# PAPER – 10: COST & MANAGEMENT ACCOUNTANCY

## Paper – 10: Cost & Management Accountancy

**Time Allowed: 3 Hours** **Full Marks: 100**

### Section - A

**1. Answer Question No.1 which is compulsory carrying 25 Marks**

**(a) Answer the following;** **[5 × 2 = 10]**

**(i) 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 ₹)**

**(ii) A JBC machine was used on a contract site for the period of 7 months and depreciation on it was charged to the contract ₹78,750. If the working life of the machine is 5(five) years and salvage value is ₹25,000. Estimate the cost of JBC machine.**

**(iii) A factory operates a standard cost system, where 2,000 kgs of raw materials @ ₹12 per kg were used for a product, resulting in price variance of ₹6,000(F) and usage variance of ₹3,000 (A). Then what will be the standard material cost of actual production?**

**(iv) During the physical verification of stores of X Ltd. it was found that 100 units of raw material 'Y' was returned to the supplier has not been recorded. Its purchase invoice price is ₹5 per unit while the current standard cost is ₹4.80 per unit. Pass necessary journal entry to record the adjustment in the Cost Ledger of X Ltd.**

**(v) Arena Ltd. is preparing its cash budget for the year 2015-2016. An extract from its sales budget for the same year shows the following sales values:**

| | |
|---|---|
| **March 2015** | **₹1,20,000** |
| **April 2015** | **₹1,40,000** |
| **May 2015** | **₹1,10,000** |
| **June 2015** | **₹1,30,000** |

**40% of its sales are expected to be for cash. Of its credit sales, 50% are expected to pay in the month after sales and 50% are expected to pay in the second month after the sale. Calculate the value of sales receipts to be shown in the cash budget for May 2015.**

**(b) Match the following** **[5 × 1 = 5]**

| | Column 'A' | | Column 'B' |
|---|---|---|---|
| 1 | Angle of Incidence | A | Coal Industry |
| 2 | JIT System | B | Profitability Rate |
| 3 | Pareto Distribution | C | Management by exception |
| 4 | Variance Analysis | D | ABC Analysis |
| 5 | Output costing | E | Control of Inventory |

**(c) Under what conditions, will the appointment of Cost Auditor for conducting Cost Audit be appointed in firm's name? Who will authenticate such reports and how? Can the appointment of proprietary firms also be appointed? 5**

**(d) The total cost function of a manufacturing firm is given by $C = 2x^3 – x^2 + 3x + 5$ and the Marginal Revenue = 8 – 3x, X = output, determine the most profitable output of the firm. 5**

**Answer:**

**1. (a)** (i) Break Even Point (unit) = Fixed cost/ Contribution per unit
= (₹ 2 × 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

(ii) Depreciation for one year 78,750 × 12/7 = ₹1,35,000
Depreciation for 5 years 1,35,000 × 5 = ₹6,75,000
Cost of Machine = Total Depreciation plus salvage value
= ₹6,75,000 + 25,000 = ₹7,00,000

(iii) Total material cost variance = Material price variance + Material usage variance
= 6,000 (F) + 3,000 (A)
= 3.000(F)
Actual material cost = 2,000 × 12
= ₹ 24,000

Hence, the standard material cost of actual production = 24,000 + 3,000(F)
= ₹ 27,000.

(iv)

| Particulars | | Amount (₹) | Amount (₹) |
|---|---|---|---|
| General Ledger Adjustment Account | Dr. | 500 | |
| To Stores ledger Account | | | 480 |
| To Material Purchase Variance Account | | | 20 |

(v) **Value of sales receipts in May 2015**

| Particulars | | Amount (₹) |
|---|---|---|
| Cash Sales | ₹1,10,000 × 0.4 | 44,000 |
| Credit sale realized: | | |
| April | ₹1,40,000 × 0.6 × 0.5 | 42,000 |
| March | ₹1,20,000 × 0.6 × 0.5 | 36,000 |
| Sales Receipts | | 1,22,000 |

**1. (b)**

| | Column 'A' | | Column 'B' |
|---|---|---|---|
| 1 | Angle of Incidence | B | Profitability Rate |
| 2 | JIT System | E | Control of Inventory |
| 3 | Pareto Distribution | D | ABC Analysis |

| | | | |
|---|---|---|---|
| 4 | Variance Analysis | C | Management by exception |
| 5 | Output costing | A | Coal Industry |

**1. (c)** Appointment of Cost Auditor under a firm's name will be subjected to the following conditions:

(i) All the partners of the firm are full time Cost Accounting Practitioners within the Meaning of Sees 6 & 7 of the Cost and Works Accountants Act, 1959.

(ii) The firm must have constituted with the previous approval of Central Government or of the Central Council of ICAI.

The cost audit report shall be signed by any one partner of the firm responsible for the conduct in his own hand for and on behalf of the firm. In any case the report should not be signed by merely offering the firm's name.

**1. (d)** $C = 2x^3 - x^2 + 3x + 5$

M.R. $= 8 - 3x$

$M.C = \frac{dc}{dx} = 6x^2 - 2x + 3$

Profit maximum at MC = MR

$6x^2 - 2x + 3 = 8 - 3x$

$6x^2 + x - 5 = 0$

$6x^2 + 6x - 5x - 5 = 0$

$6x(x + 1) - 5(x + 1) = 0$

$(x + 1)(6x - 5) = 0$

$X = -1.\ 6x - 5 = 0$

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

## Section B

**(Cost & Management Accounting – Methods & Techniques and Cost Records and Cost Audit)**

**Answer any three questions from the following each question carries 17 marks**

**2. (a) Following information relates to the manufacturing of a component X-101 in a cost centre:**

| | |
|---|---|
| **Cost of materials** | **₹ 0.06 per component** |
| **Operator's wages** | **₹ 0.72 an hour** |
| **Machine-hour rate** | **₹ 1.50** |
| **Setting up time of the machine** | **2 hours and 20 minutes** |
| **Manufacturing time** | **10 minutes per component** |

**Prepare cost sheets showing both production and setting up costs total and per unit, when a batch consists of: (I) 10 components, (II) 100 components [8]**

**(b) Kapur Engineering Company undertakes long term contract which involves the fabrication of pre stressed concrete block and the reaction of the same on consumer's life.**

**The following information is supplied regarding the contract which is incomplete on 31st March, 2012**

**Cost Incurred:**

| **Fabrication cost to date:** | ₹ |
|---|---|
| **Direct materials** | **2,80,000** |
| **Direct Labour** | **90,000** |
| **Overheads** | **75,000** |
| | **4,45,000** |
| **Erection cost to date** | **15,000** |
| **Total** | **4,60,000** |
| **Contract price** | **8,19,000** |
| **Cash received on account** | **6,00,000** |

**Technical estimate of work completed to date:**
**Fabrication: Direct materials 80%**
**Direct labour and overheads 75%**
**Erection 25%**

**You are required to prepare a statement for submission to the management indicating**

**(i) The estimated profit on the completion of the contract;**

**(ii) The estimated profit to date on the contract. [9]**

**Answer:**

**2. (a) (I) Cost Sheet for a Batch of 10 Components (₹)**

| Particulars | | Total | Per unit |
|---|---|---|---|
| Machine Setting Cost (fixed): | | | |
| Operator wages | (2 hr. 20 mts. @ ₹0.72) | 1.68 | |
| Machine overhead | (2 hr. 20 mts. @ ₹1.50) | 3.50 | |
| | (a) | 5.18 | 0.52 |
| Production Cost (Variable): | | | |
| Material | (10 units × ₹0.06) | 0.60 | 0.06 |
| Operator wages | (10 units × 10 mts. × ₹ 0.72/60 mts) | 1.20 | 0.12 |
| Machine overhead | (10 units × 10 mts × 1.50/60 mts.) | 2.50 | 0.25 |
| | (b) | 4.30 | 0.43 |
| Total cost | (a) + (b) | 9.48 | 0.95 |

**(II) Cost Sheet for a Batch of 100 components (₹)**

| Particulars | | Total | Per unit |
|---|---|---|---|
| Machine Setting Cost (fixed): | | | |
| Operator wages | (2 hr. 20 mts. @ ₹ 0.72) | 1.68 | |
| Machine overhead | (2 hr. 20 mts. @ ₹ 1.50) | 3.50 | |
| | (a) | 5.18 | 0.05 |
| Production Cost (Variable): | | | |
| Material | (100 units × ₹0.06) | 6.00 | 0.06 |
| Operator wages | (100 units × 10 mts. × ₹0.72/60 mts.) | 12.00 | 0.12 |

| | | | |
|---|---|---|---|
| Machine overhead | (100 units × 10 mts. × ₹1.50/60 mts. | 25.00 | 0.25 |
| | (b) | 43.00 | 0.43 |
| Total Cost | (a) + (b) | 48.18 | 0.48 |

**(b) Statement showing computation of profit on completion of contract and profit to date:**

| | Incurred to date ₹ | To be incurred ₹ | Total ₹ |
|---|---|---|---|
| Material | 2,80,000 | 70,000 | 3,50,000 |
| Labour | 90,000 | 30,000 | 1,20,000 |
| Overheads | 75,000 | 25,000 | 1,00,000 |
| Erection | 15,000 | 45,000 | 60,000 |
| | 4,60,000 | 1,70,000 | 6,30,000 |
| Profit* | | | *1,89,000 |
| Contract Price | | | 8,19,000 |

**Profit to date** = 1,89,000 × (6,00,000 / 8,19,000) = 1,38,461 (or)

= 1,89,000 × (4,60,000 / 6,30,000) = 1,38,000

**3. (a) Taurus Ltd. produces three products A, B and C from the same manufacturing facilities. The cost and other details of the three products are as follows:**

| Particulars | A | B | C |
|---|---|---|---|
| **Selling price per unit (₹)** | **200** | **160** | **100** |
| **Variable cost per unit (₹)** | **120** | **120** | **40** |
| **Fixed expenses/month (₹)** | | | **2,76,000** |
| **Maximum production per month (units)** | **5,000** | **8,000** | **6,000** |
| **Total hours available for the month** | | | **200** |
| **Maximum demand per month (units)** | **2,000** | **4,000** | **2,400** |

**The processing hour cannot be increased beyond 200 hrs per month.**
**You are required to:**
**(i) Compute the most profitable product-mix.**
**(ii) Compute the overall break-even sales of the co., for the month based in the mix calculated in (i) above. [12]**

**(b) You are required to prepare a Selling Overhead Budget from the estimates given below:**

| | ₹ |
|---|---|
| **Advertisement** | **1,000** |
| **Salaries of the Sales Dept.** | **1,000** |
| **Expenses of the Sales Dept.(Fixed)** | **750** |
| **Salesmen's remuneration** | **3,000** |

**Salesmen's and Dearness Allowance - Commission @ 1% on sales affected**
**Carriage Outwards: Estimated @ 5% on sales**
**Agents Commission: 7½% on sales**

**The sales during the period were estimated as follows:**

**(a) ₹80,000 including Agent's Sales ₹8,000**

**(b) ₹90,000 including Agent's Sales ₹10,000**

**(c) ₹1,00,000 including Agent's Sales ₹10,500 [5]**

**Answer:**

**3. (a) (i) Statement showing computation of contribution per hour and determination of priority for profitability:**

| Sr. No. | Particulars | A | B | C |
|---|---|---|---|---|
| I | Selling price (₹) | 200 | 160 | 100 |
| II. | Variable cost (₹) | 120 | 120 | 40 |
| III. | Contribution (₹) | 80 | 40 | 60 |
| IV. | No. of units per hour assuming only one product is made during the month | 5,000/200 = 25 | 8,000/200 = 40 | 6,000/200 = 30 |
| V. | Contribution per hour (₹) | 25 × 80 = 2,000 | 40 × 40 = 1,600 | 30 × 60 = 1,800 |
| | Priority | I | III | II |

**Statement showing optimum mix under the given conditions and computation of profit at that mix:**

| Sr. No. | Particulars | A | B | C | Total |
|---|---|---|---|---|---|
| I | No. of units | 2,000 | 1,600 | 2,400 | |
| II. | Sales (₹) | 4,00,000 | 2,56,000 | 2,40,000 | 8,96,000 |
| III. | Total contribution (₹) | 1,60,000 | 64,000 | 1,44,000 | 3,68,000 |
| IV. | Fixed cost (₹) | | | | 2,76,000 |
| V . | Profit (₹) | | | | 92,000 |

**(ii)** Break even sales = (2,76,000 × 8,96,000) / 3,68,000 = ₹6,72,000

Notes: Available hours 200
(-) Hours for A (2,000/25) 80
120
(-) Hours for C (2,400/30) 80
40

Units of B = 40 × 40 = 1,600

**(b) Selling Overhead Budget** (₹)

| Sales | 80,000 | 90,000 | 1,00,000 |
|---|---|---|---|
| (A) Fixed overhead: | | | |
| Advertisement | 1,000 | 1,000 | 1,000 |
| Salaries of the sales dept. | 1,000 | 1,000 | 1,000 |
| Expenses of the sales dept. | 750 | 750 | 750 |
| Salesmen remuneration | 3,000 | 3,000 | 3,000 |
| Total (A) | 5,750 | 5,750 | 5,750 |
| (B) Variable overhead: | | | |
| Commission | 720 (72,000 × 1%) | 800 (80,000 × 1%) | 895 (89,500 × 1%) |
| Carriage outwards | 4,000 | 4,500 | 5,000 |
| Agents Commission | 600 (8,000 × 7.5%) | 750 (10,000 × 7.5%) | 788 (10,500 × 7.5%) |
| Total (B) | 5,320 | 6,050 | 6,683 |
| Grand Total (A+B) | 11,070 | 11,800 | 12,433 |

**4. (a) The net profits of a manufacturing company appeared at ₹64,500 as per financial records for the year ended 31st December, 2012. The cost books however, showed a net profit of ₹86,460 for the same period. A careful scrutiny of the figures from both the sets of accounts revealed the following facts.**

| | ₹ |
|---|---|
| (i) Income-tax provided in financial books | 20,000 |
| (ii) Bank Interest (Cr) in financial books | 250 |
| (iii) Work overhead under recovered | 1,550 |
| (iv) Depreciation charged in financial records | 5,600 |
| (v) Depreciation recovered in cost | 6,000 |
| (vi) Administrative overheads over-recovered | 850 |
| (vii) Loss due to obsolescence charged in financial accounts | 2,800 |
| (viii) Interest on Investments not included in cost accounts | 4,000 |
| (ix) Stores adjustments (Credit in financial books) | 240 |
| (x) Loss due to depreciation in stock value | 3,350 |

**Prepare Reconciliation Statement. [10]**

**(b) From the following information compute (i) Equivalent production (ii) statement of apportionment of cost, (iii) prepare Process Account.**

| | |
|---|---|
| Work-in-progress (opening)<br>200 units @ ₹4 per unit | State of completion<br>100% Material<br>40% Labour & Overheads |
| Units introduced 1050 | |
| Transfer to next process 1100 units | 100% Material |
| Closing stock 150 units | 70% Labour and Overhead |

| Other information: | ₹ |
|---|---|
| Material cost | 1,050 |
| Labour | 2,250 |
| Production Overhead | 1,125 |
| | 4,425 |

**[7]**

**Answer:**

**4. (a) Statement showing reconciliation of profit shown by cost and financial accounts as on 31-12-2012:**

| Particulars | Amount (₹) | Amount (₹) |
|---|---|---|
| Profit as per Financial Accounts | | 64,500 |
| Add: Income tax provided in financial books only. | 20,000 | |
| Works overhead under recovered | 1,550 | |
| Loss to obsolescence considered. Financial A/c only. | 2,800 | |
| Loss due to depreciation in stock | 3,350 | 27,700 |
| | | 92,200 |
| Less: Bank interest credited in financial books. | 250 | |
| Over recovery of depreciation | 400 | |
| Administration OH's over recovered | 850 | |
| Interest on investment not included in cost books | 4,000 | |
| Stores adjustment | 240 | 5,740 |
| Profit as per Cost Accounts | | 86,460 |

**(b)**

**Statement of Equivalent Production**

| Input | Output | Units | Material | | Labour | | Overheads | |
|---|---|---|---|---|---|---|---|---|
| | | | % | Units | % | Units | % | Units |
| 200 | Opening Stock | 200 | - | - | 60 | 120 | 60 | 120 |
| 1,050 | Finished Stock (1100-200) during this period | 900 | 100 | 900 | 100 | 900 | 100 | 900 |
| | Closing Stock | 150 | 100 | 150 | 70 | 105 | 70 | 105 |
| 1,250 | | 1,250 | | 1,050 | | 1,125 | | 1,125 |

**Statement of Cost per unit**

| Particulars | Cost (₹) | Equivalent units | Cost per unit (₹) |
|---|---|---|---|
| Material | 1,050 | 1,050 | 1 |
| Labour | 2,250 | 1,125 | 2 |
| Production Overhead | 1,125 | 1,125 | 1 |

**Value of Closing Stock**

| Element | Units | Cost per unit (₹) | Total Cost (₹) |
|---|---|---|---|
| Material | 150 | 1 | 150 |
| Labour | 105 | 2 | 210 |
| Overhead | 105 | 1 | 105 |
| | | | 465 |

Dr. **Process Account** Cr.

| | Units | ₹ | | Units | ₹ |
|---|---|---|---|---|---|
| To, Opening Stock A/c | 200 | 800 | By, Closing Stock | 150 | 465 |
| To, Material A/c | 1050 | 1,050 | By, Transfer to Finished | 1100 | 4,760 |
| To, Labour A/c | | 2,250 | Stock A/c @ ₹4.327 per | | |
| To, Overheads A/c | | 1,125 | unit | | |
| | 1,250 | 5,225 | | 1,250 | 5,225 |

**Working Note for checking transfer value to the finished stock:**

| Element | Units | Cost per unit (₹) | Total Cost (₹) |
|---|---|---|---|
| Material | - | - | 800 |
| Labour | 120 | 2 | 240 |
| Overhead | 120 | 1 | 120 |
| | | | 1,160 |
| (900 × 4) | | | 3,600 |
| | | | 4,760 |

**5. (a) A factory has a key resource (bottleneck) of Facility A which is available for 31,300 minutes per week.**
**Budgeted factory costs and data on two products, X and Y, are shown below:**

| Product | Selling Price/Unit | Material Cost/Unit | Time in Facility A |
|---|---|---|---|
| **X** | **₹35** | **₹20.00** | **5 minute** |
| **Y** | **₹35** | **₹17.50** | **10 minutes** |

**Budgeted factory costs per week:**

| | ₹ |
|---|---|
| **Direct labour** | **25,000** |
| **Indirect labour** | **12,500** |
| **Power** | **1,750** |
| **Depreciation** | **22,500** |
| **Space costs** | **8,000** |
| **Engineering** | **3,500** |
| **Administration** | **5,000** |

**Actual production during the last week is 4,750 units of product X and 650 units of product Y. Actual factory cost was ₹78,250.**

**Calculate:**

**(i) Total factory costs (TFC)**

**(ii) Cost per Factory Minute**

**(iii) Return per Factory Minute for both products**

**(iv) TA ratios for both products.**

**(v) Throughput cost per the week.**

**(vi) Efficiency ratio** **[12]**

**(b) Transferor Ltd. has two processes – Preparing and Finishing. The normal output per week is 7,500 units (completed) at a capacity of 75%.**

**Transferee Ltd. had production problems in preparing and require 2,000 units per week of prepared material for their finishing process.**

**The existing cost structure of one prepared unit of Transferor Ltd. at the existing capacity is as follows.**
**Material: ₹2.00 (variable 100%)**
**Labor: ₹2.00 (variable 50%)**
**Overheads: ₹ 4.00 (variable 25%)**

**The sale price of a completed unit of Transferor Ltd. is ₹16 with a profit of ₹4 per unit.**

**Contrast the effect on the profits of Transferor Ltd. for 6 months (25 weeks) of supplying units to Transferor Ltd. with the following alternative transfer prices per unit.**

**i) Marginal Cost**

**ii) Marginal Cost + 25%**

**iii) Marginal cost + 15% return on capital employed. (Assume capital employed ₹20 lakhs)**

**iv) Existing Cost**

**v) Existing Cost + a portion of profit on the basis of preparing cost / total cost X unit profit**

**vi) At an agreed market price of ₹8.50.**

**Assume no increase in the fixed costs.** **[5]**

**Answer:**

**5. (a) (i)** Total Factory Costs = Total of all costs except materials.
= ₹25,000 + ₹12,500 + ₹1,750 + ₹22,500 + ₹ 8,000 + ₹3,500 + ₹5,000.
= ₹ 78,250

**(ii)** Cost per Factory Minute = Total Factory Cost ÷ Minutes available
= ₹ 78,250 ÷ 31,300 = ₹2.50

**(iii)** (a) Return per bottleneck minute for Product X = $\frac{\text{Selling Price - Material Cost}}{\text{Minutes in bottleneck}}$

= (35 – 20) / 5 = ₹3

(b) Return per bottleneck minute for Product Y = $\frac{\text{Selling Price - Material Cost}}{\text{Minutes in bottleneck}}$

= (35 – 17.5) / 10 = ₹1.75

**(iv)** Through put Accounting (TA) Ratio for Product X = $\frac{\text{Return per Minute}}{\text{Cost per Minute}}$

= (3 / 2.5) = ₹1.2

Throughput Accounting (TA) Ratio for Product Y = $\frac{\text{Return per Minute}}{\text{Cost per Minute}}$

= (1.75 / 2.5) = ₹0.7

Based on the review of the TA ratios relating to two products, it is apparent that if we only made Product Y, the enterprise would suffer a loss, as its TA ratio is less than 1. Advantage will be achieved, when product X is made.

**(v)** Standard minutes of throughput for the week:

= [4,750 × 5] + [650 × 10] = 23,750 + 6,500 = 30,250 minutes

Throughput cost per week: = 30,250 × ₹2.5 per minutes = ₹ 75,625

**(vi)** Efficiency % = (Throughput cost / Actual TFC) %

= (₹75,625 / ₹ 78,250) × 100

= 96.6%

The bottleneck resource of Facility A is available for 31,300 minutes per week but produced only 30,250 standard minutes. This could be due to:

(a) the process of a 'wandering' bottleneck causing facility A to be underutilized.
(b) inefficiency in facility A.

**(b)** Transferred units (25 × 2,000) = 50,000
Existing profit (7500 × 25 × 4) = ₹ 7,50,000

**Effect on profit if transfer price is :**

**(i)** Marginal cost

| | ₹ |
|---|---|
| Material | 2.00 |
| Labour | 1.00 |
| OHs | 1.00 |
| | 4.00 |

At this transfer price there is no effect on profit of transferor Ltd.

**(ii)** Increase of Profit ₹50,000

**(iii)** Profit per unit = 4 + {(2000000 × 15% × 0.5)/50000} = ₹7

Under this price profit of transferor Ltd is increases by ₹1,50,000 i.e., 50,000 × (7-4)

**(iv)** Profit increases by 50,000 × (8-4) = ₹2,00,000

**(v)** Transfer price: ₹

{8 + (8/12)4} = 10.67

(-) profit = 4.00

6.67

Profit increases by 50000 × 6.67 = ₹3,33,500/-

**(vi)** Transfer price = 8.50

Profit increase by 4.5 x 50000 = ₹2,25,000

**6. (a) What constitutes the cost records under Rule 2(e)? [5]**

**(b) The Rules state that cost records are to be maintained in Form CRA-1. However, CRA-1 does not prescribe any format but only provides principles to be followed for different cost elements. What are the role and status of Cost Accounting Standards/GACAP and its applicability vis-à-vis CRA-1? [5]**

**(c) What are the eligibility criteria for appointment as a cost auditor? [7]**

**Answer:**

6. (a) As per Rule 2(e) the Companies (Cost Records and Audit) Rules, 2014, "cost records" means 'books of account relating to utilization of materials, labour and other items of cost as applicable to the production of goods or provision of services as provided in section 148 of the Act and these Rules'. There cannot be any exhaustive list of cost accounting records.

Any transaction - statistical, quantitative or other details - that has a bearing on the cost of the product/activity is important and form part of the cost accounting records.

Cost records are to be kept on regular basis to make it possible to "calculate per unit cost of production/operations, cost of sales and margin for each of its products for every financial year on monthly/quarterly/half-yearly/annual basis". What is required is to maintain such records and details in a structured manner on a regular basis so that accumulation is possible on a periodical basis.

(b) The principles of maintenance of cost accounting records have been notified in the Rules in CRA-1. The principles are in sync with the cost accounting standards. The Rules are principle based and no formats have been prescribed for maintenance of cost accounting records like pre-2011 industry specific rules. No separate format based records maintenance has been prescribed even for the Regulated Industry and the prescription has left it open for industry to maintain cost accounting records according to its size and nature of business so long as it determines a true and fair view of the cost of production, cost of sales and margin of the products/services. The cost audit report is required to be in conformity with the "cost auditing standards" as referred to in Section 148 of the Companies Act, 2013.

It is also to be noted that the Council of the Institute of Cost Accountants of India has made it mandatory for cost accountants in practice to follow and conform to the Cost Accounting Standards issued by it and it is incumbent on the cost auditors to report any deviations from cost accounting standards.

(c) Eligibility Criteria under Section 141 of the Companies Act, 2013 read with Rule 10 of the Companies (Audit and Auditors) Rules, 2014 and Section 148 of the Companies Act, 2013. The following persons are not eligible for appointment as a cost auditor:

(i) A body corporate. However, a Limited Liability partnership registered under the Limited Liability Partnership Act, 2008 can be appointed. [Section 141(3)(a)].

(ii) An officer or employee of the company. [Section 141(3)(b)].

(iii) A person who is a partner, or who is in the employment, of an officer or employee of the company. [Section 141(3)(c)].

(iv) A person who, or his relative or partner is holding any security of or interest in the company or any of its subsidiary or of its holding or associate company or a subsidiary of such holding company. [Section 141(3)(d)(i)].

(v) Relatives of any partner of the firm holding any security of or interest in the company of face value exceeding ₹1 lakh. [Section 141(3)(d)(i) and Rule 10(1) of Companies (Audit and Auditors) Rules, 2014].

(vi) A person who is indebted to the company or its subsidiary, or its holding or associate company or a subsidiary or such holding company, for an amount exceeding ₹5 lakhs. [Section 141(3)(d)(ii) and Rule 10(2) of Companies (Audit and Auditors) Rules, 2014].

(vii) A person who has given any guarantee or provided any security in connection with the indebtedness of any third person to the company or its subsidiary, or its holding or associate company or a subsidiary of such holding company, for an amount exceeding ₹1 lakh. [Section 141(3)(d)(iii) and Rule 10(3) of Companies (Audit and Auditors) Rules, 2014].

(viii) A person or a firm who, whether directly or indirectly, has business relationship with the company or its subsidiary, or its holding or associate company or subsidiary of such holding company or associate company. [Section 141(3)(e) and Rule 10(4) of Companies (Audit and Auditors) Rules, 2014]. "Business Relationship" is defined in Rule 10(4) of Companies (Audit and Auditors) Rules, 2014 and the same shall be construed as any transaction entered into for a commercial purpose, except commercial transactions which are in the nature of professional services permitted to be rendered by a cost auditor or a cost audit firm under the Act and commercial transactions which are in the ordinary course of business of the company at arm's length price - like sale of products or services to the cost auditor, as customer, in the ordinary course of business, by companies engaged in the business of telecommunications, airlines, hospitals, hotels and such other similar businesses.

(ix) A person whose relative is a director or is in the employment of the company as a director or key managerial personnel of the company. [Section 141(3)(f)].

(x) A person who is in the full time employment elsewhere or a person or a partner of a firm holding appointment as its auditor if such person or persons is at the date of such appointment or reappointment holding appointment as auditor of more than twenty companies. [Section 141(3)(g)].

(xi) A person who has been convicted by a court for an offence involving fraud and a period of ten years has not elapsed from the date of such conviction. [Section 141(3)(h)].

(xii) Any person whose subsidiary or associate company or any other form of entity, is engaged as on date of appointment in consulting and providing specialised services to the company and its subsidiary companies: [Section 141(3)(i) and Section 144].

- accounting and book keeping services
- internal audit
- design and implementation of any financial information system
- actuarial services
- investment advisory services

- investment banking services
- rendering of outsourced financial services
- management services

## Section C

**(Economics for managerial decision making)**
**Answer any two from the following. Each question carries 12 marks**

**7. (a) What are the factors involved in Demand Forecasting? [6]**

**(b) The market for tri – cycles for small kids is competitive and each tri- cycle is priced at ₹ 230. The cost function of a firm is given by TC = $130q - 10q^2 + q^3$.**

**(i) What is $q_0$ and $p_0$**

**(ii) Is the industry in equilibrium? [4+2]**

**Answer: 7(a)**

**Price of the Product** - There is an inverse (negative) relationship between the price of a product and the amount of that product consumers are willing and able to buy. Consumers want to buy more of a product at a low price and less of a product at a high price. This inverse relationship between price and the amount consumers are willing and able to buy is often referred to as The Law of Demand.

**The Consumer's Income** - The effect that income has on the amount of a product that consumers are willing and able to buy depends on the type of good we're talking about. For most goods, there is a positive (direct) relationship between a consumer's income and the amount of the good that one is willing and able to buy. In other words, for these goods when income rises the demand for the product will increase; when income falls, the demand for the product will decrease. We call these types of goods normal goods.

However, for some goods the effect of a change in income is the reverse. For example, think about a low-quality (high fat-content) ground beef. You might buy this while you are a student, because it is inexpensive relative to other types of meat. But if your income increases enough, you might decide to stop buying this type of meat and instead buy leaner cuts of ground beef, or even give up ground beef entirely in favor of beef tenderloin. If this were the case (that as your income went up, you were willing to buy less high-fat ground beef), there would be an inverse relationship between your income and your demand for this type of meat. We call this type of good an inferior good. There are two important things to keep in mind about inferior goods. They are not necessarily low-quality goods. The term inferior (as we use it in economics) just means that there is an inverse relationship between one's income and the demand for that good. Also, whether a good is normal or inferior may be different from person to person. A product may be a normal good for you, but an inferior good for another person.

**The Price of Related Goods** - As with income, the effect that this has on the amount that one is willing and able to buy depends on the type of good we're talking about. Think about two goods that are typically consumed together. For example, bagels and cream cheese. We call these types of goods compliments. If the price of a bagel goes up, the Law of Demand tells us that we will be willing/able to buy fewer bagels. But if we want fewer bagels, we will also want to use less cream cheese (since we

typically use them together). Therefore, an increase in the price of bagels means we want to purchase less cream cheese. We can summarize this by saying that when two goods are complements, there is an inverse relationship between the price of one good and the demand for the other good.

On the other hand, some goods are considered to be substitutes for one another: you don't consume both of them together, but instead choose to consume one or the other. For example, for some people Coke and Pepsi are substitutes (as with inferior goods, what is a substitute good for one person may not be a substitute for another person). If the price of Coke increases, this may make Pepsi relatively more attractive. The Law of Demand tells us that fewer people will buy Coke; some of these people may decide to switch to Pepsi instead, therefore increasing the amount of Pepsi that people are willing and able to buy. We summarize this by saying that when two goods are substitutes, there is a positive relationship between the price of one good and the demand for the other good.

**The Tastes and Preferences of Consumers** - This is a less tangible item that still can have a big impact on demand. There are all kinds of things that can change one's tastes or preferences that cause people to want to buy more or less of a product. For example, if a celebrity endorses a new product, this may increase the demand for a product. On the other hand, if a new health study comes out saying something is bad for your health, this may decrease the demand for the product. Another example is that a person may have a higher demand for an umbrella on a rainy day than on a sunny day.

**The Consumer's Expectations** - It doesn't just matter what is currently going on - one's expectations for the future can also affect how much of a product one is willing and able to buy. For example, if you hear that Apple will soon introduce a new iPod that has more memory and longer battery life, you (and other consumers) may decide to wait to buy an iPod until the new product comes out. When people decide to wait, they are decreasing the current demand for iPods because of what they expect to happen in the future. Similarly, if you expect the price of gasoline to go up tomorrow, you may fill up your car with gas now. So your demand for gas today increased because of what you expect to happen tomorrow. This is similar to what happened after Huricane Katrina hit in the fall of 2005. Rumors started that gas stations would run out of gas. As a result, many consumers decided to fill up their cars (and gas cans), leading to long lines and a big increase in the demand for gas. This was all based on the expectation of what would happen.

The Number of Consumers in the Market - As more or fewer consumers enter the market this has a direct effect on the amount of a product that consumers (in general) are willing and able to buy. For example, a pizza shop located near a University will have more demand and thus higher sales during the fall and spring semesters. In the summers, when less students are taking classes, the demand for their product will decrease because the number of consumers in the area has significantly decreased.

**Answer: 7(b)**

**(i)** We have $P_0 = 230$. With $TC = 130 - 10q^2 + q^3$

$\Rightarrow MC = 130 - 20q + 3q^2$

At equilibrium

$P_0 = MC \Rightarrow 230 = 130 - 20q + 3q^2 \Rightarrow 3q^2 - 20q - 100 = 0 \Rightarrow (3q - 10)(q - 10) = 0$

$\therefore$ $q_0 = 10$ Now $\pi_0 = P_0q_0 - [130q_o - 10q^2_0 + q^3_0]$

$= 230 \times 10 - [130 \times 10 - 10 \times (10)^2 + (10)^3]$

$= 2300 - [1300] = 1000.$

We see q = 10, satisfies 2nd order condition

**(ii)** As the economic profits are negative i.e., as there are losses the industry is not in equilibrium. Some firms will leave the industry.

**8. (a) Explain the different kinds of demand oriented pricing. [6]**

**(b) The efficiency (E) of a small manufacturing concern depends on the number of workers (W) and is given by 10 E = $\frac{-W^3}{40}$ + 30W – 392, find the strength of the worker, which give maximum efficiency. [6]**

**Answer:**

**8. (a) Demand oriented pricing:**

**(i) Differential pricing or price discrimination:** There are many bases on which the open price discrimination is practiced. These are discussed below.

- **Time Price Differentials:** it is a general practice to use the expression "the demand for a product or service", but it is important to note that demand also has a time dimension. The demand may shift in fairly short-time intervals. For example, demand for telephone facilities is more in the day time rather than at night.
- **Use Price differentials:** Different buyers have different uses of a product or a service. For example railways can be used for long-haul or short-haul freight traffic. Railways can also be used for transporting different types of commodities. Electricity can similarly, be used for industrial or residential purposes.
- **Quality price Differentials:** If the product caters to that group of consumers who are concerned about its quality, then the quality becomes a significant determinant of demand elasticity. The seller has, therefore, to crate differences in quality to sell his product. It must be emphasized here that the differences in quality basically depend upon the buyers' understanding of the quality. Sellers use many devices to create quality differences.
- **Quantity Differentials:** When the seller discriminates on the basis of the quantity of purchase, it is known as quantity differentials. Quantity discounts are price concessions based on the size of the lot purchased at one time and delivered at one location. These discounts are thus related to size of a single purchase. The size of the lot purchased is measured in terms of either physical units or monetary units. Sometimes, discounts are according to the trade status, i.e., wholesaler, retailer, jobber, etc.

**(ii) Perceived Value pricing:**

Perceived value pricing refers to fixing the price on the basis of a buyer's perception of the value of the product.

**(b)** Given $10E = \left(\frac{-w^3}{40}\right) + 30W - 392$

Efficiency $(E) = -\frac{-w^3}{400} + 3W - \frac{392}{10}$

$\frac{de}{dw} = -\frac{1}{400} \times 3W^2 + 3 = 0$

$\Rightarrow 3W^2 = 1200$

$\Rightarrow W^2 = 400$

$\Rightarrow W = 20$

$\frac{d^2E}{dw^2} = \frac{-6w}{400}$

$\therefore \frac{d^2e}{dw^2}$ at $w = 20 = \frac{-6(20)}{400} = \frac{-6}{20} < 0$

$\therefore$ Maximum efficiency at $w = 20$.

**9. (a) What are the pricing policies for introduction stage of a new product? [6]**

**(b) A company is planning to market a new model of a doll. Rather than setting the selling price of the doll based only on production cost estimation management polls the retailers of the doll to see how many dolls they will buy for various prices. From this survey, it is determined at the unit demand function (the relationship between the amount 'x' each retailer would buy and the price he would pay) is x = 30,000 – 1500P. The fixed cost of the production of the dolls are found to be ₹ 28,000/- and cost of Material & labour to produce each doll is estimated to be ₹8/-per unit. What price should the company charge retailer in order to obtain a maximum profit? Also find the maximum profit. [6]**

**Answer:**

**9. (a)** There are two alternative price strategies which a firm introducing a new product can adopt, viz., skimming price policy and penetration pricing policy.

**A. Skimming Price Policy:**

When the product is new but with a high degree of consumer acceptability, the firm may decide to charge a high mark up and, therefore, charge a high price. The system of charging high prices for new products is known as price skimming for the object is to "skim the cream" from the market. There are many reasons for adopting a high mark-up and, therefore, high initial price:

- The demand for the new product is relatively inelastic. The high prices will not stop the new consumers from demanding the product. The new product, novelty, commands a better price. Above all, in the initial stage, there is hence cross elasticity of demand is low.
- If life of the product promises to be a short one, the management may fix a high price so that it can get as much profit as possible and, in as short a period as possible.
- Such an initially high price is also suitable if the firm can divide the market into different segments based on different elasticity's. The firm can introduce a cheaper model in the market with lower elasticity.
- High initial price may also be needed in those cases where there is heavy investment of capital and when the costs of introducing a new product are high. The initial price of a transistor radio was ₹ 500 or more (now ₹ 50 or even

less); electronic calculators used to cost ₹ 1,000 or more, they are now available for ₹ 100 or so.

**B. Penetration Price Policy.**

Instead of setting a high price, the firm may set a low price for a new product by adding a low mark-up to the full cost. This is done to penetrate the market as quickly as possible. The assumptions behind the low penetration price policy are:

- The new product is being introduced in a market which is already served by well-known brands. A low price is necessary to attract gradually consumers who are already accustomed to other brands.
- The low price will help to maximize the sales of the product even in the short period.

The low price is set in the market to prevent the entry of new products.

Penetration price policy is preferred to skimming price under three conditions:
In the first place, skimming price offering a high margin will attract many rivals to enter the market. With the entry of powerful rivals into the market, competition will be intensified, price will fall and profits will be competed away in the long run. A firm will prefer a low penetration price if it fears the entry of powerful rivals with plenty of capital and new technology. For a low penetration price, based on extremely low mark-up will be least profitable and potential competitors will not be induced to enter the market.

Secondly, a firm will prefer low penetration price strategy if product differentiation is low and if rival firms can easily imitate the product. In such a case, the objective of the firm to fix low price is to establish a strong market based and build goodwill among consumers and strong consumer loyalty.

Finally, a firm may anticipate that its main product may generate continuing demand for the complementary items. In such a case, the firm will follow penetration pricing for its new product, so that the product as well as its complements will get a wider market.

**(b)** $x = 30000 - 1500P$

$x - 30000 = -1500P$

$\therefore P = \frac{30000 - x}{1500}$

Revenue $= \frac{30000x - x^2}{1500}$

$C = 8x + 28000$

Profit $= \frac{30000x - x^2}{1500} - 8x - 28000$

$\frac{dc}{dx} = \frac{1}{1500}(30000 - 2x) - 8 = 0$

$= 30000 - 2x - 12000 = 0$

$-2x = -18000$

$x = \frac{18000}{2}$

$\frac{d^2p}{dx^2} = -2$, which is Negative

$= \frac{30000 \times 9000 - 9000^2}{1500} - 72,000 - 28000$

$= 180000 - \frac{810000}{15} - 72,000 - 28000.$