Paper 10 : Cost and Management Accountancy

Full Marks: 100   **Time : 3 hours**

1.   Answer all questions :

(i)   From the following particulars, write up Contract Account and find out the value of tender (contract) price: Materials use ₹ 30,000; Productive wages ₹ 25,000; Direct expenses ₹ 500; Provide 60% on productive wage for works overhead and 12 ½ % on works cost for office overhead. Profit to be realized 15% on the tender price.   (3)

Answer.

Memorandum Contract Account

Particulars	Amount (₹)	Particulars	Amount (₹)
Materials used	30,000.00	Contract price to be tendered	93,308.82
Productive wages	25,000.00		
Direct expenses	500.00		
Prime cost	**55,500.00**		
Work overhead : 60% of ₹ 25,000	15,000.00		
Work cost	**70,500.00**		
Office overhead: 12.5% of (₹)70,500	8,812.50		
Total cost	**79,312.50**		
Add : Profit 15% on Tender price or 15/85 on 79,312.50	13,996.32		
	93,308.82		**93,308.82**

(ii) What are equivalent unit of production ?   (2)

Answer.
An equivalent unit of production is an indication of the amount of work done by manufacturers who have partially completed units on hand at the end of an accounting period. Basically the fully completed units and the partially completed units are expressed in terms of fully completed units. To illustrate, let's assume that a manufacturer uses direct labor continuously in one of its production departments. During June, the department began with no units in inventory and it started and completed 10,000 units. It also started an additional 1,000 units that were 30% complete at the end of June. This department is likely to state that it manufactured 10,300 (10,000 + 300) equivalent units of product during June.

The formula to calculate the equivalent units of production is: number of partially completed units x % of completion = Equivalent Units or Production. The output can be computed in two ways: the weighted average method and the FIFO or First In First Out method. The use of any of these two procedures are acceptable in cost accounting.

(iii) A company prepares a budget for a production of 2,00,000 units. Variable cost per unit is ₹ 15 and the fixed cost is ₹ 2 per unit. The company fixes its selling price to fetch a profit of 10% on cost.
What is the break-even point ? (both in units and ₹)   (3)

Answer.
Break Even Point (unit) = Fixed cost/ Contribution per unit
                        = (₹ 2 x 2,00,000 units) / ₹ 3.7
                        = 1,08,108 units

Break Even Point (₹)   = 1,08,108 × 18.70 = ₹ 20,21,620

Note : Selling price per unit   = Total cost + 10% profit on cost
                                 = ₹ 17.00 + 10% of 17
                                 = ₹ 18.70

Contribution per unit   = Selling price – Variable cost
                        = ₹ 18.70 - ₹ 15.00
                        = ₹ 3.70

(iv) Depreciation charged in costing books is ₹ 12,500 and in financial books is ₹ 11,200. What will be the financial profit when costing profit is ₹ 5,000? **(2)**

Answer.
The required financial profit will be = ₹ [5,000 + (12,500 – 11,200)] = ₹ 6,300

(v) How will you treat Cenvat availed as credit on purchased raw materials in the Cost Accounting Records ? **(2)**

Answer.
Cenvat credit to be deducted from the cost of raw materials, and only the net value should be taken in the priced stores ledger, which forms the basis for pricing materials issues to cost centres.

(vi) A company manufactures various types of the product. As a Cost Auditor would you accept the absorption of "Selling and Distribution" expenses as a percentage on Sales Values.
(2)
Answer.
The method of absorption of Selling and Distribution Overheads as a percentage of sales value is not correct because :
    (a) Some quantities of product have been consumed captively.
    (b) Separate seminars or advertisement expenses incurred for various type of products
    (c) Freight cost is different for different type of product
    (d) Product has different demand in different areas and their selling expenses cannot be pooled as common.

(vii) Demand for a product refers to **(1)**
    (i)   Various quantities that are demanded by consumers.
    (ii) Various amounts desired by consumers.
    (iii) Total quantity of a product demanded during a given period of time.
    (iv) Total quantity of a product demanded at a particular price in the market during a given period of time.

(viii) A firm operating under conditions of perfect competitions can (1)
    (i)   Determine the price of its product.
    (ii) Determine only the size of its output.
    (iii) Promote the sales through effective advertisement.
    (iv) Capture the market by cutting down the price.

(ix) The production function is given by q = √L. The output is sold in a competitive market at ₹ 10. What is the firm's short run demand curve? (4)

Answer.
The aim of the firm is to maximize π = TR – TC i.e. π = 10q – wL, where w = wage rate.
π = 10√L – wL

∴ For maximum π, $\dfrac{d\lambda}{dL}$ = 0

$\dfrac{10}{2\sqrt{L}}$ - w = 0

√L = $\dfrac{5}{w}$

i.e. L = $\dfrac{25}{w^2}$ which is the demand curve

Section A – Answer any two questions from this section

2.   **(a) A Club runs a library for its members. As part of club policy, an annual subsidy of upto ₹ 5 per member including cost of books may be given from the general funds of the club. The management of the club has provided the following figures for its library department.**

Number of Club members	5,000
Number of Library members	1,000
Library fee per member per month	₹100
Fine for late return of books	₹ 1 per book per day
Average No. of books returned late per month	500
Average No. of days each book is returned late	5 days
Number of available old books	50,000 books
Cost of new books	₹ 300 per book
Number of books purchased per year	1,200 books
Cost of maintenance per old book per year	₹10

Staff details	No.	Per Employee Salary per month (₹)
Librarian	01	10,000
Assistant Librarian	03	7,000
Clerk	01	4,000

You are required to calculate:

(i) The cost of maintaining the library per year excluding the cost of new books;

(ii) The cost incurred per member per month on the library excluding cost of new books; and

(iii) The net income from the library per year.

If the club follows a policy that all new books must be purchased out of library revenue (a) What is the maximum number of books that can be purchased per year and (b) How many excess books are being purchased by the library per year?

Also, comment on the subsidy policy of the club. (2+2+2+2+1=9)

Answer.

(i) Computation of total revenue

No. of library members	No	1,000
Library fees per month	₹	1,00,000
Late fees per month (500 × 5 × 1)	₹	2,500
Total Revenue per month	₹	1,02,500
Total Revenue per annum (1,02,500 × 12)	₹	12,30,000

Computation of total cost

Staff details	No.	Salary per month ₹	Total cost ₹
Librarian	1	10,000	10,000
Assistant Librarian	3	7,000	21,000
Clerk	1	4,000	4,000
Total Staff cost per month			35,000
Total Staff cost per year (35,000 × 12)			4,20,000

	No.	Cost per book	
Books maintenance cost	50,000	₹ 10	
			5,00,000

Total maintenance cost per annum excluding cost of new books (4,20,000 + 5,00,000)		9,20,000
Cost incurred per library member per annum (₹ 9,20,000/1,000)	₹	920
Cost incurred per member per month on the library excluding cost of new books (920/12)	₹	76.67
Cost incurred per club member per annum (9,20,000/5,000)	₹	184
Cost incurred per club member per month (184/12)	₹	15.33

	₹
Net income from the library per annum	3,10,000
(12,30,000 – 9,20,000)	
Cost per new book	₹ 300
Maximum number of new books per annum	
(3,10,000/300)	No. 1033.333
Present number of books purchased	No. 1200
Excess books purchased (1200 – 1033.333)	No. 166.6667
Subsidy being given per annum	₹ 50,000
Subsidy per library member per annum	₹ 50
(50,000/1,000)	
Subsidy per club member per annum	₹ 10
(50,000/5,000)	

Comment:

The club is exceeding its subsidy target to members by ₹ 45 (₹ 50 – 5) per library member and ₹ 5 (₹ 10 – 5) per club member.

(b) The following data are available in respect of Process 1 for February 2013 :
   (i)   Opening stock of work in process : 800 units at a total cost of ₹ 4,000.
   (ii) Degree of completion of opening work in process:
Material	100%
Labour	60%
Overheads	60%

   (iii) Input of materials at a total cost of ₹ 36,800 for 9,200 units.
   (iv) Direct wages incurred ₹ 16,740
   (v) Production overhead ₹ 8,370.
   (vi) Units scrapped 1,200 units. The stage of completion of these units was:
Materials	100%
Labour	80%
Overheads	80%

   (vii)Closing work in process; 900 units. The stage of completion of these units was:
Material	100%
Labour	70%
Overheads	70%

   (viii) 7,900 units were completed and transferred to the next process.
   (ix) Normal loss is 8% of the total input (opening stock plus units put in)
   (x) Scrap value is ₹ 4 per unit.
You are required to :
   I.   Compute equivalent production,
   II. Calculate the cost per equivalent unit for each element.
   III. Calculate the cost of abnormal loss (or gain), closing work in process and the units transferred to the next process using the FIFO method,
   IV. Show the Process Account for February 2013.   (3+2+4+2=11)

Answer.
   I.   Statement of Equivalent Production (FIFO Method)

			Material		Labour		Overheads	
Input	*Output*	*Unit*	*%*	*Units*	*%*	*Units*	*%*	*Units*

(Units)			Comple tion			Compl etion			Compl etion	
800	Opening stock of WIP	800	—	—	40	320	40	320		
9,200	Finished	7,100	100	7,100	100	7,100	100	7,100		
	Closing WIP	900	100	900	70	630	70	630		
	Normal Loss	800	—	—	—	—	—	—		
	Abnormal Loss	400	100	400	80	320	80	320		
				8,400		8,370		8,370		

II.   Statement of Cost per equivalent units

Elements	Cost		Equivalent production (Units)	Cost per equivalent Unit
	₹	₹		₹
Material Cost	36,800			
Less: Scrap realisation 800 units @ ₹ 4/- p.u.	3,200	33,600	8,400	4/-
Labour cost		16,740	8,370	2/-
Overhead Cost		8,370	8,370	1/-
Total Cost				7/-

III.   Cost of Abnormal Loss – 400 Units

		₹
Material cost of 400 equivalent units @ ₹ 4/- p.u.	1,600	
Labour cost of 320 equivalent units @ ₹ 2/- p.u.	640	
Overhead cost of 320 equivalent units @ ₹ 1/- p.u.	320	
		2,560

Cost of closing WIP – 900 Units

Material cost of 900 equivalent units @ ₹ 4/- p.u.	3,600	
Labour cost of 630 equivalent units @ ₹2/- p.u.	1,260	
Overhead cost of 630 equivalent @ ₹ 1/- p.u.	630	
		5,490

Cost of 7,900 units transferred to next process

(i)Cost of opening WIP Stock b/f – 800 units	4,000
(ii)Cost incurred on opening WIP stock	
Material cost	—
Labour cost 320 equivalent units @ ₹ 2/- p.u.	640
Overhead cost 320 equivalent units @ ₹ 1/- p.u.	320
	960
(iii)Cost of 7,100 completed units	
7,100 units @ ₹7/- p.u.	49,700
Total cost [(i) + (ii) + (iii)]	54,660

IV.   Process Account for February, 2013

	Units	₹		Units	₹

To Opening WIP Stock	800	4,000	By Cost of Finished goods	7,900	54,660
To Materials	9,200	36,800			
To Labour		16,740	By Closing WIP	900	5,490
To Overhead		8,370	By Abnormal Loss	400	2,560
			By Normal Loss	800	3200
	10,000	65,910		10,000	65,910

3. **ABC Ltd., a manufacturing company having a capacity of 60,000 units, has prepared a following Cost Sheet:**

Particulars	₹
Direct material (per unit)	12.50
Direct wages (per unit)	5.00
Semi-variable cost	30,000 fixed plus 0.50 per unit
Factory overhead (per unit)	10.00 (50% fixed)
Selling and Administration overhead (per unit)	8.00 (25% variable)
Selling price (per unit)	40.00

During the last year the sales volume achieved by the company was 50,000 units. The Company has launched an expansion program as under –
   (i) Capacity will be increased to 1,00,000 units.
   (ii) Cost of investment on expansion is ₹5 lakhs, which is proposed to be financed through Financial Institution at 12% p.a.
   (iii) Depreciation rate of new investment is 10% based on Straight-Line method.
   (iv) Additional fixed overhead will be ₹ 2 lakhs upto 80,000 units, and will increase by ₹ 80,000 more beyond 80,000 units

After the expansion, the company has two alternatives for operating the expanded plain as under –
   (i) Sales can be increased upto 80,000 units by spending ₹ 50,000 on special advertisement campaign to explore new market.
   (ii) Sales can be increased upto 1,00,000 units subject to the following –
      (a) Reduction of selling price by ₹ 4 per unit on all the units sold.
      (b) The direct material cost would go down by 4% due to discount on bulk buying
      (c) Increasing the variable selling and administration expenses by 4%.

Required :
   (i) Construct a Flexible Budget at the level 50,000 units, 80,000 units and 1,00,000 units of production and select the best profitable level of operation.
   (ii) Calculate Break Even Point both before and after expansion.   **(20)**

Answer.

Computation of fixed cost at different levels

Quantity/ Output level	50,000 units	80,000 units	1,00,000 units
Present fixed costs	₹	₹	₹
From Semi-variable cost (given)	30,000	30,000	30,000
From Factory OH (₹ 10 x 50% x 60,000 units)	3,00,000	3,00,000	3,00,000
From Selling OH (₹ 8 x 25% x 60,000 units)	3,60,000	3,60,000	3,60,000
Sub-total	6,90,000	6,90,000	6,90,000
Add : Interest on Investment (₹ 5,00,000 x 12%)	-	60,000	60,000

Additional fixed cost	-	2,00,000	2,80,000
Depreciation on new investment (₹ 5,00,000 x 10%)	-	50,000	50,000
Special advertisement campaign	-	50,000	-
Total fixed cost	6,90,000	10,50,000	10,80,000

(i) Flexible Budget at different output levels

Quantity/ Output level	50,000 units	80,000 units	1,00,000 units
	₹	₹	₹
Selling price p.u.	40	40	(40 – 4) = 36
Sales value	20,00,000	32,00,000	36,00,000
Variable costs			
Direct materials (at ₹ 12.50 p.u.)	(50,000 x 12.50) = 6,25,000	(80,000 x 12.50) = 10,00,000	(1,00,000 x 12.50 – 4%) = 12,00,000
Direct wages (at ₹ 5 p.u.)	(50,000 x 5.00) = 2,50,000	(80,000 x 5.00) = 4,00,000	(1,00,000 x 5.00) = 5,00,000
Variable Overheads :			
From Semi-variable cost (₹ 0.50 p.u.)	(50,000 x 0.50) = 25,000	(80,000 x 0.50) = 40,000	(1,00,000 x 0.50) = 50,000
From factory overhead (₹ 10 x 50% = ₹ 5)	(50,000 x 5.00) = 2,50,000	(80,000 x 5.00) = 4,00,000	(1,00,000 x 5.00) = 5,00,000
From Selling overhead (₹ 8 x 25% = ₹ 2)	(50,000 x 2.00) = 1,00,000	(80,000 x 2.00) = 1,60,000	(1,00,000 x 2 + 4%) = 2,08,000
Total variable cost	12,50,000	20,00,000	24,58,000
Contribution	7,50,000	12,00,000	11,42,000
Fixed cost	6,90,000	10,50,000	10,80,000

Decision : The company can earn maximum profits at 80,000 units. So, it is the profitable level of operation.

(ii) Computation of Break Even Quantity

Particulars	Before expansion		After expansion
Output level	50,000 units	80,000 units	1,00,000 units
Fixed cost	₹ 6,90,000	₹ 10,50,000	₹ 10,80,000
Contribution p.u.	(₹ 7,50,000 ÷ 50,000 units) = ₹ 15.00	(₹ 12,00,000 ÷ 80,000 units) = ₹ 15.00	(₹ 11,42,000 ÷ 1,00,000 units) = ₹ 15.00
BEQ	46,000 units	70,000 units	94,570 units
BES	46,000 units x ₹ 40 = ₹ 18,40,000	70,000 units x ₹ 40 = ₹ 28,00,000	94,570 units x ₹ 36 = ₹ 34,04,520

4. (a) The financial records of Modern Manufacturers Ltd. reveal the following for the year ended 30-6-2012:

	₹ in thousands
Sales (20,000 units)	**4,000**
Materials	**1,600**
Wages	**800**
Factory Overheads	**720**
Office and Administrative Overheads	**416**
Selling and Distribution Overheads	**288**

Finished Goods (1,230 units)		240
Work-in-progress	48	
Labour	32	
Overheads (Factory)	<u>32</u>	112
Goodwill written off		320
Interest on Capital		32

In the Costing records, factory overhead is charged at 100% wages, administration overhead 10% of factory cost and selling and distribution overhead at the rate of ₹ 16 per unit sold.
Prepare a statement reconciling the profit as per cost records with the profit as per financial records of the company. **(10)**

Answer.

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Profit & Loss Account of Modern Manufacturers
for the year ended 30-6-2012

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(₹ in thousands)

To Materials	1,600	By Sales (20,000 units)	4,000
To Wages	800	By Closing Stock	
To Factory Overheads	720	By Finished Goods	240
To Office and Admn. Overheads	416	1230 units	
To Selling & Distribution Overheads	288	Work-in-Progress	112
To Goodwill written off	320		
To Interest on Capital	32		
To Net Profit	<u>176</u>		<u> </u>
	<u>4,352</u>		<u>4,352</u>

Profit as per Cost Record

	₹ In thousands)
Materials	1,600
Wages	<u>800</u>
Prime Cost	2,400
Factory Overhead (100% of wages)	<u>800</u>
Gross Factory Cost	3,200
Less: Closing WIP	<u>112</u>
Factory Cost (21,230 units)	3,088
Add: Office & Administrative Overhead (10% of Factory Cost)	<u>308.80</u>
Total Cost of output	3,396.80
Less: Closing stock (1,230 units) of Finished Goods	196.80

(See Working Note 1)

Cost of Production of 20,000 units	3,200.00
Selling and Distribution overhead	320.00
(@ ₹ 16 p u.)	
Cost of sales	3,520.00
(20,000 units)	
Sales Revenue	4,000.00
(20,000 units)	
Profit	480.00

Reconciliation Statement

	₹ (,000)	₹ (,000)
Profit as per Cost Accounts		480.00
Add: Factory overhead Over absorbed	80.00	
(800-720)		
Selling and Distribution Overhead Over absorbed	32.00	
(320-288)		
Closing stock overvalued in Financial Accounts	43.20	152.20
(240-196.8)		635.20
Less: Office & Administrative Overhead under absorbed	107.20	
(416-308.80)		
Goodwill written off	320.00	
Interest on Capital	32.00	459.20
Profit as per Financial Accounts		176.00

Working Note:

1. Cost per unit of finished goods = $\dfrac{\text{Total Cost of output}}{\text{Total number of units produced}}$

   = $\dfrac{₹\ 3396.80\ Thousand}{21,230\ units}$ = ₹ 160

   Cost of 1230 units   = ₹ 160 x 1230 = ₹ 1,96,800

   Alternatively: Administrative overheads could be excluded from the cost of production.

(b) A company has produced 1,500 units against a budgeted quantity of 2,000 units. Actual sales were 1,300 units. The company's policy is to value stocks at standard absorption cost. Other data are –

Particulars	₹	Particulars	₹
Direct material	100 per unit	Variable selling OH	26,000
Direct labour	100 p.u. at normal efficiency	Budgeted fixed selling OH	30,000
Variable OH	50 per unit	Actual fixed selling OH	25,000
Fixed OH at budgeted capacity	1,00,000	Selling price	400 p.u.

There was no opening stock.

   (i)   Present the profitability statement under Absorption Costing System.

(ii) Assuming actual labour was 25% below normal efficiency, and that 100 units of production had to be scrapped after complete manufacture, compute the actual profit or loss.

(iii) Reconcile the profits under (i) and (ii) above.   **(4+4+2 =10)**

Answer.

(i)   Profit Statement under Absorption Costing

Particulars	Computation	₹
Direct material	1,500 units at ₹ 100	1,50,000
Direct labour	1,500 units at ₹ 100	1,50,000
Prime cost		3,00,000
Add : Factory Overhead Variable	1,500 units at ₹ 50	75,000
Fixed	Absorbed for 1,500 units at ₹ 50	75,000
Cost of production		4,50,000
Less : Closing stock	(₹ 4,50,000 x 200 units) ÷ 1,500 units i.e. 300 p.u.	60,000
Cost of goods sold		3,90,000
Add : Under absorption of FOH	(₹ 1,00,000 - ₹ 75,000)	25,000
Total absorption cost		4,15,000
Add : Selling Overhead Variable	Given	26,000
Fixed	Given	25,000
Cost of sales		4,66,000
Add : Profit (balancing figure)		54,000
Sales	1,300 units at ₹ 400	5,20,000

Note :

a. Fixed factory OH absorption rate = ₹ 1,00,000 ÷ 2,000 units (based on Budgeted Capacity) = ₹ 50 p.u.

b. Std Absorption Cost p.u. (materials + Labour + VOH + FOH) = 100 + 100 + 50 + 50 = ₹ 300 p.u.

(ii)   Statement showing actual profit

Particulars	Computation	₹
Direct material	1,500 units at ₹ 100	1,50,000
Direct labour	(1,500 units at ₹ 100) ÷ 75%	2,00,000
Prime cost		3,50,000
Add : Factory Overhead Variable	1,500 units at ₹ 50	75,000
Fixed	Assumed as increased at actual	1,00,000
Cost of production		5,25,000
Less : Cost of Closing stock	100 units at 300 p.u.	30,000
Cost of goods sold		4,95,000
Add : Selling Overhead Variable	Given	26,000
Fixed	Given	25,000
Cost of sales		5,46,000
Add : Profit/(Loss) (balancing figure)		(26,000)
Sales	1,300 units at ₹ 400	5,20,000

(iii)   Reconciliation Statement

Particulars	₹
Profit as per Absorption Costing Statement above	54,000
Less : Effect of lower efficiency of labour (₹ 1,50,000 – 2,00,000)	(50,000)

Less : Value of units scrapped (100 units at ₹ 300 p.u.)	(30,000)
Actual profit/ (Loss) for the period (as above)	(26,000)

Note : IN case Budgeted Fixed Selling Overheads are considered while arriving at profit as per Absorption Costing, a saving of ₹ 5,000 should also be identified as part of reconciliation.

Section B – Answer any one question from this section

5. **(a) How will you treat the following items in Cost Accounting Records ?**
   (i) Interest received on security deposit with the Electricity Board.
   (ii) Voluntary Retirement Compensation paid to workers, included under wages
   (iii) Cenvat availed as credit on purchased raw materials
   (iv) Profit on sale of fertilizers to cane-growers by a sugar company.   (4)

Answer.

(i)   This cannot be considered as an investment outside the business. Deposit with Electricity Board is made for obtaining power connection and is based on estimated monthly bill for power consumption. It is part of the Working Capital (Current Assets), interest on such deposits can therefore be set off against interest paid or alternatively taken as a credit against overhead. However, the amount involved may not be very significant.

(ii)   This is a one-time non-recurring expenditure. Even if it is included under salaries and wages in Financial A/c., it should be excluded for Cost Accounts purposes. This item is also an item of reconciliation.

(iii)   This is to be deducted from the cost of raw materials, and only the Net Value should be taken in the priced Stores Ledger, which forms the basis for pricing material, issues to cost centres.

(iv)   Some sugar factories supply fertilizers to cane growers to ensure quality of suppliers, and as an incentive for regular supply. Although it helps sugar production, this activity is not directly related to sugar production and is purely a trading activity. The profit from such activity should be shown as an item of reconciliation between Financial and Cost Accounts.

(b) There was a strike from 17.08.2012 to 28.10.2012 in a company of which you are a Cost Auditor for the year ended 31.03.2013. Although the company began working from 29.10.2012 production could effectively begin only from 30.11.2012. The expenses incurred during the year ended 31.03.2013 were :

	₹ in lakhs
Salaries & wages (Direct)	**3,000**
Salaries & wages (Indirect)	**2,000**
Power (variable – 90%)	**1,200**
Depreciation	**1,800**
Other fixed expenses	**2,400**
Repairs and maintenance (variable ₹ 1,100 lakhs)	**1,400**
Total	**11,800**

The following relate to the period 17.08.2012 to 29.11.2012.

Salaries & wages (Indirect)	**700**
Depreciation (non-productive)	**600**

Other fixed expenses   900
Repair & maintenance (Indirect)   <u>100</u>
                  Total   <u>2,300</u>

Calculate the amount which, in your opinion, should be treated as abnormal for exclusion from the Product Costs. (8)

Answer.
Calculation of fixed expenses during the period 17.08.2012 to 29.11.2012 :
(15 + 30 + 31 + 29 = 105 days)

                                              ₹ in lakhs

Total expenses (2012-13)		11,800
Less : Variable expenses		
Power (1,200 – 120)	1,080	
Repairs & Maintenance	1,100	<u>2,180</u>
Total fixed expenses during 2012-13		<u>9,620</u>

Since, strike period is 73 days and non-strike period is 292 days (292 + 73 = 365)
Fixed expenses calculated during strike period
17.08.2012 to 28.28.10.2012(15 + 30 + 28) = 73 days
= 9,624 x 73/365 = 1,924

Fixed expenses incurred during
29.10.2012 to 29.11.2012 (3 + 29) = 32 days
= (2,300 – 1,924) = 376

Thus, in my opinion, ₹ 1,924 lakh is to be treated as abnormal cost and to be excluded from the production cost.

(c) Give your understanding on flow chart. (4)

    Answer.
Flow chart is a diagrammatic representation of flow of information with help of documents. It is useful to record the 'decisions' at various levels, posting of data and recording of transactions on documents. Flow chart is used to indicate the analysis of systems and documents detailed as under :
    (i)   The number of copies of each document.
    (ii)   Movement of each document through different departments, sequence of such movements, and final destination of every copy.
    (iii)   The operations like giving approval, putting initial , done on the documents along with brief description and reason for the same.

Thus flow chart helps us in following ways :
    (i)   Identifies the division of responsibilities in different departments.
    (ii)   Locates the source document whose error may have far reaching consequences;
    (iii)   Points out the occurrence of clerical error at each stage;
    (iv)   Provides a bird's eye view of the system and acts as efficient documentation for the auditors;
    (v)   It is the most efficient tool for doing actual analysis.

However details are sometimes omitted from a flow chart and as a result it may not give the desired result. Failure to standardize the symbols and incomplete nature of chart are also responsible for not having the desired results

6. (a) Following data is available for a company relating to the cost of production of a product subjected to Cost Audit. Prepare the Export Profitability Statement to be included in the Annexure to the Cost of Production of 10,000 units.

	₹
Sales(local) 9000 units	2,02,500
Sales (export) 1000 units	20,000
Material consumed 20 tonnes @₹ 5 kg.	1,00,000
Imported Component @₹ 3/unit	30,000
Direct Labour	10,000
Factory Overhead	15,000
Administrative Overhead	5,000
Freight & Packing (local sales)	4,500
Packing for export	2,000
Handling at port	500
Opening Work-in-progress	10,000
Closing Work-in-progress	5,000

Additional Information :
(i) Export incentive of 10% on F.O.B is receivables.
(ii) Draw Back on duty paid on raw materials and components available on export is ₹ 2,500/.

(8)

Answer.
Taking into consideration the requirements under provisions of Cost Audit (Report) Rules, like showing separately local and export sales, with details like quantity, net realization, price per unit, packing charges etc., Profitability Statement have been prepared as follows :

Statement of Cost of Production

Production : 10, 000 units	Total cost (₹)	Per unit cost (₹)
Direct materials (20,000 kgs. @ ₹ 5 per kg)	1,00,000	10.00
Imported components (10,000 units @ ₹ 3 per unit)	30,000	3.00
Direct labour	10,000	1.00
Prime cost	1,40,000	14.00
Factory overhead	15,000	1.50
Opening WIP	10,000	1.00
	1,65,000	16.50
Less : Closing WIP	5,000	0.50
Works cost	1,60,000	16.00
Administrative overhead	5,000	0.50
Cost of production	1,65,000	16.50

Statement of Cost and Profit on Export Sales

Export Sales : 1,000 units	Total cost (₹)	Per unit cost (₹)
Cost of production	16,500	16.50
Export packing	2,000	2.00
Handling at port	500	0.50
Cost of sales	19,000	19.00
Export sales realization	20,000	20.00

Export incentive @ 10% of F.O.B.	2,000	2.00
Duty drawback on components	2,500	2.50
Total realization	24,500	24.50
Profit on export	5,500	5.50

(b) In dealing with the financial position of a company as per para 9 of the Annexure to the Cost audit Report, state your opinion regarding :
(i) Is the Capital Employed to be computed as at the beginning of the accounting period or at the end of the accounting period or average of both?
(ii) Should investments like National Savings Certificates deposited with Government authorities for Sales Tax, Excise etc. as security be treated as investments outside the business?
(iii) How is 'net worth' defined in this para? The para also states "if there is any change in the composition of the net worth during the year, special mention may be made along with the reasons there for." How would you take care of this provision?
(iv) Should the net sales figure include other service charges and jobbing income   (4 x 2)

Answer.
(i)   Capital employed should be stated as at the close of the accounting period.
(ii)   Such investments are in normal course of business and for the business, therefore these cannot be treated as investments outside the business.
(iii)   The term 'net worth' has been defined as share capital plus reserves and surplus (excluding revaluation reserve) less accumulated losses and intangible assets. In other words it can be calculated as under :

Share Capital (paid up capital- equity and preference)   **
Add: Reserves and Surplus   **
Less: Revaluation Reserve   **
Less: Intangible Assets   **
Less: Profit and Loss A/c(Debit balance)   **
Less: Misc/ deferred expenditure   **

A reconciliation of net worth in following form may be provided :
Net worth at the beginning of the year   **
Add :   increase in capital
Add :   increase in reserve
Less: Decrease in reserves
Less: Any loss
Less: Any acquisition of intangible asset or incurrence of expenses treating
        as deferred Net worth at the end of the year   **

(iv)   If other service charges and jobbing income are a regular part of the activity and are of material value these can be treated as sales , otherwise not to be so considered.

Section C – Answer any two from this section

7. (a) Define the cost function from the given information. (4)

Volume of activity	Output Level (Units)	Total Cost
High	2500	8000
Low	1200	4100

Answer.

Let the cost function be C = a + bq. Where q is output. We are to determine a & b.
∴ We have 8000 = a + 2500b …………(1)
4100 = a + 1200b …………..(2)
From (1) & (2), we get a = 500, b = 3.
∴ C = 500 + 3q.

(b) What is demand forecasting ? (4)

Answer.

Demand forecasting seeks to investigate and measure the forces that determine sales for existing and new products. Generally companies plan their business – production or sales in anticipation of future demand. Hence forecasting future demand becomes important. The art of successful business lies in avoiding or minimizing the risks involved as far as possible and face the uncertainties in a most befitting manner.

Methods of Forecasting:

Demand forecasting is a highly complicated process as it deals with the estimation of future demand. It requires the assistance and opinion of experts in the field of sales management. Demand forecasting, to become more realistic should consider the two aspects in a balanced manner. Application of commonsense is needed to follow a pragmatic approach in demand forecasting.

Broadly speaking, there are two methods of demand forecasting.

They are:

1) Survey methods and
2) Statistical methods

Forecasting product demand is crucial to any supplier, manufacturer, or retailer. Forecasts of future demand will determine the quantities that should be purchased, produced, and shipped. Demand forecasts are necessary since the basic operations process, moving from the suppliers' raw materials to finished goods in the customers' hands, takes time. Most firms cannot simply wait for demand to emerge and then react to it. Instead, they must anticipate and plan for future demand so that they can react immediately to customer orders as they occur. In other words, most manufacturers "make to stock" rather than "make to order" –they plan ahead and then deploy inventories of finished goods into field locations. Thus, once a customer order materializes, it can be fulfilled immediately – since most customers are not willing to wait the time it would take to actually process their order throughout the supply chain and make the product based on their order. An order cycle could take weeks or months to go back through part suppliers and sub-assemblers, through manufacture of the product, and through to the eventual shipment of the order to the customer.

Firms that offer rapid delivery to their customers will tend to force all competitors in the market to keep finished good inventories in order to provide fast order cycle times. As a result, virtually every organization involved needs to manufacture or at least order parts based on a forecast of future demand. The ability to accurately forecast demand also affords the firm opportunities to

control costs through leveling its production quantities, rationalizing its transportation, and generally planning for efficient logistics operations.

In general practice, accurate demand forecasts lead to efficient operations and high levels of customer service, while inaccurate forecasts will inevitably lead to inefficient, high cost operations and/or poor levels of customer service. In many supply chains, the most important action we can take to improve the efficiency and effectiveness of the logistics process is to improve the quality of the demand forecasts.

(c) Define Managerial Economics. **(4)**

Answer.
Managerial economic is concerned with decision making at the level of firm. It has been described as an economics applied to decision making. It is viewed as a special branch of economics bridging the gap between pure economic theory and managerial practices. It is defined as application of economic theory and methodology to decision making process by the management of the business firms. In it economic theories and concepts are used to solve practical business problem. It lies on the borderline of economic and management. It helps in decision making under uncertainty and improves effectiveness of the organization. The basic purpose of managerial economic is to show how economic analysis can be used in formulating business plans.

Definitions of managerial economics:
In the words of Mc Nair and Merriam," Managerial Economics consists of use of economic modes of thought to analyze business situation". According to Spencer and Seigelman—"it is defined as the integration of economic theory with business practice for the purpose of facilitating decision making and forward planning by the management". Economic provides optimum utilization of scarce resource to achieve the desired result. ME's purpose is to show how economic analysis can be used formulating business planning.

Managerial Economics bridges the gap between purely analytical problems dealt within economic theory and decision problems faced in real business and thus helps out in making rational choices to yield maximum return out of minimum efforts and resources by making the best selection among alternative course of action. How does managerial economics differ from regular economics?
• There is no difference in the theory; standard economic theory provides the basis for managerial economics.
• The difference is in the way the economic theory is applied.
• Economics in its broadest sense means what economists do. They provide solutions to various economic problems (inflation, unemployment etc). The one main root cause of all economic problems is SCARCITY and managerial economics is the use of economic analysis to make business decisions involving the best use of organization's scarce resources.

Human wants are virtually unlimited and insatiable and economic resources to satisfy them are limited which give rise to choices between what to produce, how to produce and for whom to produce.

MANAGERIAL ECONOMICS = Economics + Decision Science + Business Management

Managerial economics has evolved by establishing link on integration between economic theory and decision sciences along with business management in the theory and practice for the optimal solution to business decision problems. It deals with the application of economic

principles and methodologies to the decision making process within the firm, under the given situation.

8. (a) Why does demand curve slopes downward? (6)

Answer.
Demand curve slopes downward from left to right (Negative Slope).

There are many causes for downward sloping of demand curve:-
  (i)   Law of Diminishing Marginal utility - As the consumer buys more and more of the commodity, the marginal utility of the additional units falls. Therefore the consumer is willing to pay only lower prices for additional units. If the price is higher, he will restrict its consumption.
  (ii)   Principle of Equi-Marginal Utility - Consumer will arrange his purchases in such a way that the marginal utility is equal in all his purchases. If it is not equal, they will alter their purchases till the marginal utility is equal.
  (iii)   Income effect - When the price of the commodity falls, the real income of the consumer will increase. He will spend this increased income either to buy additional quantity of the same commodity or other commodity.
  (iv)   Substitution effect - When the price of tea falls, it becomes cheaper. Therefore the consumer will substitute this commodity for coffee. This leads to an increase in demand for tea.
  (v)   Different uses of a commodity - Some commodities have several uses. If the price of the commodity is high, its use will be restricted only for important purpose. For e.g. when the price of tomato is high, it will be used only for cooking purpose. When it is cheaper, it will be used for preparing jam, pickle etc...
  (vi)   Psychology of people - Psychologically people buy more of a commodity when its price falls. In other word it can be termed as price effect.
  (vii)   Tendency of human beings to satisfy unsatisfied wants.

(b) An industry has 100 firms. 50 are located in Haldia and 50 firms are located in Durgapur. The output is sold in Calcutta, the transportation cost is ₹6 from Haldia to Calcutta and ₹10 from Durgapur to Calcutta. The cost function of all firms is same and in given by TC = ½q². The industry demand is given by 1400 – 10P₀.
  (i)   What is the price charged?
  (ii)   What is the output supplied by each firm?
  (iii)   What are the amounts of profit earned by each firm? (6)

Answer.
  (i)   The cost function of a firm in Haldia is $TC_H = \frac{1}{2} q_H^2 + 6q_H \Rightarrow MC_H = q_H + 6$
        The cost function of firm in Durgapur is

        $TC_D = \frac{1}{2} q_D^2 + 10q_D \Rightarrow MC_D = q_D + 10$
        At equilibrium $P_o = MC_H = P_o - 6$
        Also, $P_o = MC_D \Rightarrow P_o = q_D + 10 \Rightarrow q_D = P_o - 10$.
        Industry supply $= 50q_H + 50q_D$ [50 firms are located in Haldia & Durgapur]
                  $= 50(P_o - 6) + 50(P_o - 10)$
                  $= 100P_o - 800$
        At equilibrium, industry demand equals industry supply

$\Rightarrow 1400 - 10P = 100P_o - 800$

$\Rightarrow 120P_o = 2400 \Rightarrow P_o = 20$

(ii) $\therefore q_H = P_o - 6 = 20 - 6 = 14$
   $q_D = P_o - 10 = 20 - 10 = 10.$

(ii) We know $\pi = TR - TC \therefore \pi_H = P_o q_H = TC_H$

$$= P_o q_H - \left[\frac{1}{2}qH^2 + 6qH\right] = 20 \times 14 - \left[\frac{1}{2} \times (14)^2 + 6 \times 14\right] = 98$$

$$\pi_D = P_o \, q_D - TC_D = 20 \times 10 - \left[\frac{1}{2} \times (10)^2 + 10 \times 10\right] = 50$$

9. (a) Let the demand curve be P = $\frac{10}{q}$ and C = 5 + 2q + 5q^2 if the objective of the firm is profit maximization only, will the firm produce? **(4)**

Answer.

Here P = $\frac{10}{q} \Rightarrow TR = pq = 10 \Rightarrow MR = zero$

Again, C = 5 + 2q + 5q $^2 \Rightarrow MC = 2 + 10q.$

At equilibrium, $MR = MC \Rightarrow 0 = 2 \, 10q \Rightarrow q = -\frac{1}{5} < 0.$

As output is negative, the firm does not produce anything.

(b) For a monopolist, the demand curve is q = 100 – 2p and total cost(c) = 0.05q^2 + 2q + 300. Find profit maximizing output & price. **(4)**

Answer.

We have q = 100 – 2p $\Rightarrow$ p = 50 - $\frac{1}{2}$q $\Rightarrow$ MR = 50 - q.

Also MC = $\frac{d}{dq}$ = 0.1q + 2

At equilibrium, $MR = MC \Rightarrow 50 - q = 0.1q + 2$

$\Rightarrow$ q = 43.6 & p = 50 - $\frac{1}{2}$(43.6) = 28.2

(c) How income elasticity helps in business decision? **(4)**

Answer.
Introduction
Income elasticity of demand measures the relationship between a change in quantity demanded for good X and a change in real income. The formula for calculating income elasticity is:

% change in demand divided by the % change in income

The income elasticity of demand is usually strongly positive for
- Fine wines and spirits, high quality chocolates and luxury holidays overseas.
- Sports cars
- Consumer durables - audio visual equipment, smart-phones
- Sports and leisure facilities (including gym membership and exclusive sports clubs).

In contrast, income elasticity of demand is lower for
- Staple food products such as bread, vegetables and frozen foods.
- Mass transport (bus and rail).
- Beer and takeaway pizza!
- Income elasticity of demand is negative (inferior) for cigarettes and urban bus services.

Product ranges and longer term trends
Income elasticity of demand will vary within a product range. For example the Yed for own-label foods in supermarkets is less for the high-value "finest" food ranges.

There is a general downward trend in the income elasticity of demand for many basic products, particularly foodstuffs. One reason is that as a society becomes richer, there are changes in tastes and preferences. What might have been considered a luxury good several years ago might now be regarded as a necessity? How many of you regard a Sky sports subscription or an iPhone5, an iPad2 or a new Blackberry as a necessity?

The income elasticity of demand for most types of food is low – occasionally negative (e.g. for margarine) and likewise the own price elasticity of demand for most foodstuffs is also inelastic.

How do businesses make use of estimates of income elasticity of demand?
Knowledge of income elasticity of demand helps firms predict the effect of an economic cycle on sales. Luxury products with high income elasticity see greater sales volatility over the business cycle than necessities where demand from consumers is less sensitive to changes in the cycle.

Income elasticity and the pattern of consumer demand
As we become better off, we can afford to increase our spending on different goods and services. The income elasticity of demand will also affect the pattern of demand over time.
- For normal luxury goods - income elasticity of demand exceeds +1, so as incomes rise, the proportion of a consumer's income spent on that product will go up.
- For normal necessities (income elasticity of demand is positive but less than 1) and for inferior goods (where the income elasticity of demand is negative) – then as income rises, the share or proportion of their budget on these products will fall
- For inferior goods as income rise, demand will decline and so too will the share of income spent on inferior products..

A good example of a product with a negative income elasticity of demand is tobacco products. Many factors affect demand for cigarettes and related products – not least the level of indirect tax placed on them by the government and also the effects of health campaigns and bans on smoking in public places.