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SUGGESTED SOLUTION

IPCC NOVEMBER 2016 EXAM

COSTING

Test Code - I N J 1 0 4 6

BRANCH - (MUMBAI) (Date :05.06.2016)

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Answer-1 :

(i) Total equivalent single room suites

Nature of suite	Occupancy (Room-days)	Equivalent single room suites (Room-days)
Single room suites	36,000 (100 rooms x 360 daysx 100%)	36,000 (36,000 x 1)
Double rooms suites	14,400 (50 rooms x 360 daysx 80%)	36,000 (14,400 x 2.5)
Triple rooms suites	6,480 (30 rooms x 360 daysx 60%)	32,400 (6,480 x 5)
		1,04,400

(2 Marks)

(ii) Statement of total cost:

	(Rs.)
Staff salaries	14,25,000
Room attendant's wages	4,50,000
Lighting, heating and power	2,15,000
Repairs and renovation	1,23,500
Laundry charges	80,500
Interior decoration	74,000
Sundries	1,53,000
	25,21,000
Building rent {(Rs.10,000x 12 months) + 5% on total taking}	1,20,000+ 5% on totaltakings
Total cost	26,41,000 + 5% on totaltakings

(4 Marks)

Profit is 20% of total takings

∴ Total takings = Rs.26,41,000 + 25% (5% +20%) of total takings

Let x be rent for single room suite

Then 1,04,400 x = 26,41,000 + 0.25 × 1,04,400 x

Or, 1,04,400 x = 26,41,000 + 26,100 x

Or, 78,300 x = 26,41,000

Or, x = 33.73

(1 Mark)

(iii) Rent to be charged for single room suite = Rs. 33.73

Rent for double rooms suites Rs. 33.73 x 2.5 = Rs. 84.325

Rent for triple rooms suites Rs. 33.73 x 5 = Rs. 168.65

(1 Mark)

Answer-2 :

Arnav Construction Ltd. Contract A/c
(November 1, 2012 to Oct. 31, 2013)

Particulars	Amount (Rs.)	Amount (Rs.)	Particulars	Amount (Rs.)	Amount (Rs.)
To Materials issued		6,75,000	By Plant returned to store on 31/03/13 at cost	75,000	
To Labour paid	4,50,000		Less: Depreciation for 5 months @ 33.33%	(10,417)	64,583
Less: Prepaid wages	(25,000)	4,25,000	By W-I-P:		
To Plant purchased &issued		3,75,000	Work certified	20,00,000	
To Expenses paid	2,00,000		Work un-certified	75,000	20,75,000

Add: Outstanding exp.	50,000	2,50,000	By Plant at site	3,00,000	
			(Rs. 3,75,000 – Rs. 75,000)		
			Less: Depreciation @33.33%	1,00,000	2,00,000
To Notional profit c/d		6,89,583	By Material at site		75,000
		24,14,583			**24,14,583**
To Costing P & L A/c (Working Note-1)		1,48,580	By Notional Profit b/d	6,89,583	
To Work-in –progress (Profit transferred toreserve)		5,41,003			
		6,89,583			**6,89,583**

(4 Marks)

Arnav Construction Ltd. Contract A/c (November 1, 2012 to March 31, 2014)
(For computing estimated profit)

Particulars	**Amount (Rs.)**	**Particulars**	**Amount (Rs.)**
To Material issued (Rs. 6,75,000 + Rs. 12,37,500)	19,12,500	By Material at site	37,500
		By Plant returned to stores on31/03/13	64,583
To Labour (Paid & Outstanding) (Rs.4,25,000 + Rs.5,87,500+Rs.2,500)	10,15,000		
To Plant purchased	3,75,000	By Plant returned to stores on31/03/14	
To Expenses(2,50,000 + 3,25,000)	5,75,000	WDV on 31/10/2013 2,00,000	
		Less: Depreciation for 5 months @ 33.33% (27,778)	1,72,222
To Estimated profit	3,34,305	By Contractee A/c	39,37,500
	42,11,805		**42,11,805**

(2 Marks)

Working Note:

1. Profit to be taken to Costing Profit & Loss A/c on prudent basis:

$$\text{Estimated profit} \times \frac{\text{Cash received}}{\text{Work certified}} \times \frac{\text{Work certified}}{\text{Total Contract}}$$

$$\text{Rs.3,34,305} \times \frac{\text{Rs.17,50,000}}{\text{Rs.20,00,000}} \times \frac{\text{Rs.20,00,000}}{\text{Rs.39,37,500}} = \text{Rs.1,48,580}$$

(2 Marks)

Answer-3 : **(6 Marks)**

Annual requirement of raw material in kg. (A) $= \frac{1,00,000 \text{ units}}{2.5 \text{ units per kg.}} = 40,000 \text{ kg.}$

Ordering Cost (Handling & freight cost) (O) = Rs. 360 + Rs. 390 = Rs. 750

Carrying cost per unit per annum i.e. inventory carrying cost + working capital cost (c × i)
= (Rs. 0.5 × 12 months) + Rs. 9
= Rs.15 per kg.

(i) E.O.Q. $= \frac{\sqrt{2 \times 40,000 \text{ kgs.} \times \text{Rs.}750}}{\text{Rs.}15} = 2,000 \text{ kg.}$

(1 Mark)

(ii) Frequency of orders for procurement:

Annual consumption (A) = 40,000 kg.

Quantity per order (EOQ) = 2,000 kg.

No. of orders per annum $\left(\frac{A}{EOQ}\right)$ $= \frac{40,000\text{kg.}}{2,000\text{kg.}} = 20 \text{ times}$

Frequency of placing orders (in months) $= \frac{12 \text{ months}}{20 \text{ orders}} = 0.6 \text{ months}$

Or, (in days) $= \frac{365 \text{ days}}{20 \text{ orders}} = 18 \text{ days (approx.)}$

(2 Marks)

(iii) Percentage of discount in the price of raw materials to be negotiated:

	Quarterly order	**EOQ**
Size of the order	10,000 kg.	2,000 kg.
No. of orders	4	20
Cost of placing orders	Rs.3,000 (4 order × Rs. 750)	Rs.15,000 (20 orders × Rs. 750)
Inventory carrying cost	Rs.75,000 (10,000 kg. × ½ × Rs.15)	Rs.15,000 (2,000 kg. × ½ × Rs. 15)
Total Cost	**Rs.78,000**	**Rs.30,000**

When order is placed on quarterly basis the ordering cost and carrying cost increased byRs. 48,000 (Rs.78,000 - Rs.30,000). This increase in total cost should be compensated byreduction in purchase price per kg. to make quarterly order placement rational.

Reduction per kg. in the purchase price of raw material $= \frac{\text{Increase in total cost}}{\text{Annual requirement}}$

$= \frac{\text{Rs.48,000}}{\text{40,000 units}} = \text{Rs.1.2 per kg.}$

(3 Mark)

Discount in the price of raw material to be negotiated $= \frac{\text{Rs.1.20}}{Rs.60} = 2\%$

Answer-4 (a) :

Increase in hourly rate of wages under Rowan Plan is Rs. 10 i.e.(Rs. 60 – Rs. 50)

This is Equal to $\frac{\text{Time Saved}}{\text{Time Allowed}}$ x Rate per hour (Please refer Working Note)

Or, $\frac{\text{Time Saved}}{\text{Time Allowed}}$ x Rs.50 – Rs.10

Or, $\frac{\text{Time Saved}}{\text{90 hours}}$ x Rs.50 = Rs.10

Therefore, Time Saved = 18 hours and Time Taken is 72 hours i.e. (90 hours – 18 hours)

Effective Hourly Rate under Halsey System:

Time saved = 18 hours

Bonus @ 40% = 18 hours × 40% × Rs. 50 = Rs. 360

Total Wages = (Rs.50 × 72 hours + Rs.360) = Rs. 3,960

Effective Hourly Rate = Rs. 3,960 ÷ 72 hours = Rs. 55

(3 Marks)

Working Note:

$$\text{Effective hourly rate} = \frac{(\text{Time Taken x Rate per hour}) + \frac{\text{Time Taken}}{\text{Time Allowed}} \text{ x Time Saved x Rate per hour}}{\text{Time Taken}}$$

$$\text{Or, Rs.60} = \frac{\text{Time Taken x Rate per hour}}{\text{Time Taken}} + \frac{\frac{\text{Time Taken}}{\text{Time Allowed}} \text{ x Time Saved x Rate per hour}}{\text{Time Taken}}$$

Or, Rs.60 -

$$\frac{\text{Time Taken x Rate per hour}}{\text{Time Taken}} = \frac{\text{Time Taken}}{\text{Time Allowed}} \text{ x Time Saved x Rate per hour x } \frac{1}{\text{Time Taken}}$$

Or, $Rs.60 - Rs.50 = \frac{\text{Time Saved}}{\text{Time Allowed}} \times Rs.50$ **(1 Mark)**

Answer-4 (b) :

Calculation of earnings for workers under different incentive plans:

(i) Halsey's Premium Plan:

	Worker – A	**Worker – B**
Actual time taken	40 hours	40 hours
Standard time for actual Production	44 hours $\left(\frac{176 \text{ Pcs} \times 15 \text{ Min.}}{60 \text{ Min.}}\right)$	35 hours $\left(\frac{140 \text{ Pcs} \times 15 \text{ Min.}}{60 \text{ Min.}}\right)$
Minimum Wages	Rs. 1,600 (40 hours x Rs. 40)	Rs. 1,600 (40 hours x Rs.40)
Bonus	Rs. 80 {50% (44-40) x Rs.40}	No bonus
Earning	Rs. 1,680	Rs. 1,600
Rowan's Premium Plan:		
Minimum Wages (as above)	Rs. 1,600	Rs. 1,600
Bonus	= Rs. 145.45 $\left(\frac{4 \text{ hours}}{44 \text{ hours}} \times 40 \text{ hours} \times Rs.40\right)$	
Earning	Rs. 1,745.45	Rs. 1,600

(2 Marks)

(ii) Taylor's differential Piece rate

Efficiency	110% $\left(\frac{176 \text{ pcs.}}{160 \text{ pcs.}} \times 100\right)$	87.5% $\left(\frac{140 \text{ Pcs.}}{160 \text{ Pcs.}} \times 100\right)$
Earning	Rs.2,112 (Rs.10 x 120% x 176 pcs.)	Rs.1,120 (Rs.10 x 80% x 140pcs.)
Emerson's efficiency Plan		
Time Wages	1,600 (Rs. 40 x 40 hours)	1,600 (Rs.40 x 40 hours)
Bonus	480 (20+10)% of (Rs.40x40 hrs)	320 (20% of 1,600)
Earning	Rs. 2,080	Rs. 1,920

(2 Marks)

Answer-5 :

(a) Preparation of Production Budget (in nos.)

	October	**November**	**December**	**January**
Demand for the month (Nos.)	4,000	3,500	4,500	6,000
Add: 20% of next month's demand	700	900	1,200	1,300
Less: Opening Stock	(950)	(700)	(900)	(1,200)
Vehicles to be produced	3,750	3,700	4,800	6,100

(2 Marks)

(b) Preparation of Purchase budget for Part-X

	October	**November**	**December**
Production for the month (Nos.)	3,750	3,700	4,800
Add: 40% of next month'sproduction	1,480 (40% of 3,700)	1,920 (40% of 4,800)	2,440 (40% of 6,100)

	5,230	5,620	7,240
No. of units required for production	20,920	22,480	28,960
	(5,230 × 4 units)	(5,620 × 4 units)	(7,240 × 4 units)
Less: Opening Stock	(4,800)	(5,920)	(7,680)
		(1,480 × 4 units)	(1,920 × 4 units)
No. of units to be purchased	16,120	16,560	21,280

(4 Marks)

(c) Budgeted Gross Profit for the Quarter October to December

	October	**November**	**December**	**Total**
Sales in nos.	4,000	3,500	4,500	12,000
Net Selling Price per unit*	Rs. 3,46,150	Rs. 3,46,150	Rs. 3,46,150	
Sales Revenue (Rs. in lakh)	13,846	12,115.25	15,576.75	41,538
Less: Cost of Sales (Rs.in lakh)				
(Sales unit × Cost per unit)	11,428	9,999.50	12,856.50	34,284
Gross Profit (Rs. in lakh)	**2,418**	**2,115.75**	**2,720.25**	**7,254**

(4 Marks)

* Net Selling price unit = Rs. 3,95,600 – 12.5% commission on Rs. 3,95,600 = Rs. 3,46,150

Answer-6 :

Budgeted Cost Sheet for the year 2014

Particulars			**(Amount Rs.)**
Direct material consumed		12,00,000	
Add: 44% due to increased output		5,28,000	
		17,28,000	
Less: 6% for decline in price		1,03,680	16,24,320
Direct wages (manufacturing)		7,00,000	
Add: 60% increase		4,20,000	11,20,000
Prime cost			27,44,320
Manufactured Overhead:			
Fixed	3,60,000		
Add: 20% increase	72,000	4,32,000	
Variable	2,50,000		
Add: 60% increase	1,50,000	4,00,000	8,32,000
Cost of production			35,76,320
Add: 1/9 of Cost or 10% on selling price			3,97,369
Selling price			**39,73,689**

Production will increase by 60% but efficiency will decline by 10%.
160 – 10% of 160 = 144%
So increase by 44%.

Note: If we consider that variable overhead once will change because of increase in production(From Rs. 2,50,000 to Rs. 4,00,000) then with efficiency declining by 10% it shall be Rs. 3,60,000 andthen again as mentioned in point No. (iii) of this question it will increase by 60% then variableoverhead shall be Rs.3,60,000 „e 160% = Rs.5,76,000. Hence, total costs shall be Rs.37,52,320 andprofit shall be 1/9th of Rs.37,52,320 = Rs.4,16,924. Thus, selling price shall be Rs.41,69,244.

Answer-7 :

Working notes

1. Annual production (20,000 units per quarter × 4 quarters) = 80,000 units
2. Raw material required for 80,000 units (80,000 units × 0.5 kg.) = 40,000 kg.

3. $EOQ=\sqrt{\frac{2 \text{ x } 40{,}000 \text{ kgs. x Rs.}100}{\text{Rs.}2}} = 2{,}000 \text{ kgs.}$

4. Total cost of procurement and storage when the order size is equal to EOQ or 2,000 kg.

No. of orders (40,000 kg. ÷ 2,000 kg.)	= 20 times
Ordering cost (20 orders × Rs.100)	= Rs. 2,000
Carrying cost (Rs.)(½ × 2,000 kg. × Rs.2)	= Rs. 2,000
Total cost	Rs.4,000

(i) **Re-order point** = Safety stock + Lead time consumption

$$= 1{,}000 \text{ kg.} + \frac{40{,}000 Kg.}{360 \text{ days}} \text{ x } 36 \text{ days}$$

= 1,000 kg. + 4,000 kg. = 5,000 kg.

(1 Mark)

(ii) **Statement showing the total cost of procurement and storage of rawmaterials**

(after considering the discount)

Order size Kg.	No. of orders	Total cost of procurement Rs.	Average Stock Kg.	Total cost of storage of raw materials Rs.	Discount Rs.	Total cost Rs.
(1)	(2)	(3) = (2) x Rs.100	(4) = 1/2 x (1)	(5) = (4) x Rs.2	(6)	(7) = [(3) + (5) – (6)]
40,000	1	100	20,000	40,000	4,000	36,100
20,000	2	200	10,000	20,000	3,200	17,000
10,000	4	400	5,000	10,000	2,000	8,400
6666.66	6	600	3,333	6,666	400	6,868

(2 Marks)

(iii) Number of orders which the company should place to minimize the costs after taking EOQ also into consideration is 20 orders each of size 2,000 kg. The total cost of procurementand storage in this case comes to Rs. 4,000, which is minimum.

(1 Mark)