CMA JUNE-2019 EXAMINATION
PROFESSIONAL LEVEL –III
SUBJECT: 302: ADVANCED COST ACCOUNTING

Model Solution

Solution to the question No. 1

(a)

The primary difference between the FIFO and average method of process costing lies in the treatment of the cost of the beginning work in process inventory. In the FIFO method, the cost of beginning work in process inventory is kept separate from the cost of production of the current period. In FIFO method, each department is regarded as a separate accounting unit. Thus the application of the FIFO method in practice is modified to the extent that subsequent departments usually combine all transferred costs into one amount, even though they could identify and separately account for the costs relating to the preceding department's beginning inventory and those relating to the preceding department's units started and completed during the period.

(b)

Quantity Schedule and Equivalent Units

Quantity Schedule

Units to be accounted for:	
Work in process, beginning.....	500
Started into production	10,000
Total units to be accounted for	10,500

Units accounted for as follows: Transferred out:

		Equivalent Units	
		Materials	Conversion
From the beginning inventory	500	200	150
Started and completed	9,100	9,100	9,100
Work in process, ending.....	900	540	810
Total units accounted for	10,500	9,840	10,060

Costs per Equivalent Unit

Cost to be accounted for:

	Total Cost	Materials	Conversion
Work in process, beginning.....	Tk.9,945		
Cost added during the month (a)	291,036	Tk.31,488	Tk.259,548
Total cost to be accounted for	Tk.300,981		
Equivalent units (above) (b)		9,840	10,060
Cost per EU, (a) ÷ (b)		Tk.3.200	Tk.25.800
Cost per whole unit.....	Tk.29.000		

Cost Reconciliation

	Total Cost	Equivalent Units	
		Materials	Conversion
Cost accounted for as follows:			
Transferred out:			
From the beginning inventory:			
Cost in the beginning inventory	Tk.9,945		
Cost to complete these units:			
Materials	640	200	
Conversion	3,870	150	
Total cost from beginning inventory.	14,455		
Units started and completed	263,900	9,100	9,100

Total cost transferred out.....	278,355	
Work in process, ending:		
Materials.....	1,728	540
Conversion	20,898	810
Total work in process, ending	22,626	
Total cost accounted for ..... .Tk.	300,981	

(c)

Tk.[40,000 + 10,000 + 30,000 + (20,000 x 10%)] = Tk.82,000

Solution to the question No. 2

(a)

The method used in calculating unit costs produces the same unit cost for all grades of lumber sold. The owner is then led to believe that the same costs in the same ratio are attributable to the low as well as the high grade lumber. It must also be recognized that because of the inherent nature of the materials and the milling process, it is not possible to eliminate low grade lumber. Thus, the profitability of the operation can be viewed best by considering the aggregate of revenue and costs of both the high and low grades of lumber, coupled with controls to assure that all practical steps are taken to obtain high quality logs and to mill them properly. A higher price for logs may be justified in terms of a greater amount of high grade lumber.

(b) (i)

Total joint cost to be allocated = Tk.(250,000+70,000) = Tk.320,000

Physical Units Method:

	Gallons Produced	Percent of Gallons Produced		Joint Cost	Joint Cost Allocation
Anarol	2,000	2,000/10,000 = 0.20	×	Tk.320,000	Tk.64,000
Estyl	3,000	3,000/10,000 = 0.30	×	Tk.320,000	Tk.96,000
Betryl	5,000	5,000/10,000 = 0.50	×	Tk.320,000	Tk.160,000
Total	10,000				Tk.320,000

Sales-value-at-split-off Method:

	Gallons Produced	Price at Split-off	Revenue at Split-off	Percent of Revenue		Joint Cost	Joint Cost Allocation
Anarol	2,000	Tk.55	Tk.110,00	0.28947	×	Tk.320,000	Tk.92,630
Estyl	3,000	Tk.40	Tk.120,000	0.31579	×	Tk.320,000	Tk.101,053
Betryl	5,000	Tk.30	Tk.150,000	0.39474	×	Tk.320,000	Tk.126,317
Total			Tk.380,000				Tk.320,000

Net Realizable Value Method:

Step-1: Determine hypothetical sales revenue

	Eventual Price	-	Further processing cost per Gallon	=	Hypothetical Sales Price		Gallons	Hypothetical Revenue
Anarol	Tk.55		-		Tk.55	×	2,000	Tk.110,000
Estyl	Tk.40		-		Tk.40	×	3,000	Tk.120,000
Betryl	Tk.60		Tk.5		Tk.55	×	5,000	Tk.275,000
Total								Tk.505,000

Step-2: Allocate Joint cost as a proportion of hypothetical sales revenue

	Hypothetical Sales Revenue	Percent	×	Joint Cost	Joint Cost Allocation
Anarol	Tk.110,000	0.21782		Tk.320,000	Tk.69,702
Estyl	Tk.120,000	0.23762		Tk.320,000	Tk.76,039*
Betryl	Tk.275,000	0.54456*		Tk.320,000	Tk.174,259
	Tk.505,000				Tk.320,000

* Rounded up

Constant Gross Percentage Method:

	Amount (in Tk.)	Percentage
Revenue [(55×2,000)+(40×3,000)+(60×5,000)]	530,000	100.00%
Costs [Tk.320,000+(Tk.5×5,000)]	345,000	65.09%
Gross Margin	185,000	34.91%

	Anarol (Tk.)	Estyl (Tk.)	Betryl (Tk.)
Eventual market value	110,000	120,000	300,000
Less: Gross Margin at 34.91%	38,401	41,892	104,730
Cost of Goods Sold	71,599	78,108	195,270
Less: Separable costs	-	-	(25,000)
Joint costs allocation	71,599	78,108	170,270

Note: Tk.71,599+78,108+170,270=Tk.319,977; there is a rounding error of Tk.23

(b)(ii)

Joint costs are irrelevant to this decision. Instead, further processing costs and the opportunity cost of lost contribution margin on the estyl diverted to anarol purification must be considered.

Added revenues Tk.[(112 – 55)× 2,000]	Tk.114,000
Less: Further processing of anarol mixture	(35,000)
Less: Lost contribution margin on estyl Tk.(1,500×40)	(60,000)
Increased operating income	Tk.19,000

Yes, ABC should further process the estyl into the anarol anesthetic.

Solution to the question No. 3

(a)

Management has limited ability to control fixed overhead costs in the short run because these costs are incurred to provide the capacity to produce. Fixed costs can be controllable to a limited extent at the point of commitment; therefore, the FOH spending variance can be considered, in part, controllable.

On the other hand, the volume variance arises solely because management has selected a specific level of activity on which to calculate the FOH application rate. If actual activity differs at all from this selected base, a volume variance will occur. Production levels are controllable to a very limited extent in the production area. Production is more often related to ability to sell and demand; thus, these levels are not controllable by the production manager.

(b)

(i) Application rate = Tk.6/DLH
Total Overhead Cost = Tk.50,000 + Tk.1/DLH
Standard Quantity (A) 5,000 x 2 = 10,000
(B) 5,000 x 4 = 20,000
Standard Hours 5,000 x 2 = 10,000

(ii)
a. 1. (Tk.7.20 - Tk.7.00) x 12,000 = Tk.2,400 U
2. (Tk.3.90 - Tk.4.00) x 20,000 = 2,000 F
Tk. 400 U

b. 1. (10,500 - 10,000) x Tk.7.00 = Tk.3,500 U
2. (19,800 - 20,000) x Tk.4.00 = 800 F
Tk.2,700 U

c. Tk.79,380 - (9,800 x Tk.8) = Tk.980 U
d. (9,800 - 10,000) x Tk.8 = Tk.1600 F
e. (10,000 - 10,000) x Tk.5 = 0
f. (9,800 - 10,000) x Tk.1 = Tk.200 F
g. Fixed Spending variance Tk.48,100 - Tk.50,000 = Tk.1,900 F
Variable Spending variance Tk.21,000 - (9,800 x Tk.1) = Tk.11,200 U

Solution to the question No. 4

(a) (i)

Ontario Industries Quality Cost Statement For the period ended ……			
Particulars	**Olivia (in Tk.)**	**Solta (in Tk.)**	**Total (in Tk.)**
Prevention Costs			
Design (6,000×75; 1,000×75)	450,000	75,000	525,000
Appraisal Costs			
Testing and Inspection (10,000×1×40; 5,000×0.5×40)	400,000	100,000	500,000
Internal Failure Costs			
Rework (10,000×5%×500; 5,000×10%×400)	250,000	200,000	450,000
External Failure Costs			
Repair at customer site (10,000×4%×600; 5,000×8%×450)	240,000	180,000	420,000
Lost sales from poor quality-CM lost [0; 300×(1500-800)]	0	210,000	210,000

(a) (ii)

Ontario Industries Quality Cost Comparison For the period ended ……			
Particulars	**Olivia (in Tk. and Percentage)**	**Solta (in Tk. and percentage)**	**Total (in Tk. and percentage)**
Sales Revenue (10,000×2,000;5,000×1,500)	200,000,000 (100%)	7,500,000 (100%)	207,500,000 (100%)
Prevention Costs	450,000 (0.225%)	75,000 (1%)	525,000 (0.253%)
Appraisal Costs	400,000 (0.2%)	100,000 (1.33%)	500,000 (0.241%)
Internal Failure Costs	250,000 (0.125%)	200,000 (2.667%)	450,000 (0.217%
External Failure Costs	240,000 (0.12%)	390,000 (5.2%)	630,000 (0.304%)

Comment: COQ percentage provides a relative measure of performance for both Olivia and Solta. For Solta, Ontario Industries incur higher amount of quality cost in each category. Particularly, the external failure costs are quite higher for Solta due to the contribution margin lost in lost sales. Ontario Industries may consider investing more in preventive mechanisms (which would cause an increase in prevention costs) to minimize both internal and external failure costs.

(b) (i)

Here, mark up (40%) is given. Since, we are to calculate target cost using the given selling price, a computation of margin will make the process simple. Therefore, margin of the product = (40/140×100) = 28.57%.

Therefore, Target cost = Target Selling Price – Target Profit = Tk.(28 - 28×28.57%) = Tk.20

b) (ii)

Original Life Cycle Cost

Life Cycle Stages	Total Costs (Tk.) (For 50,000 Units)	Unit Cost (Tk.)
Design and Development	200,000	4
Manufacturing	900,000	18
End of Life	100,000	2
Total	1,200,000	24

Since per unit life cycle cost (Tk.24) is greater than the per unit target cost (Tk.20), the product is not worth making at this cost.

(b) (iii)
With an additional Tk.50,000 design cost, manufacturing cost is reduced and manufacturing cost per unit should be at a level so that life cycle cost per unit is not greater than target cost.
Let, manufacturing cost per unit = x
Therefore, $20 = 250{,}000/50{,}000 + x + 100{,}000/50{,}000$
Or, $20 = 5 + x + 2$
$x = 13$
Therefore, the maximum manufacturing cost per unit should be Tk.13 if the company is to earn its required mark-up Tk.8.

Solution to the question No. 5
(a)
Statement of Cost per Running km

Particulars	Vehicle Ashok (Tk.)	Vehicle Tata (Tk.)
Step A: Fixed Costs per annum -		
(i) Road license	1,000	1,000
(ii) Garage rent	700	400
(iii) Insurance	800	600
(iv) Supervision salary	2,000	2,000
(v) Interest @ 5% p.a.	5,000	4,000
(vi) Total fixed costs per annum	9,500	8,000
(vii) Kilometers run per annum	10,000	6,000
Fixed cost per km (vi ÷ vii)	0.95	1.33
Step B: Running cost per km -		
(i) Driver's wages	0.30	0.30
(ii) Fuel cost per km	0.30	0.40
(iii) Repairs and maintenance	2.00	2.50
(iv) Tire allocation	1.00	0.80
(v) Depreciation (cost ÷ estimated life)	1.00	1.00
Total running cost per km	4.60	3.00
Step C: (A + B) Total cost per running km	5.55	4.33

(b)
(i)

Entry	Transactions	Debit(Tk.)	Credit(Tk.)
A1	Materials and In-Process Inventory Control	880,000	
	Accounts Payable Control		880,000
	(direct materials purchased)		
A2	Conversion Costs Control	422,000	
	Various accounts (such as Wages Payable Control)		422,000
	(conversion costs incurred)		
C1	Finished Goods Control	1,250,000	
	Materials and In-Process Inventory Control		850,000
	Conversion Costs Allocated		400,000
	(standard cost of finished goods completed)		
D1	Cost of Goods Sold	1,190,000	
	Finished Goods Control		1,190,000
	(standard costs of finished goods sold)		

(ii) Under an ideal JIT production system, if the manufacturing lead time per unit is very short, there would be zero inventories at the end of each day. Entry (C1) would be for Tk. 1,190,000 finished goods production [to match finished goods sold in entry (D1)], not Tk.

1,250,000. If the marketing department could only sell goods costing Tk. 1,190,000, the JIT production system would call for direct materials purchases and conversion costs of lower than Tk. 880,000 and Tk. 422,000, respectively, in entries (A1) and (A2).

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