Test Series: February, 2016

MOCK TEST PAPER – 1

FINAL COURSE: GROUP – II

PAPER – 5: ADVANCED MANAGEMENT ACCOUNTING

SUGGESTED ANSWERS/HINTS

1. (a) Workings

Statement Showing "Variable Manufacturing Cost *per unit*"

Particulars of Costs	Rs. / unit
Sales	79,600
Less: Contribution (40%)	31,840
Variable Cost	47,760
Less: Variable Selling Costs (Rs. 79,600 × 0.1)	7,960
Variable Manufacturing Cost	39,800

Statement Showing "Expected Profit"

Particulars of Costs	('000) Rs. / unit	
	500 units	750 units
Sales	39,800 (Rs. 79,600 × 500)	52,200 (Rs. 69,600 × 750)
Less: Variable Mfg. Cost	19,900 (Rs.39,800 × 500)	29,850 (Rs. 39,800 × 750)
Less: Variable Selling Cost	3,980 (Rs. 39,800 × 0.1)	5,220 (Rs. 52,200 × 0.1)
Add: Salvage Value	625	900
Less: Cost of Plant	3,500	5,200
Net Profit	13,045	12,830

Development cost is sunk and is not relevant.

Advice

Based on the above 'Expected Profit' statement which is purely based on *financial considerations* firm may go for high price – low volume i.e. 500 units level. However, *non-financial considerations* are also given due importance as they account for actions that may not contribute directly to profits in the short run but

© The Institute of Chartered Accountants of India

may contribute significantly to profits in long run. Here, it is important to note that life cycle of product is two years and there is no significant difference between the profits at both levels. In this scenario firm may opt the plant having high capacity not only to increase its market share but also to establish a long term brand image.

(b) Following acceptance by early innovators, conventional consumers start following their lead. New competitors are likely to now enter the market attracted by the opportunities for large scale production and profit. WSL may wish to discourage competitors from entering the market by lowering the price and thereby lowering the unit profitability. The price needs to be lowered so that the product becomes attractive to different market segments thus increasing demand to achieve the growth in sales volume. Strategies at this stage may include the following:

(i) Improving quality and adding new features such as Data Theft Protection, Parental Control, Web Protection, Improved Scan Engine, Anti Spyware, Anti Malware etc.

(ii) Sourcing new market segments/ distribution channels.

(iii) Changing marketing strategy to increase demand.

(iv) Lowering price to attract price-sensitive buyers.

(c) (i) Cost incurred on Product 'C' *upto point of separation* is irrelevant for decision making as Product 'C' is a Joint Product. Joint Products are the result of same raw material & same process Operations.

Cost incurred *after point of separation* will be considered for decision making as *specifically* incurred for Product 'C'.

After further processing Product 'C' will *contribute* Rs.17 per unit toward 'Joint Production Cost'.

Calculation is as follows:

Particulars	Amount (Rs.)	Amount (Rs.)
Selling Price *per unit*		37.00
Less: Cost after Separation:		
Marginal Cost *per unit*	15.00	
Fixed Cost *per unit*	5.00	20.00
Contribution toward 'Joint Production Cost'		17.00

Hence, *further processing* of Product 'C' is recommended.

© The Institute of Chartered Accountants of India

(ii) If Product 'C' is not a joint product with same cost structure. In this case there will be *negative contribution* on production of Product 'C'. The calculation is as follows:

Particulars	Amount (Rs.)
Selling Price *per unit*	37.00
Less: Marginal Cost (Rs. 30 + Rs. 15)	45.00
Contribution	(8.00)

Hence, production of Product 'C' will not be recommended.

(d) The usual learning curve model is

$$y = ax^b$$

Where

y = Average time per part for x parts

a = Time required for first part (100 minutes)

x = Cumulative number of parts

b = Learning coefficient and is equal to –0.322 (learning rate 80%)

Calculation of total time for 40 parts:

$$y = 100 \times (40)^{-0.322}$$

$$\log y = \log 100 - 0.322 \times \log 40$$

$$\log y = \log 100 - 0.322 \times [3 \times \log 2 + \log 5]$$

$$\log y = 2 - 0.322 \times [3 \times 0.30103 + 0.69897]$$

$$\log y = 1.484$$

y = antilog of 1.484

y = 30.48 minutes

Total time for 40 Parts = 40 Parts × 30.48 minutes

= 1,219 minutes (A)

Calculation of total time for 60 parts:

$$y = 100 \times (60)^{-0.322}$$

$$\log y = \log 100 - 0.322 \times \log 60$$

$$\log y = \log 100 - 0.322 \times [2 \times \log 2 + \log 5 + \log 3]$$

$$\log y = 2 - 0.322 \times [2 \times 0.30103 + 0.69897 + 0.47712]$$

© The Institute of Chartered Accountants of India

$$\log y = 1.4274$$

$$y = \text{antilog of } 1.4274$$

$$y = 26.75 \text{ minutes}$$

Total Time for 60 Parts = 60 Parts × 26.75 minutes

= 1,605 minutes (B)

Calculation of total time for 41 to 60 parts (B) – (A):

= 1,605 minutes –1,219 minutes

= 386 minutes

2. (a) The balanced scorecard is a method which displays organisation's performance into four dimensions namely financial, customer, internal and innovation. The four dimensions acknowledge the interest of shareholders, customers and employees taking into account of both long-term and short-term goals. The detailed analysis of performance of the company using Balance Scorecard approach as follows:

(i) Financial Perspective: Operating ratio and average revenue will be covered in this prospective.

Company is unable to achieve its target of reducing operating ratio to 50% instead it has increased to 60%. Company is required to take appropriate steps to control and manage its operating expenses. Average revenue per user has increased from Rs. 210 to Rs. 225 but remains short of targeted Rs. 250. This is also one of the reasons of swelled operating ratio. Company can boost up its average revenue per user either by increasing the price of its services or by providing more paid value added services.

(ii) Customer Perspective: Service complaints will be covered under this perspective. The company had set a target of reducing unresolved complaints by 20% instead unresolved complaints have risen by 10%[(27,500-25,000)/(25,000) × 100]. It shows dissatisfaction is increasing among the consumers which would adversely impact the consumer's general perception about the company and company may lose its consumers in long run.

(iii) Internal Business Perspective: Establishing customer relationship centres will be covered under this perspective. Company has established 80 relationship centres in the current period exceeding its target of 50 (250-200) to cater to the needs of existing consumers as well as soliciting new consumers. This shows the seriousness of the company towards the consumer satisfaction and would help them in the long run.

(iv) Learning and Growth Perspective: Employee training programmes are covered under this perspective.

© The Institute of Chartered Accountants of India

Company had set a target to cover at least 15% employee under its training programmes but covered only 10%. This could hurt capabilities of the employees which are needed for long term growth of the organisation necessary to achieve the objectives set in the previous three perspectives. People or the human resource of the company is one of the three principle sources where organisational learning and growth comes.

(b)

$C_j \rightarrow$			6	4	10	0	0	0	Min. Ratio
C_B	Basic Variable	Quantity	X_1	X_2	X_3	S_1	S_2	S_3	
0	S_1	400	0	4/3	0	1	-1/3	0	300
6	X_1	400	1	2/3	2	0	1/3	0	600
0	S_3	400	0	5/3	0	0	-2/3	1	←240
		$Z_j = \sum C_{Bi}X_j$	6	4	12	0	2	0	
		$C_j - Z_j$	0	0↑	-2	0	-2	0	

(i) Yes, because the given solution has no artificial variables in the basic column.

(ii) Perform one more iteration with X_2:

$C_j \rightarrow$			6	4	10	0	0	0
C_B	Basic Variable	Quantity	X_1	X_2	X_3	S_1	S_2	S_3
0	S_1	80	0	0	0	1	1/5	-4/5
6	X_1	240	1	0	2	0	3/5	-2/5
4	X_2	240	0	1	0	0	-2/5	3/5
		$Z_j = \sum C_{Bi}X_j$	6	4	12	0	2	0
		$C_j - Z_j$	0	0	-2	0	-2	0

(iii) Shadow Price is Rs.0, Rs.2 and Rs.0 (or any other given monetary unit) for Constraint 1, Constraint 2 and Constraint 3 respectively and same has been obtained from row $C_j - Z_j$.

(iv) $C_j - Z_j$ for X_3 being –2, production of each unit of X_3 would cause a reduction of Rs.2 (or any other given monetary unit). Thus, the price for X_3 should be increased by at least two rupee per unit to ensure no reduction of profits.

(v) Original Constraint Inequality with the coefficient of variables:

Let us consider the given iteration is the 2nd one. The first iteration (I_1) must have had S_2 instead of X_1. Row X_1 of I_2 has been computed by <u>dividing the S_2 row of I_1 by 3</u>. S_2 of I_1 (in Identity Matrix) would have been 1. Now it is 1/3. Working backwards, we multiply row X_1 of I_2 by 3 to get Row S_2 of I_1.

© The Institute of Chartered Accountants of India

Original Row S_2 [X_1 of I_2 × 3]:

$$(1X_1 + 2/3X_2 + 2X_3) \times 3 \quad \leq \quad 400 \times 3$$

Or

$$3X_1 + 2X_2 + 6X_3 \quad \leq \quad 1{,}200$$

Similarly Original Row S_1 [S_1 of I_2 + X_1 of I_2]:

$$(0X_1 + 4/3X_2 + 0X_3) + (1X_1 + 2/3X_2 + 2X_3) \quad \leq \quad 400 + 400$$

Or

$$X_1 + 2X_2 + 2X_3 \quad \leq \quad 800$$

Similarly Original Row S_3 [S_3 of I_2 + 2 × X_1 of I_2]:

$$0X_1 + 5/3X_2 + 0X_3 + (1X_1 + 2/3X_2 + 2X_3) \times 2 \quad \leq \quad 400 + 400 \times 2$$

Or

$$2X_1 + 3X_2 + 4X_3 \quad \leq \quad 1{,}200$$

☞

> Original Constraint Inequality (with the coefficient of variables) can also be traced through algebraic method by solving through *system of equations*.

3. (a) (i) Gourmet and high-end restaurants recognises Natural Spices on the basis of its *high quality* of spices. Therefore, quality is most critical success factor of Natural Spices. There are other factors which cannot be ignore such as price delivery options, attractive packing etc. But all are secondary to the quality.

(ii) Deliberate action of cutting price to increase sales volume indicates that firm is intending to expand its market to retail market and street shops which is price sensitive.

Purchase Price Variance is clearly indicating that firm has purchased raw material at lower price which may be due to buying of lower quality of material. Similarly positive *Efficiency Variance* is indicating cost cutting and stretching resources.

It appears that firm is intending to expand its market to retail market and street shops by not only reducing the price but also compromising its quality which is opposing its current strategy of *high quality*.

Management should monitor the trends of variances on regular basis and take appropriate action in case of evidence of permanent decline in quality. Here, customer feedback is also very important.

© The Institute of Chartered Accountants of India

(b) (i) Assumed Quotation Price 'P', Quantity 'Q'

The Marginal Cost of a 'Wagon' is Rs.13,60,000

(Rs.2,20,000 × 4 Casnub Bogies + Rs.4,80,000)

Demand Function for a 'Wagon'

P	=	Rs.17,10,000 – (Rs.50,000 / 2) × Q
Revenue (R)	=	Q × [17,10,000 – 25,000 × Q]
	=	17,10,000 Q – 25,000 Q^2
Marginal Revenue (MR)	=	17,10,000 – 50,000 Q
Marginal Cost (MC)	=	13,60,000

Profit is Maximum where Marginal Revenue (MR) equals to Marginal Cost (MC)

17,10,000 – 50,000 Q	=	13,60,000
Q	=	7.00 units

By putting the value of 'Q' in *Demand Function*, value of 'P' is obtained.

P	=	17,10,000 – (50,000/ 2) × Q
	=	17,10,000 – 25,000 × 7.00
	=	Rs.15,35,000

At Rs.15,35,000 unit Quotation Price of a Wagon the Eastern Company Ltd.'s Profit will be Maximum.

(ii) At CBD the Divisional Manager would ensure that Divisional Marginal Revenue should be *equal to* Division's Marginal Cost so that Profit can be Maximum.

MR of a Casnub Bogies	=	MC of Manufacturing a Casnub Bogies
3,20,000 – 2(10,000/ 30) × Q	=	2,20,000
Q	=	150 units

Selling Price of a Casnub Bogie 'P' is

P	=	3,20,000 – (10,000/ 30) × 150
	=	Rs.2,70,000

CBD will earn Maximum Profit when it will Quote Rs.2,70,000 to the Outside Market. Since, Outside Market Quotation is *Transfer Price* as well, so Transfer Price to WD will be Rs.2,70,000 and it forms part of WD's Marginal Cost.

At WD, Division Manager would ensure that Divisional Marginal Revenue should be *equal to* Division's Marginal Cost so that Profit can be Maximum.

© The Institute of Chartered Accountants of India

MR of a Wagon	=	MC of Manufacturing a Wagon
17,10,000 – 50,000 × Q	=	(Rs.2,70,000 × 4 Casnub Bogies) + Rs.4,80,000
Q	=	3.00 units

Quotation Price of a Wagon 'P' should be:

P	=	Rs.17,10,000 – 25,000 × 3.00
	=	Rs.16,35,000

The unit Quotation Price of Wagon that emerges as a result of Market Based Transfer Pricing is Rs.16,35,000.

4. (a) (i) Calculation of Contribution Margin *per machine hour*

	Jaya (Rs.)	Surya (Rs.)
Selling Price *per unit*	1,500	2,000
Less: Variable Manufacturing Cost *per unit*	(900)	(1,600)
Less: Variable Marketing Cost *per unit*	(250)	(150)
Contribution Margin *per unit*	350	250
Number of Regular Machine Hours	2.0	1.0
Contribution Margin *per machine hour*	175	250
Ranking	II	I

Based on the ranking above, manufacturing preference will be given to Surya but after the committed production of 12,500 units of Jaya.

Since to manufacture Surya, a hiring cost of Rs. 60,00,000 is also paid for high precision machine, so the result obtained through the above ranking may not be beneficial. For this purpose we solve this problem taking two options.

Option 1: 12,500 units of Jaya and 35,000* units of Surya:

*[60,000 hours – (12,500 units of Jaya × 2 hours) ÷ 1 hour to produce one unit of Surya]

	Amount (Rs.)
Contribution Margin on Jaya (12,500 units × Rs. 350)	43,75,000
Contribution Margin on Surya (35,000 units × Rs. 250)	87,50,000
Total Contribution Margin	1,31,25,000
Less: Hire Charges on High Precision Machine	(60,00,000)
Net Relevant Contribution	71,25,000

© The Institute of Chartered Accountants of India

Option 2: Produce only Jaya i.e. 30,000 units :

Contribution Margin / Net Relevant Contribution (30,000 units × Rs.350)

= Rs.1,05,00,000

Even though Surya has the higher contribution margin per machine hour but net relevant contribution option 1 is lower than the option 2. Hence, JSL should produce 30,000 units of Jaya only to earn more profit.

(ii) Based on the above ranking, if preference is given to production of Surya after the production of committed units of Jaya i.e. 12,500 units of Jaya and 95,000 units of Surya.

Option 1: 12,500 units of Jaya and 95,000* units of Surya:

*[1,20,000 hours – (12,500 units of Jaya × 2 hours) ÷ 1 hour to produce one unit of Surya]

	Amount (Rs.)
Contribution Margin on Jaya (12,500 units × Rs. 350)	43,75,000
Contribution Margin on Surya (95,000 units × Rs. 250)	2,37,50,000
Total Contribution Margin	2,81,25,000
Less: Hire Charges on High Precision Machine	(60,00,000)
Less: Capacity Enhancement Cost	(28,00,000)
Net Relevant Contribution	1,93,25,000

Option 2: Produce only Jaya i.e. 60,000 units:

	Amount (Rs.)
Contribution Margin (60,000 units × Rs. 350)	2,10,00,000
Less: Capacity Enhancement Cost	(28,00,000)
Net Relevant Contribution	1,82,00,000

When capacity of the regular machine is doubled, the optimum product mix will be 12,500 units of Jaya and 95,000 units of Surya.

Increase in operating profit will be Rs. 88,25,000 (Rs. 1,93,25,000 – Rs. 1,05,00,000).

☞

While calculating relevant contribution from the option 1 and option 2 in requirements (i) and (ii) above, the contribution from the 12,500 units of Jaya may also be ignored as this is same under the two options.

© The Institute of Chartered Accountants of India

(b) Probability of Completing the Project by Schedule Time T_s is given by

$$Z = \frac{T_s - T_e}{\sigma_e}$$

Probability if the Project is required to be completed in 15 weeks:

Probability if the Project is required to be completed in 15 weeks is given by

$$Z = \frac{15 - 18}{3}$$

$$Z = -1$$

Probability (Z = –1) = 0.1587

Probability if the Project is required to be completed in 21 weeks:

Probability if the Project is required to be completed in 21 weeks is given by

$$Z = \frac{21 - 18}{3}$$

$$Z = +1$$

Probability (Z = +1) = 0.8413

Probability that the Project may be completed not earlier than 15 weeks and not later than 21 weeks

= 0.8413–0.1587

= 0.6826

Or = 68.26%

5. (a) Direct Product Profitability (DPP) Statement

(Amount in Rs.)

	Butter Jelly	Fruits & Nuts	Icy Cool
Selling Price *per unit*	84.00	42.00	26.00
Less: Purchase Price *per unit*	76.00	34.00	22.00
Gross Profit ...(A)	8.00	8.00	4.00
Direct Product Costs:			
Warehouse Costs *per* m^3 [W.N.-1]	7.46	2.07	3.73
Retail Stores Costs *per* m^3 [W.N.-2]	6.36	4.00	6.36
Transportation Costs [W.N.-3]	76.56	50.00	76.56
Total DPP costs *per* m^3	90.38	56.07	86.65
Items *per* m^3 [W.N.-4]	12,600	4,032	2,880

© The Institute of Chartered Accountants of India

Cost *per item* ...(B)	0.007	0.014	0.030
Direct Product Profit ...(A) - (B)	7.993	7.986	3.97

Working Notes

(1) Warehouse Related Costs

	General Costs (Rs.)	Cost Related with Refrigerated Goods (Rs.)
Labour & Staff Costs	27,000	---
Refrigeration Costs	---	1,52,000
Material Handling Costs	28,000	---
Total	55,000	1,52,000
Volume of Goods Sold	40,000 m^3	25,000 m^3
Cost *per* m^3 *per month*	1.38	6.08

Products	Time in Warehouse	Cost *per* m^3 *per month* (Rs.)	Total Cost
Butter Jelly	1 Month	7.46 (1.38 + 6.08)	7.46
Fruits & Nuts	1.5 Months	1.38	2.07
Icy-cool	0.5 Months	7.46 (1.38 + 6.08)	3.73

(2) Retail Stores Related Costs

	General Costs (Rs.)	Cost Related with Refrigerated Goods (Rs.)
Labour Related Costs	33,000	---
Refrigeration Costs	---	1,09,000
Other Costs	47,000	---
Total	80,000	1,09,000
Volume of Goods Sold	40,000 m^3	25,000 m^3
Cost *per* m^3 *per month*	2.00	4.36

© The Institute of Chartered Accountants of India

Products	Time in Retail Stores	Cost *per m³ per month*	Total
Butter Jelly	1 Month	Rs. 6.36 (Rs. 2.00 + Rs. 4.36)	Rs. 6.36
Fruits & Nuts	2 Months	Rs. 2.00	Rs. 4.00
Icy-Cool	1 Month	Rs. 6.36 (Rs. 2.00 + Rs. 4.36)	Rs. 6.36

(3) Transportation Costs

	Normal Van Costs	Refrigerated Van Costs
Cost *per trip*	Rs. 3,200	Rs. 4,900
Volume of Van	64 m^3	64 m^3
Cost *per m^3 per trip*	Rs. 50.00	Rs. 76.56

(4) No. of Items *per m^3*

Products	No. of Cartons (m^3)	No. of Items *per Cartons* (units)	No. of Items *per m^3*
Butter Jelly	42	300	12,600 (42 × 300)
Fruits & Nuts	28	144	4,032 (28 × 144)
Icy - Cool	40	72	2,880 (40 × 72)

(b) The assignment problem is special case of transportation problem; it can also be solved by transportation method. But the solution obtained by applying this method would be severely degenerate. This is because the optimality test in the transportation method requires that there must be m+n-1 allocations/assignments. But due to the special structure of assignment problem of order n × n, any solution cannot have more than n assignments. Thus, the assignment problem is naturally degenerate. In order to remove degeneracy, n-1* number of dummy allocations will be required in order to proceed with the transportation method. Thus, the problem of degeneracy at each solution makes the transportation method computationally inefficient for solving an assignment problem.

☞

(*) $\underline{m+n-1} - n \Rightarrow \underline{n+n-1} - n \Rightarrow \underline{2n-1} - n \Rightarrow \underline{n-1}$

© The Institute of Chartered Accountants of India

6. (a) Random No- Coding for Fresh Cake

No. of Cakes	Probability	Cumulative Probability	Random Numbers
100	0.01	0.01	00 – 00
101	0.03	0.04	01 – 03
102	0.04	0.08	04 – 07
103	0.07	0.15	08 – 14
104	0.09	0.24	15 – 23
105	0.11	0.35	24 – 34
106	0.15	0.50	35 – 49
107	0.21	0.71	50 – 70
108	0.18	0.89	71 – 88
109	0.09	0.98	89 – 97
110	0.02	1.00	98 – 99

Random No. Coding for One Day Old Cake

No. of Cakes	Probability	Cumulative Probability	Random Numbers
0	0.70	0.70	00 – 69
1	0.20	0.90	70 – 89
2	0.08	0.98	90 – 97
3	0.02	1.00	98 – 99

Let us simulate the sale of fresh and one day old cakes for the next ten days using the given random numbers / information.

Simulation Sheet

Day	R. No. of Fresh Cake	Fresh Stock	Demand	Sales Pcs.	Cl. Stock	Order Initiated	One Day Old Stock	R.N. of Old Cake	Sale of Old Cake Pcs.	Loss Pcs.
1	37	105	106	105	0	110	0	17	0	0
2	73	110	108	108	2	110	0	28	0	0

© The Institute of Chartered Accountants of India

3	14	110	103	103	7	105	2	69	0	2
4	17	105	104	104	1	105	7	38	0	7
5	24	105	105	105	0	105	1	50	0	1
6	35	105	106	105	0	110	0	57	0	0
7	29	110	105	105	5	110	0	82	0*	0
8	37	110	106	106	4	105	5	44	0	5
9	33	105	105	105	0	105	4	89	1	3
10	68	105	107	105	0	110	0	60	0	0
				1051					1	18

Calculation of Vendor's Profit

	Amount (Rs.)
Sales of Fresh Cakes (1,051 Pcs. × Rs.7)	7,357.00
Sale of One Day Old Cake (1 Pcs. × Rs.2)	2.00
Total Sales Revenue	7,359.00
Less: Cost of Cakes Sold [Rs.4.50 × (1,051 + 1) Pcs.]	4,734.00
Less: Cost of Spoilt Cakes [Rs.4.50 × 18 Pcs.]	81.00
Profit	2,544.00

☞

Order for Day 2's Sale - Vendor will initiate order in day one's morning i.e. one day in advance *at the time of receiving previous order.*

Vendor follows - *If there is no stock of cake with him at the end of previous day, he orders for 110 pieces otherwise he orders 100 or 105 pieces whichever is nearest actual fresh cake sale on the previous day.*

Accordingly to initiate order in day one's morning vendor has to consider previous day's stock i.e. Day 0's stock. But, there is no stock at the end of Day 0 or beginning of Day 1 (given in the problem). Accordingly Vendor will initiate order of 110 pieces in day 1's morning for day 2's sales.

(*)

On 7th Day Demand for 'One Day Old' cake is one piece (as per random no. 82). But there was nil stock at the end of the 6th Day. Accordingly, sale of one Day old cake is nil.

© The Institute of Chartered Accountants of India

(b) Calculation Showing Rates for each Activity

Activity	Activity Cost [a] (Rs.)	Activity Driver	No. of Units of Activity Driver [b]	Activity Rate [a] / [b] (Rs.)
Providing ATM Service	1,00,000	No. of ATM Transactions	2,00,000	0.50
Computer Processing	10,00,000	No. of Computer Transactions	25,00,000	0.40
Issuing Statements	8,00,000	No. of Statements	5,00,000	1.60
Customer Inquiries	3,60,000	Telephone Minutes	6,00,000	0.60

Calculation Showing Cost of each Product

Activity	Checking Accounts (Rs.)	Personal Loans (Rs.)	Gold Visa (Rs.)
Providing ATM Service	90,000 (1,80,000 tr. x 0.50)	---	10,000 (20,000 tr. x 0.50)
Computer Processing	8,00,000 (20,00,000 tr. x 0.40)	80,000 (2,00,000 tr. x 0.40)	1,20,000 (3,00,000 tr. x 0.40)
Issuing Statements	4,80,000 (3,00,000 st. x 1.60)	80,000 (50,000 st. x 1.60)	2,40,000 (1,50,000 st. x 1.60)
Customer Inquiries	2,10,000 (3,50,000 min. x 0.60)	54,000 (90,000 min. x 0.60)	96,000 (1,60,000 min. x 0.60)
Total Cost [a]	Rs.15,80,000	Rs.2,14,000	Rs.4,66,000
Units of Product [b]	30,000	5,000	10,000
Cost of each Product [a] / [b]	52.67	42.80	46.60

7. (a) The product life cycle span the time from the initial R & D on a product to when customer service and support is no longer offered for that product.

Life Cycle Costing technique is particularly important when:

(i) High percentage of total life-cycle costs are incurred before production begins and revenue are earned over several years and

(ii) High fraction of the life cycle costs are locked in at the R & D and design stages.

© The Institute of Chartered Accountants of India

Fiona should identify those industries and then companies belonging to those industries where above mentioned feature are prevalent. For example, Automobile and Pharmaceutical Industries companies like Tata Motors Ltd./ Dabur India Ltd. will be good candidates for study on product life cycle costing.

(b) Statement Showing Selling Price

	Perfect Competition	Monopoly
Units	6,000	1,200
Contribution (Rs.1,06,000 + Rs.74,000)	1,80,000	1,80,000
Contribution *per unit*	30	150
Variable Cost *per unit* $\left(\text{Rs.}150 \times \frac{4}{3}\right)$	---	200
Variable Cost *per unit*	200	---
Selling Price *per unit*	230	350

(c) The Initial solution obtained by the North-West Corner Rule in transportation need not always contain the R_2C_1 cell. In the North-West Corner Rule the first allocation is made at R_1C_1 cell and then it only moves towards R_2C_1 cell when the resources at the first row i.e. R_1 is exhausted first than the resources of first column i.e. C_1. On the contrary if resources at first column i.e. C_1 is exhausted first then the next allocation will be at R_1C_2.

For example the resource availability at first row (R_1) is 1,500 units and the demand in first column (C_1) is 1,000 units. In this case resource availability of first row (R_1) will be exhausted to the extent of the demand in first column (C_1) first and then the remaining resource availability at first row (R_1) will be used to meet the demand of the second column (C_2). In this example cell R_2C_1 will not come in initial solution obtained by the North-West Corner Rule.

(d) Direct Product Profitability (DPP) is 'Used primarily within the retail sector, and involves the attribution of both the purchase price and other indirect costs *such as distribution, warehousing, retailing* to each product line. Thus a net profit, as opposed to a gross profit, can be identified for each product. The cost attribution process utilises a variety of measures *such as warehousing space, transport time* to reflect the resource consumption of individual products.'

Benefits of Direct Product Profitability:

(i) Better Cost Analysis - Cost *per product* is analysed to know the profitability of a particular product.

(ii) Better Pricing Decision- It helps in price determination as desired margin can be added with the actual cost.

© The Institute of Chartered Accountants of India

(iii) Better Management of Store and Warehouse Space- Space Cost and Benefit from a product can be analysed and it helps in management of store and warehouse in profitable way.

(iv) The Rationalisation of Product Ranges etc.

(e)

Particulars	Standard Hours Produced		
	Product X	*Product Y*	*Total*
Output (units)	1,200	800	
Hours *per unit*	8	12	
Standard Hours	9,600	9,600	19,200

Actual Hours Worked: (100 workers $\times$ 8 hours $\times$ 22 days) 17,600

Budgeted Hours *per month*: (1,86,000 / 12) 15,500

Capacity Ratio $= \frac{\text{Actual Hours}}{\text{Budgeted Hours}} \times 100 = \frac{17,600}{15,500}$ 113.55%

Efficiency Ratio $= \frac{\text{Standard Hours Produced}}{\text{Actual Hours}} \times 100 = \frac{19,200}{17,600} \times 100$ 109.09%

Activity Ratio $= \frac{\text{Standard Hours Produced}}{\text{Budget Hours}} \times 100 = \frac{19,200}{15,500} \times 100$ 123.87%

Relationship: Activity Ratio

= Efficiency Ratio $\times$ Capacity Ratio

$= \frac{109.09 \times 113.55}{100}$ 123.87%

© The Institute of Chartered Accountants of India