FINAL CA – May 2018
ADVANCED MANAGEMENT ACCOUNTING

Test Code – F13
Branch: MULTIPLE Date: 17.12.2017

(50 Marks)

*Note: **All** questions are compulsory.*

Question 1 (3 marks each)

(i) **Computation of <u>Standard Cost of Production</u> of the shirts per dozen as well as in total for Lot Nos. 245, 246, 247**

Lot No.	Cost per dozen (₹)	Dozens	Total Standard Cost (₹)
245 (UK)	1,062#	1,700	18,05,400
246 (US)	955.20*	1,200	11,46,240
247 (HK)	1,062#	1,000	10,62,000
			40,13,640

Lot No. 245/247

100% as regards to material cost	₹ 528.00
100% as regards to conversion cost	₹ 534.00
	₹1,062.00

* Lot No. 246

100% as regards to material cost	₹528.00
80% as regards to conversion cost	₹427.20
	₹955.20

(ii) **<u>Statement of Variation</u> between standard quantity of material and actual quantity of material used for each lot as well as in total**

Lot Nos.	Output (In Dozens)	Std. Qty. Per Dozen (In Metre)	Total Std. Quantity (In Metres)	Total Actual Quantity (In Metres)	Variation (In Metres)
245 (UK)	1,700	24	40,800	40,440	360 (F)
246 (US)	1,200	24	28,800	28,825	25 (A)
247 (HK)	1,000	24	24,000	24,100	100 (A)
			93,600	93,365	235 (F)

<u>Statement of Variation</u> between standard labour hours and actual labour hours worked for each lot as well as in total

Lot Nos.	Output (In Dozens)	Std. Labour Hours Per Dozen	Total Std. Labour Hours	Total Actual Labour Hours	Variation (In Hours)
245 (UK)	1,700	3	5,100	5,130	30 (A)
246 (US)	1,200	3	2,880 (1,200 Doz x 3 Hrs. x 80%)	2,890	10 (A)
247 (HK)	1,000	3	3,000	2,980	20 (F)
			10,980	11,000	20 (A)

(iii) Calculation of Variances

Material Price Variance = Purchase Quantity x (Standard Price – Actual Price)

$$= 95{,}000 \text{ Metres } \times \left[₹\,22 - \frac{₹\,21{,}28{,}000}{95{,}000 \text{ Metres}}\right]$$

= ₹ 20,90,000 – ₹ 21,28,000

= ₹ 38,000(A)

Labour Rate Variance = Actual Hrs. × (Std. Rate *per hour* – Actual Rate *per hour*)

= 11,000 Hrs.× (₹ 98 – ₹ 100)

= ₹ 22,000 (A)

Variable Overhead Efficiency Variance

= Std. Variable Overhead Rate *per hour** x

(Std. Hours for Actual Output – Actual Hours)

= ₹ 48 x (10,980 Hrs. – 11,000 Hrs.)

= ₹ 960 (A)

**Standard Variable Overhead Rate per hour = 60% of ₹ 80 = ₹ 48*

Fixed Overhead Volume Variance

= Std. Fixed Overhead Rate *per hour* ** x

(Std. Hrs. for Actual Output – Budgeted Hours)

= ₹ 32 x (10,980 Hrs. – 12,000 Hrs.)

= ₹ 32,640 (A)

***Standard fixed overhead rate per hour = 40% of ₹ 80 = ₹ 32*

Question 2 (1 mark for each step)

The given problem is an unbalanced transportation problem. Introducing a dummy assignment to balance it, we get-

Manager	Assignment				Time Available (Hours)
	Transfer Pricing (₹)	Corporate Valuation (₹)	Statutory Audit (₹)	Dummy (₹)	
Peter	1,800	2,250	2,850	0	176
Johns	2,100	1,950	1,800	0	176
Albert	2,400	2,100	2,250	0	176
Time Required (Hours)	143	154	176	55	528

The objective here is to maximize total billing amount of the auditors. For achieving this objective, let us convert this maximization problem into a minimization problem by subtracting all the elements of the above payoff matrix from the highest payoff i.e. ₹2,850.

Manager	Assignment				Time Available (Hours)
	Transfer Pricing (₹)	Corporate Valuation (₹)	Statutory Audit (₹)	Dummy (₹)	
Peter	1,050	600	0	2,850	176
Johns	750	900	1,050	2,850	176
Albert	450	750	600	2,850	176
Time Required (Hours)	143	154	176	55	528

The given information can be tabulated in following transportation problem-

Manager	Assignment			Time Available (Hours)
	Transfer Pricing (₹)	Corporate Valuation (₹)	Statutory Audit (₹)	
Peter	1,800	2,250	2,850	176
Johns	2,100	1,950	1,800	176
Albert	2,400	2,100	2,250	176
Time Required (Hours)	143	154	176	

Now, let us apply VAM method to the above matrix for finding the initial feasible solution.

Manager	Assignment				Time Available (Hours)	
	Transfer Pricing (₹)	Corporate Valuation (₹)	Statutory Audit (₹)	Dummy (₹)		
Peter	1,050	600	0 176	2,850	176/0	600 - -
Johns	750	900 121	1,050	2,850 55	176/55/0	150 150 1,950
Albert	450 143	750 33	600	2,850	176/33/0	150 300 2,100
Time Required (Hours)	143/0	154/121/0	176/0	55/0	528	
	300	150	600	0		
	300	150	--	0		
	-	150	-	0		

The initial solution is given below. It can be seen that it is a degenerate solution since the number of allocation is 5. In order to apply optimality test, the total number of allocations should be 6 (m + n -1). To make the initial solution a non-degenerate, we introduce a very small quantity in the least cost independent cell which is cell of Albert, Statutory Audit.

Manager	Assignment			
	Transfer Pricing (₹)	Corporate Valuation (₹)	Statutory Audit (₹)	Dummy (₹)
Peter	1,050	600	0 [176]	2,850
Johns	750	900 [121]	1,050	2,850 [55]
Albert	450 [143]	750 [33]	600 [e]	2,850

Let us test the above solution for optimality-

(u_i+v_j) matrix for allocated cells

				u_i
		0		-600
	900		2,850	150
450	750	600		0
450	750	600	2,700	

v_j

(u_i+v_j) matrix for un allocated cells

				u_i
-150	150		2,100	-600
600		750		150
			2,700	0
450	750	600	2,700	

v_j

$\Delta_{ij} = C_{ij} - (u_i+v_j)$

1,200	450		750
150		300	
			150

Since, all allocations in $\Delta_{ij} = C_{ij} - (u_i+v_j)$are non negative, the allocation is optimal. The allocation of assignments to managers and their billing amount is given below:

Manager	Assignment	Billing Amount
Peter	Statutory Audit	₹5,01,600 (176 hrs. x ₹2,850)
Johns	Corporate Valuation	₹2,35,950 (121 hrs. x ₹1,950)
Albert	Transfer Pricing	₹3,43,200 (143 hrs. x ₹2,400)
Albert	Corporate Valuation	₹69,300 (33 hrs. x ₹2,100)
Total Billing		₹11,50,050

Question 3 (12 marks)

a.

(i) **Statement Showing "Profitability of Product A & B"**

Particulars	**Product A 15,000 units (₹)**	**Product B 15,000 units (₹)**
Contribution	6,00,000 (15,000 units × ₹40)	7,50,000 (15,000 units × ₹50)
Less: Setup Cost	32,000 (8 runs × ₹4,000)	90,000 (12 runs × ₹7,500)
Less: Distribution Cost	60,000 (500 boxes × ₹120)	24,000 (120 boxes × ₹200)
Less: Step Fixed Cost	32,000 (8 × ₹4,000)	75,000 (15 × ₹5,000)
Less: Un-analyzed Fixed Cost	32,000	32,000
Profit	4,44,000	5,29,000

(6 marks)

(ii) Break Even Point "A"

Un-analyzed Fixed Cost is ₹ 32,000

Minimum units for BEP $= \frac{₹\ 32,000}{₹\ 40}$

$= 800$ units

Setup Cost (fixed for 2,000 units); 1 Production Run; ₹ 4,000/-

Step Cost (fixed for 2,000 units); ₹ 4,000/-

Distribution Cost will have to be recovered on the basis of 30 units.

Let BEP (units) - 'K'

$$40 \times K = ₹\ 32,000 + ₹\ 8,000 + \left(\frac{K}{30 \text{ units}}\right)\text{Boxes} \times ₹120$$

$K = 1,111.11$ units

Refining, 1,111.11 will have 37.03 boxes or say 38 boxes. The last box will cost ₹ 120 which is *equivalent to* contribution from 3 units. Hence, **BEP** is **1,114 units**.

(6 marks)

Question 4 (4 marks for each budget)

(i) **Production Budget May'17 (tons)**

Particulars	**Super**	**Normal**
Expected Sales	200	80
Add: Budgeted Inventory (31st May)	20	15
Total Requirements	220	95

Less: Actual Inventory (1st May)	40	20
Required Production	180	75

(ii) **Materials Purchase Budget May'17 (tons)**

Particulars	**Grade A**	**Grade B**	**Grade C**	**Grade D**
Requirement for Production	126.00 (180 × 70%)	54.00 (180 × 30%)	30.00 (75 × 40%)	45.00 (75 × 60%)
Add: Budgeted Inventory (31st May)	50.00	56.00	250.90	40.50
Total Requirements	176.00	110.00	280.90	85.50
Less: Actual Inventory (1st May)	40.00	25.00	150.00	60.00
Quantity *to be purchased*	136.00	85.00	130.90	25.50
Add: Lose of Weight* (Seasoning)	24.00	15.00	23.10	4.50
Quantity *to be purchased* (Gross)	160.00	100.00	154.00	30.00

(*) Quantity *to be purchased* × 15% / 85%

Question 5 (2 marks for IBFS, 3 marks for rest of the part)

Working

The given problem is a balanced minimization transportation problem. The objective of the company is to minimize the cost. Let us find the initial feasible solution using Vogel's Approximation method (VAM).

	A	B	C	D	Supply	Diff.
X	25	50	20 [100]	25	100/0	5 5 5 5
Y	30 [150]	40	35 [50]	10 [50]	250/200/0	20 20 5 5
Z	20 [100]	10 [100]	25	35	200/100/0	10 5 5 -
Demand	250/150/0	100/0	150/50/0	50/0	550	
Diff.	5	30	5	15		
	5	-	5	15		
	5	-	5	-		
	5	-	15	-		

Since the number of allocations m+n-1 (= 6), let us test the above solution for *optimality*.

We have taken $u_3 = 0$ (as stated in question), and rest of the u_i's, v_j's and Δ_{ij}'s are calculated as below-

($u_i + v_j$) Matrix for Allocated / Unallocated Cells

					u_i
	15	5	20	-5	-5
	30	20	35	10	10
	20	10	25	0	0
v_j	20	10	25	0	

Now we calculate $\Delta_{ij} = C_{ij} - (u_i + v_j)$ for non basic/ unallocated cells which are given in the table below-

Δ_{ij} Matrix

10	45		30
	20		
		0	35

Answer to the Requirement

(i) Since, all cells values in $\Delta_{ij} = C_{ij} - (u_i + v_j)$ matrix are non- negative, hence the solution is *optimum*.

(ii) It may be noted that zero opportunity cost in cell (Z, C) indicates a case of *alternative optimum solution*.

Question 6

Workings

Statement Showing Variable Manufacturing Cost *per unit*

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

2 marks

Statement Showing Expected Profit

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

3 marks

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 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.

3 marks

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