

THE INSTITUTE OF COST AND MANAGEMENT ACCOUNTANTS OF BANGLADESH  
CMA JUNE, 2017 EXAMINATION  
PROFESSIONAL LEVEL-I  
SUBJECT: 102. COST ACCOUNTING

**Model Solution**

**Solution to the Q. No. 01**

01. Computation of manufacturing cost per unit (in millions)

<u>Particulars</u>	<u>Supreme</u>	<u>Deluxe</u>	<u>Regular</u>
Direct materials costs	Tk. 84.00	Tk. 54.00	Tk. 62.00
Direct manufacturing labor costs	14.00	28.00	8.00
Indirect manufacturing costs	<u>42.00</u>	<u>84.00</u>	<u>24.00</u>
Total manufacturing costs	<u>140.00</u>	<u>166.00</u>	<u>94.00</u>
Units produced (millions)	80	120	100
Cost per unit (Total manufacturing costs ÷ Units produced)	Tk.1.7500	Tk. 1.3833	Tk. 0.9400

02. The unit costs in requirement 1 includes Tk. 20 million of indirect manufacturing costs that are fixed irrespective of changes in the volume of output per month, while the remaining variable indirect manufacturing costs change with the production volume. Given the unit volume changes for August, the use of unit costs from the past month at a different unit volume level (both in aggregate and at the individual product level) will yield incorrect estimates of total costs in August.

**Solution to the question # 02**

(1)

Equivalent Units of Production (EUP)

<u>PRODUCTION DATA</u>	<u>WHOLE UNITS</u>	<u>MATERIAL</u>	<u>CONVERSION</u>
Beginning inventory (100%; 60%)	2,000		
+ Gallons started	<u>15,000</u>		
= Gallons to account for	<u>17,000</u>		
Beginning inventory completed (0%; 40%)	2,000	0	800
+ Gallons started and completed	<u>11,200</u>	11,200	11,200
= Total gallons completed	13,200		
+ Ending inventory (100%; 75%)	2,500	2,500	1,875
+ Normal spoilage (100%; 50%)	<u>1,300</u>	1,300	650
= Gallons accounted for	<u>17,000</u>	<u>15,000</u>	<u>14,525</u>

(2)

<u>COST DATA</u>	<u>TOTAL</u>	<u>MATERIAL</u>	<u>CONVERSION</u>
Beginning inventory costs	Tk. 16,620.00		
Current costs	<u>122,357.75</u>		
Total costs	<u>Tk. 138,978.75</u>		
Divided by EUP	15,000	14,525	
Cost per FIFO EUP	<u>Tk.8.20</u>	<u>Tk6.85</u>	<u>Tk1.35</u>

(3) Cost of gallon transferred

Transferred:		
From beginning inventory	Tk 16,620.00	
Cost to complete: Conversion (800×Tk 1.35)	<u>1,080.00</u>	
Total cost of beginning inventory	Tk.17,700.00	
Started and completed (11,200×Tk 8.20)	<u>91,840.00</u>	
Cost prior to peroration of spoilage	Tk 109,540.00	
Normal spoilage*	<u>8,056.65</u>	
Total cost of gallons transferred		Tk 117,596.65

(4) Cost of march,2017 ending inventory

Ending inventory:		
Material (2500×Tk 6.85)	Tk. 17,125.00	
Conversion (1,875×Tk 1.35)	<u>2,531.25</u>	
Cost prior to peroration of spoilage	Tk 19,656.25	
Normal spoilage*	<u>1,725.85</u>	
Total cost of ending inventory		<u>21,383.10</u>
Total costs accounted for		<u>Tk. 138,978.75</u>

\* Proration of normal spoilage is done as follows:

	MATERIAL		CONVERSION	
	EUP	%	EUP	%
Gallons Started and completed **	11,200	82	11,200	86
Ending work in process	<u>2,500</u>	<u>18</u>	<u>1,875</u>	<u>14</u>
	<u>13,700</u>	<u>100</u>	<u>13,075</u>	<u>100</u>

Given the above relative EUP perchantages, proration of spoilage costs is

Material (1,300×Tk 6.85)	Tk. 8,905.00
Conversion ( 650×Tk 1.35)	<u>877.50</u>
Cost of normal spoilage to be prorated	<u>Tk. 9,782.50</u>

	MATERIAL	COVERSION	TOTAL
Gallons Started and completed:			
.82×Tk8,905	Tk. 7,302.00		
.86×Tk. 877.50		Tk. 754.65	Tk. 8,056.65
Ending work in process:			
.18×Tk8,905	Tk. 1,603.00		
.14×Tk. 877.50		<u>122.85</u>	<u>1,725.85</u>
Total allocations	<u>Tk.8,905.00</u>	<u>Tk. 877.50</u>	<u>Tk. 9,782.50</u>

\*\* The gallons in begining VIP were not included in this calculation because begining WIP was 100% complete as to material and 60% complete as to conversion. Thus, this inventory was beyond the inspection point (50%) and no spoilage cost should be assigned to it.

**Solution to the question # 03:**

**Workings:**

Distribution of overhead of Service department 1 ( repair ) :

$$\text{to Department 2 : } \frac{1,700}{1,700 + 2,000 + 3,100} = \frac{1,700}{6,800} = .25$$

$$\text{to Department 10 : } \frac{2,000}{6,800} = .294117647 = .29$$

$$\text{to Department 11 : } \frac{3,100}{6,800} = .455882352 = .46$$

Distribution of overhead of Service department 2 ( Cafeteria ) :

$$\text{to Department 1 : } \frac{3,375}{3,375 + 2,300 + 1,825} = \frac{3,375}{7,500} = .45$$

$$\text{to Department 10: } \frac{2,300}{7,500} = .3067 = .31$$

$$\text{to Department 11 : } \frac{1,825}{7,500} = .2433 = .24$$

Let A = Department 1 and  
B = Department 2

since the services between the service departments are reciprocal, we can set the following equations:

$$A = \text{Tk. } 14,000 + .45B$$

$$B = \text{Tk. } 11,000 + .25 A$$

Substitute

$$A = \text{Tk. } 14,000 + .45(\text{Tk. } 11,000 + .25A)$$

$$\text{or } A = \text{Tk. } 14,000 + \text{Tk. } 4,950 + .1125 A$$

$$\text{or } .8875 A = \text{Tk. } 18,950$$

$$\text{So, } A = \text{Tk. } 18,950 / .8875 = 21,352.11268 = 21,352$$

Substitute

$$B = \text{Tk. } 11,000 + .25 A$$

$$\text{or } B = \text{Tk. } 11,000 + .25 (\text{Tk. } 21,352)$$

$$\text{or } B = \text{Tk. } 11,000 + 5,338$$

$$\text{So, } B = \text{Tk. } 16,338$$

Statement showing the allocation of total cost of the service departments to the producing departments and computation of factory overhead application rates

	Service departments		Producing departments	
	Department 1	Department 2	Department 10	Department 11
Total Overhead cost	Tk. 14,000	Tk. 11,000	Tk. 52,500	Tk. 48,000
Apportionment of overhead of Department 1 to Department 2 , Department 10 and Department 11 ( 25: 29:46 )				
Apportionment of overhead of	(Tk. 21,352)	Tk. 5,338	Tk.6,192	Tk.9,822

Department 2 to Department 1 , Department 10 and Department 11 ( 45: 31 :24 )	Tk. 7,352	(Tk. 16,338)	Tk. 5,065	Tk. 3,921
Total Overhead cost (3)	-----	-----	Tk. 63,757	Tk. 61,743
Estimated Direct labor Hours (4)			1,500	1,250
Factory Overhead Application Rate(5) = (3)/(4)			Tk. 42.50	Tk. 49.39

#### **Solution to the Q no. 4**

##### **Sunflower Company**

- i)  $EOQ = \sqrt{(2 \times 24,000 \times 1.20) / (10.10\%)} = 240$  units
- ii) Number of orders = Annual requirement / EOQ =  $24,000 / 240 = 1000$  orders
- iii) The cost of ordering and of carrying blades for the year:  
 $\frac{1}{2} EOQ \times \text{Carrying cost per unit} + (\text{Annual requirement} / EOQ) \times \text{ordering cost}$   
 $= 240 / 2 \times (10 \times 10\%) + 24,000 / 240 (1.20)$   
 $= \text{Tk.} 240$
- iv) The next order should be placed immediately. The conclusion is arrives at as follows:
  - a) Number of days' supply in each order: Days in year / Order per year =  $360 / 100 = 3.6$  days
  - b) Number of days' supply left in Inventory: Units in Inventory / EOQ x Days supply in each order =  $200 / 240 \times 3.6 = 3$  days' supply left
  - c) Days before next order should be placed: (Days supply left – Delivery lead time) =  $3 \text{ days} - 0 \text{ days} = 3 \text{ days}$
- v) Some of the difficulties most firms would have in attempting to apply the EOQ formula to Inventory problems are:
  - a) Inventory is not always used at a constant rate. The constant usage assumption is implicit in the EOQ formula
  - b) The EOQ formula requires estimates of i) annual requirements ii) ordering cost iii) purchase price per unit and iv) cost of carrying inventories. These estimates may be extremely difficult to obtain with accuracy.

#### **Solution to the Q. No. 05**

01. Total distribution costs (given), Tk. 42,60,000

$$\text{Distribution cost per case under existing system} = \frac{\text{Total distribution costs}}{\text{Total cases of premium and regular wine shipped}}$$

$$= \text{Tk. } 42,60,000 / 4,00,000 = \text{Tk. } 10.65 \text{ per case}$$

	<u>Regular Per Case</u>		<u>Premium Per Case</u>	
	<u>Total (1)</u>	<u>(2) (1) ÷ 2,40,000</u>	<u>Total (3)</u>	<u>(4) 3 ÷ 1,60,000</u>
<b>Distribution costs</b>				
Tk. 10.65 × 2,40,000 and	Tk. 25,56,000	Tk. 10.65	Tk. 17,04,000	Tk. 10.65
Tk. 10.65 × 1,60,000				

02.

	<u>Regular Per Case</u>		<u>Premium Per Case</u>	
	<u>Total (1)</u>	<u>(2) (1) ÷ 2,40,000</u>	<u>Total (3)</u>	<u>(4) 3 ÷ 1,60,000</u>
<b>Particulars</b>				
<b>Delivery costs</b>				
Tk. 8 × 2,40,000 cases	Tk. 19,20,000	Tk. 8.00	Tk. 12,80,000	Tk. 8.00

Tk. 8×1,60,000 cases				
<b>Ordering costs</b>				
Tk. 600×10 orders/year × 10 distributors	60,000	0.25	3,60,000	2.25
Tk. 600 ×20 orders/year × 30 distributors				
<b>Promotion costs</b>				
Tk. 16,000×10 distributors	1,60,000	0.67	4,80,000	3.00
Tk. 16,000×30 distributors	<u>          </u>	<u>          </u>	<u>      </u>	<u>          </u>
Total costs	21,40,000	8.92	21,20,000	13.25

03.

The existing costing system uses cases shipped as the only cost allocation base for distribution costs. As a result, the distribution cost per case is the same for premium and regular wines (Tk. 10.65). In fact, premium wine uses distribution resources more intensively than regular wine: (a) Shaw Wallace spends Tk. 16,000 on promotional costs at each distributor independent of cases sold. Premium wine distributors sell fewer cases a year than regular wine distributors. As a result the promotional cost per case of wine sold is higher for premium wine than for regular wine. (b) Shaw Wallace's cost per order is Tk. 600 regardless of the number of cases sold in each order. Because premium wine distributors order fewer cases per order, the ordering costs per case are higher for premium wines than for regular wines.

The existing costing system under costs distribution costs per case for premium wine and over costs distribution costs per case for regular wine.