales} &= \text{Rs. } 2,70,000 \times 0.80 \\ &= \text{Rs. } 2,16,000\end{aligned}$$

Total Assets Turnover = 0.3 times

$$\begin{aligned}\therefore \text{Total Assets} &= \frac{\text{Sales}}{\text{Total Assets Turnover}} \\ &= \frac{\text{Rs. } 2,70,000}{0.3} \\ &= \text{Rs. } 9,00,000\end{aligned}$$

Sales – Gross Profits = COGS

$$\begin{aligned}\therefore \text{COGS} &= \text{Rs. } 2,70,000 - 54,000 \\ &= \text{Rs. } 2,16,000\end{aligned}$$

Inventory turnover = 4 times

$$\begin{aligned}\text{Inventory} &= \frac{\text{COGS}}{\text{Inventory turnover}} = \frac{2,16,000}{4} \\ &= \text{Rs. } 54,000\end{aligned}$$

Average Collection Period = 20 days

$$\begin{aligned}\therefore \text{Debtors turnover} &= \frac{360}{\text{Average Collection Period}} \\ &= 360/20=18\end{aligned}$$

$$\begin{aligned}\therefore \text{Debtors} &= \frac{\text{Credit Sales}}{\text{Debtors turnover}} \\ &= \frac{\text{Rs. } 2,16,000}{18} \\ &= \text{Rs. } 12,000\end{aligned}$$

Current ratio = 1.8

$$1.8 = \frac{\text{Debtors} + \text{Inventory} + \text{Cash}}{\text{Creditors}}$$

$$1.8 \text{ Creditors} = (\text{Rs. } 12,000 + \text{Rs. } 54,000 + \text{Cash})$$

$$1.8 \text{ Creditors} = \text{Rs. } 66,000 + \text{Cash}$$

$$\text{Long-term Debt to Equity} = 40\%$$

$$\text{Shareholders Funds} = \text{Rs. } 6,00,000$$

$$\therefore \text{Long-term Debt} = \text{Rs. } 6,00,000 \times 40\%$$

$$= \text{Rs. } 2,40,000$$

$$\text{Creditors (Balance figure)} = 9,00,000 - (6,00,000 + 2,40,000)$$

$$= \text{Rs. } 60,000$$

$$\therefore \text{Cash} = (60,000 \times 1.8) - 66,000$$

$$= \text{Rs. } 42,000$$

Balance Sheet			
Creditors (Bal. Fig)	60,000	Cash	42,000
		Debtors	12,000
Long- term debt	2,40,000	Inventory	54,000
Shareholders' funds	6,00,000	Fixed Assets (Bal fig.)	7,92,000
	9,00,000		9,00,000

Question 8

MNP Limited is thinking of replacing its existing machine by a new machine which would cost Rs. 60 lakhs. The company's current production is Rs. 80,000 units, and is expected to increase to 1,00,000 units, if the new machine is bought. The selling price of the product would remain unchanged at Rs. 200 per unit. The following is the cost of producing one unit of product using both the existing and new machine:

	<i>Existing Machine (80,000 units)</i>	<i>New Machine (1,00,000 units)</i>	<i>Unit cost (Rs.) Difference</i>
Materials	75.0	63.75	(11.25)
Wages & Salaries	51.25	37.50	(13.75)
Supervision	20.0	25.0	5.0
Repairs and Maintenance	11.25	7.50	(3.75)
Power and Fuel	15.50	14.25	(1.25)
Depreciation	0.25	5.0	4.75

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Allocated Corporate Overheads	10.0	12.50	2.50
	<u>183.25</u>	<u>165.50</u>	<u>(17.75)</u>

The existing machine has an accounting book value of Rs.1,00,000, and it has been fully depreciated for tax purpose. It is estimated that machine will be useful for 5 years. The supplier of the new machine has offered to accept the old machine for Rs.2,50,000. However, the market price of old machine today is Rs.1,50,000 and it is expected to be Rs.35,000 after 5 years. The new machine has a life of 5 years and a salvage value of Rs.2,50,000 at the end of its economic life. Assume corporate Income tax rate at 40%, and depreciation is charged on straight line basis for Income-tax purposes. Further assume that book profit is treated as ordinary income for tax purpose. The opportunity cost of capital of the Company is 15%.

Required:

- Estimate net present value of the replacement decision.
- Estimate the internal rate of return of the replacement decision.
- Should Company go ahead with the replacement decision? Suggest.

Year (t)	1	2	3	4	5
$PVIF_{0.15,t}$	0.8696	0.7561	0.6575	0.5718	0.4972
$PVIF_{0.20,t}$	0.8333	0.6944	0.5787	0.4823	0.4019
$PVIF_{0.25,t}$	0.80	0.64	0.512	0.4096	0.3277
$PVIF_{0.30,t}$	0.7692	0.5917	0.4552	0.3501	0.2693
$PVIF_{0.35,t}$	0.7407	0.5487	0.4064	0.3011	0.2230

(8+3+1=12 Marks)

Answer

(i) Net Cash Outlay of New Machine

Purchase Price	Rs. 60,00,000
Less: Exchange value of old machine	
[2, 50,000- 0.4(2,50,000-0)]	<u>1,50,000</u>
	<u>Rs. 58,50,000</u>

Market Value of Old Machine: The old machine could be sold for Rs. 1,50,000 in the market. Since the exchange value is more than the market value, this option is not attractive. This opportunity will be lost whether the old machine is retained or replaced. Thus, on incremental basis, it has no impact.

Depreciation base: Old machine has been fully depreciated for tax purpose.

Thus the depreciation base of the new machine will be its original cost i.e. Rs. 60,00,000.

Net Cash Flows: Unit cost includes depreciation and allocated overheads. Allocated overheads are allocations from corporate office therefore they are irrelevant. The depreciation tax shield may be computed separately. Excluding depreciation and allocated overheads, unit costs can be calculated. The company will obtain additional revenue from additional 20,000 units sold.

Thus, after-tax saving, excluding depreciation, tax shield, would be

$$= \{100,000(200 - 148) - 80,000(200 - 173)\} \times (1 - 0.40)$$

$$= \{52,00,000 - 21,60,000\} \times 0.60$$

$$= \text{Rs. } 18,24,000$$

After adjusting depreciation tax shield and salvage value, net cash flows and net present value is estimated.

Calculation of Cash flows and Project Profitability

							Rs. (‘000)
		0	1	2	3	4	5
1	After-tax savings	-	1824	1824	1824	1824	1824
2	Depreciation (Rs. 60,00,000 – 2,50,000)/5	-	1150	1150	1150	1150	1150
3	Tax shield on depreciation (Depreciation x Tax rate)	-	460	460	460	460	460
4	Net cash flows from operations (1+3)	-	2284	2284	2284	2284	2284
5	Initial cost	(5850)					
6	Net Salvage Value (2,50,000 – 35,000)	-	-	-	-	-	215
7	Net Cash Flows (4+5+6)	(5850)	2284	2284	2284	2284	2499
8	PVF at 15%	1.00	0.8696	0.7561	0.6575	0.5718	0.4972
9	PV	(5850)	1986.166	1726.932	1501.73	1305.99	1242.50
10	NPV	Rs.1913.32					

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	Rs. ('000)					
	0	1	2	3	4	5
NCF	(5850)	2284	2284	2284	2284	2499
PVF at 20%	1.00	0.8333	0.6944	0.5787	0.4823	0.4019
PV	(5850)	1903.257	1586.01	1321.751	1101.57	1004.35
PV of benefits	6916.94					
PVF at 30%	1.00	0.7692	0.5917	0.4550	0.3501	0.2693
PV	(5850)	1756.85	1351.44	1039.22	799.63	672.98
PV of benefits	5620.12					

$$\begin{aligned} \text{IRR} &= 20\% + 10\% \times \frac{1066.94}{1296.82} \\ &= 28.23\% \end{aligned}$$

- (iii) *Advise:* The company should go ahead with replacement project, since it is positive NPV decision.

Question 9

- (a) A Company needs Rs. 31,25,000 for the construction of new plant. The following three plans are feasible:

- I The Company may issue 3,12,500 equity shares at Rs. 10 per share.
 - II The Company may issue 1,56,250 ordinary equity shares at Rs. 10 per share and 15,625 debentures of Rs. 100 denomination bearing a 8% rate of interest.
 - III The Company may issue 1,56,250 equity shares at Rs. 10 per share and 15,625 preference shares at Rs. 100 per share bearing a 8% rate of dividend.
- (i) If the Company's earnings before interest and taxes are Rs. 62,500, Rs. 1,25,000, Rs. 2,50,000, Rs. 3,75,000 and Rs. 6,25,000, what are the earnings per share under each of three financial plans ? Assume a Corporate Income tax rate of 40%.
 - (ii) Which alternative would you recommend and why?
 - (iii) Determine the EBIT-EPS indifference points by formulae between Financing Plan I and Plan II and Plan I and Plan III.

(6+1+3=10 Marks)

- (b) Discuss Miller-Orr Cash Management model.

(2 Marks)

Answer**(a) (i) Computation of EPS under three-financial plans.****Plan I: Equity Financing**

EBIT	Rs. 62,500	Rs. 1,25,000	Rs. 2,50,000	Rs. 3,75,000	Rs. 6,25,000
Interest	0	0	0	0	0
EBT	Rs. 62,500	Rs. 1,25,000	Rs. 2,50,000	Rs. 3,75,000	Rs. 6,25,000
Less: Taxes 40%	25,000	50,000	1,00,000	1,50,000	2,50,000
PAT	Rs. 37,500	Rs. 75,000	Rs. 1,50,000	Rs. 2,25,000	Rs. 3,75,000
No. of equity shares	3,12,500	3,12,500	3,12,500	3,12,500	3,12,500
EPS	0.12	0.24	0.48	0.72	1.20

Plan II: Debt – Equity Mix

EBIT	Rs. 62,500	Rs. 1,25,000	Rs. 2,50,000	Rs. 3,75,000	Rs. 6,25,000
Less: Interest	1,25,000	1,25,000	1,25,000	1,25,000	1,25,000
EBT	(62,500)	0	1,25,000	2,50,000	5,00,000
Less: Taxes 40%	25,000*	0	50,000	1,00,000	2,00,000
PAT	(37,500)	0	75,000	1,50,000	3,00,000
No. of equity shares	1,56,250	1,56,250	1,56,250	1,56,250	1,56,250
EPS	(0.24)	0	0.48	0.96	1.92

* The Company will be able to set off losses against other profits. If the Company has no profits from operations, losses will be carried forward.

Plan III : Preference Shares – Equity Mix

EBIT	Rs. 62,500	Rs. 1,25,000	Rs. 2,50,000	Rs. 3,75,000	Rs. 6,25,000
Less: Interest	0	0	0	0	0
EBT	62,500	1,25,000	2,50,000	3,75,000	6,25,000
Less: Taxes (40%)	25,000	50,000	1,00,000	1,50,000	2,50,000
PAT	37,500	75,000	1,50,000	2,25,000	3,75,000
Less: Pref. dividend	1,25,000	1,25,000	1,25,000	1,25,000	1,25,000
PAT for ordinary shareholders	(87,500)	(50,000)	25,000	1,00,000	2,50,000
No. of Equity shares	1,56,250	1,56,250	1,56,250	1,56,250	1,56,250
EPS	(0.56)	(0.32)	0.16	0.64	1.60

(ii) The choice of the financing plan will depend on the state of economic conditions. If

the company's sales are increasing, the EPS will be maximum under Plan II: Debt – Equity Mix. Under favourable economic conditions, debt financing gives more benefit due to tax shield availability than equity or preference financing.

(iii) EBIT – EPS Indifference Point : Plan I and Plan II

$$\frac{(EBIT^*) \times (1 - T_c)}{N_1} = \frac{(EBIT^* - \text{Interest}) \times (1 - T_c)}{N_2}$$

$$\frac{EBIT^* (1 - 0.40)}{3,12,500} = \frac{(EBIT^* - 1,25,000) \times (1 - 0.40)}{1,56,250}$$

$$\begin{aligned} EBIT^* &= \frac{3,12,500}{3,12,500 - 1,56,250} \times 1,25,000 \\ &= \text{Rs. } 2,50,000 \end{aligned}$$

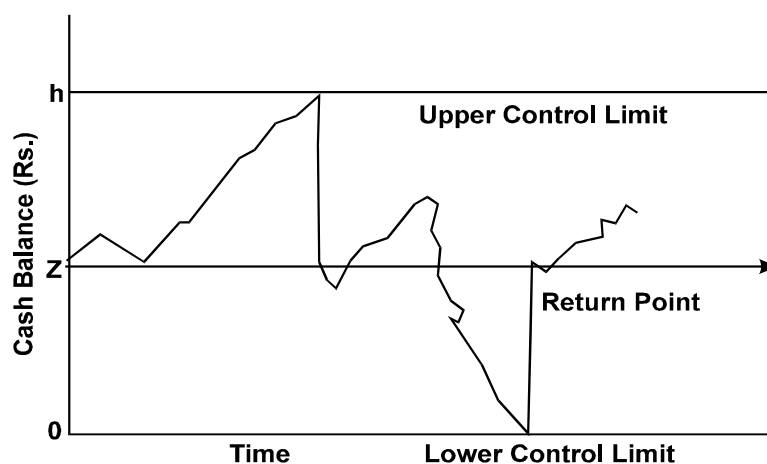
EBIT – EPS Indifference Point: Plan I and Plan III

$$\frac{EBIT^* (1 - T_c)}{N_1} = \frac{EBIT^* (1 - T_c) - \text{Pref. Div.}}{N_2}$$

$$\begin{aligned} EBIT^* &= \frac{N_1}{N_1 - N_2} \times \frac{\text{Pref. Div.}}{1 - T_c} \\ &= \frac{3,12,500}{3,12,500 - 1,56,250} \times \frac{1,25,000}{1 - 0.4} \\ &= \text{Rs. } 4,16,666.67 \end{aligned}$$

(b) Miller – Orr Cash Management Model

According to this model the net cash flow is completely stochastic. When changes in cash balance occur randomly, the application of control theory serves a useful purpose. The Miller – Orr model is one of such control limit models. This model is designed to determine the time and size of transfers between an investment account and cash account. In this model control limits are set for cash balances. These limits may consist of 'h' as upper limit, 'z' as the return point and zero as the lower limit.

**MILLER-ORR CASH MANAGEMENT MODEL**

When the cash balance reaches the upper limit, the transfer of cash equal to 'h – z' is invested in marketable securities account. When it touches the lower limit, a transfer from marketable securities account to cash account is made. During the period when cash balance stays between (h, z) and (z, 0) i.e. high and low limits, no transactions between cash and marketable securities account is made. The high and low limits of cash balance are set up on the basis of fixed cost associated with the securities transaction, the opportunities cost of holding cash and degree of likely fluctuations in cash balances. These limits satisfy the demands for cash at the lowest possible total costs. The formula for calculation of the spread between the control limits is:

$$\text{Spread} = 3 \left(\frac{3/4 \times \text{Transaction Cost} \times \text{Variance of Cashflows}}{\text{Interest rate}} \right)^{1/3}$$

And, the return point can be calculated using the formula:

$$\text{Return point} = \text{Lower limit} + \frac{\text{Spread}}{3}$$