(GI-1, GI-2, GI-3, GI-4, VI-1 & SI-1)

DATE: 25.09.2019 **MAXIMUM MARKS: 100** **TIMING: 3¼ Hours**

PAPER : COSTING

Answer to questions are to be given only in English except in the case of candidates who have opted for Hindi Medium. If a candidate who has not opted for Hindi Medium. His/her answer in Hindi will not be valued.

Question No. 1 is compulsory.

Candidates are also required to answer any Four questions from the remaining Five Questions.

In case, any candidate answers extra question(s)/sub-question(s) over and above the required number, then only the requisite number of questions first answered in the answer book shall be valued and subsequent extra question(s) answered shall be ignored.

Wherever necessary, suitable assumptions may be made and disclosed by way of note.

Answer: 1

(a) (i) Annual usage of Components(A) = 1500×12 =18,000 Units
Ordering Cost(O) = Rs. 75 per order
Carrying cost per unit per annum (C) i.e. Storage cost + Obsolescence cost = 2% + 1% =3%
Calculation of Economic Order Quantity

$$EOQ = \sqrt{\frac{2AO}{C}} = \sqrt{\frac{2\ x\ 18{,}000 units\ x\ Rs.\ 75}{Rs.\ 1000\ x\ 3\%0}} = 300\, units$$

{1 M}

(ii) Re- Order level: = (Maximum usage × Maximum lead time)
= 400 units x 8 weeks
= 3,200 units

{1 M}

Evaluation of Profitability of different options of order quantity

When EOQ is ordered

		Rs.
Purchase Cost	(18,000 x 1,000)	1,80,00,000
Ordering Cost $\left(\frac{A}{Q}\times O\right)$	$\left(\frac{18{,}000\times 75}{300}\right)$	4,500
Carrying Cost $\left(\frac{Q}{2}\times C\times i\right)$	$\left(\frac{300}{2}\times 30\right)$	4,500
Total Cost		1,80,09,000

{1½ M}

When Quantity Discount is accepted

		Rs.
Purchase Cost	[18,000 – (1,000 – 5%)]	1,71,00,000
Ordering Cost $\left(\frac{A}{Q}\times O\right)$	$\left(\frac{18{,}000}{6{,}000}\times 75\right)$	225
Carrying Cost $\left(\frac{Q}{2}\times C\times i\right)$	$\left(\frac{6{,}000}{2}\times 950\times 3\%\right)$	88,500
Total Cost		171,85,725

{1½ M}

So, Savings in cost = Rs. 8,23,275 (Rs. 1,80,09,000 – Rs. 1,71,85,725)
Advice – The total cost of inventory is higher if EOQ is adopted. If we accept quantity discount of 5% offered by the supplier, 'ASJ' will save Rs. 8,23,275/-. Hence, the company is advised to accept the quantity discount.

Answer:

(b) (i) Amount of under/ over absorption of production overheads during the period of first six months of the year 2017-2018:

	Amount (Rs.)	**Amount (Rs.)**
Total production overheads actually incurred during the period		24,88,200
Less: Amount paid to worker as per court order	1,28,000	
Expenses of previous year booked in the current year	1,200	
Wages paid for the strike period under an award	44,000	
Obsolete stores written off	6,700	(1,79,900)
		23,08,300
Less: Production overheads absorbed as per machine hour rate (1,16,000 hours × Rs.20*)		23,20,000
Amount of over absorbed production overheads		11,700

{2 M}

*Budgeted Machine hour rate (Blanket rate)

$$= \frac{\text{Rs. } 44,00,000}{2,20,000 \text{ hours}} = \text{Rs. } 20 \text{ per hour}$$

(ii) Accounting treatment of over absorbed production overheads: As, one fourth of the over absorbed overheads were due to defective production policies, this being abnormal, **hence should be transferred to Costing Profit and Loss Account.** **{1 M}**

Amount to be transferred to Costing Profit and Loss Account = (11,700 × ¼) = Rs. 2,925

Balance of over absorbed production overheads should be distributed over Works in progress, finished goods and Cost of sales by applying supplementary rate*.

Amount to be distributed = (11,700 × ¾) =Rs. 8,775 **{1 M}**

$$\text{Supplementary rate} = \frac{\text{Rs. } 8,775}{33,000 \text{ units}} = \text{Rs. } 0.2659 \text{ per unit}$$

(iii) Apportionment of under absorbed production overheads over WIP, Finished goods and Cost of sales:

	Equivalent completed units	Amount (Rs.)
Work-in-Progress (18,000 units × 50% × Rs. 0.2659)	9,000	2,393
Finished goods (2,400 units × Rs. 0.2659)	2,400	638
Cost of sales (21,600 units × Rs. 0.2659)	21,600	5,744
Total	33,000	8,775

{1 M}

Answer:

(c) **Dr. Memorandum Reconciliation Accounts Cr.**

	(Rs.)		(Rs.)	
To Net Loss as per Costing books	3,47,000	By Administration overheads over recovered in cost accounts	60,000	{1/2 M}
To Factory overheads under absorbed in Cost Accounts	40,000	By Interest on investment not included in Cost Accounts	96,000	{1/2 M}
To Depreciation under charged in Cost Accounts	50,000	By Transfer fees in Financial books	24,000	{1/2 M}
To Income-Tax not provided in Cost Accounts	54,000	By Stores adjustment(Credit in financial books)	14,000	{1/2 M}
To Interest on Loan Funds in Financial Accounts	2,45,000	By Dividend received in financial books	32,000	{1/2 M}
		By Net loss as per Financial books	5,10,000	{1/2 M}
	7,36,000		7,36,000	

Answer:

(d) **Statement of Equivalent Production Units (Under FIFO Method)**

Particulars	Input units	Particulars	Output units	Equivalent Production	
				(%)	Equivalent units
Opening W-I-P	3,000	From opening W-I-P	3,000	30	900
Units introduced	17,000	From fresh inputs	12,000	100	12,000
		Units completed (Transferred to next process)	15,000		
		Normal Loss {12% (3,000 + 17,000 units)}	2,400	--	--
		Closing W-I-P	2,200	80	1760
		Abnormal loss (Balancing figure)	400	100	400
	20,000		20,000		15,060

{2 M}

Computation of cost per equivalent production unit :

Cost of the Process (for the period)	Rs. 33,12,720
Less: Scrap value of normal loss (Rs. 50 × 2,400 units)	(Rs. 1,20,000)
Total process cost	Rs. 31,92,720
Eq. Production units	Rs. 15,060
Cost/Eq. Production units	Rs. 212

{2 M}

{1 M}

Answer: 2

(a) **Statement Showing "Budgeted Cost per unit of the Product"**

Activity	Activity Cost (Budgeted) (Rs.)	Activity Driver	No. of Units of Activity Driver (Budget)	Activity Rate (Rs.)	Deposits	Loans	Credit Cards
ATM Services	8,00,000	No. of ATM Transaction	2,00,000	4.00	6,00,000	---	2,00,000
Computer Processing	10,00,000	No. of Computer Transaction	20,00,000	0.50	7,50,000	1,00,000	1,50,000
Issuing	20,00,000	No. of	5,00,000	4.00	14,00,000	2,00,000	4,00,000

{8 M}

Statements Customer Inquiries	3,60,000	Statements Telephone Minutes	7,20,000	0.50	1,80,000	90,000	90,000
Budgeted Cost	41,60,000				29,30,000	3,90,000	8,40,000
Units of Product (as estimated in the budget period)					58,600	13,000	14,000
Budgeted Cost per unit of the product					50	30	60

Working Note :

Activity	Budgeted Cost (Rs.)	Remark
ATM Services:		
(a) Machine Maintenance	4,00,000	– All fixed, no change.
(b) Rents	2,00,000	– Fully fixed, no change.
(c) Currency Replenishment Cost	2,00,000	– Doubled during budget period.
Total **{1/2 M}{**	8,00,000	
Computer Processing	2,50,000	– Rs. 2,50,000 (half of Rs. 5,00,000) is fixed and no change is expected.
	7,50,000	– Rs. 2,50,000 (variable portion) is expected to increase to three times the current level.
Total **{1/2 M}{**	10,00,000	
Issuing Statements	18,00,000	– Existing.
	2,00,000	– 2 lakh statements are expected to be increased in budgeted period. For every increase of one lakh statement, one lakh rupees is the budgeted increase.
Total **{1/2 M}{**	20,00,000	
Computer Inquiries		– Estimated to increase by 80% during the budget period. (Rs. 2,00,000 x 180%)
Total **{1/2 M}{**	3,60,000	

Answer:

(b) (i) Contract Account

Particulars	(Rs.'000)	(Rs.'000)	Particulars	(Rs.'000)	(Rs.'000)
To Material purchased		6,800	By Material returned		150
" Direct wages	3,450		" Work-in-progress:		
Less: Prepaid wages	(50)	3,400	Value of work certified (Rs.9,440 ÷ 0.8)	11,800	
" Salaries	200		Cost of work uncertified	500	
Add: Outstanding	100				12,300
		300	" Material stolen at Site		50
" Depreciation on Plant {(Rs.1,200× 15%) ×(5÷12)}		75	" Material at site		175
" Costing P&L A/c (Notional profit) (bal. figure)		2,100			
		12,675			12,675

{5 M}

(ii) Balance Sheet (extract) as on 31st March, 2018

Liabilities		(Rs.'000)	Assets		(Rs.'000)
Capital			Plant at site		1,125
Add: Notional Profit	2,100		Work in Progress		
Outstanding Salary		100	Work certified	11,800	
			Work uncertified	500	
				12,300	
			Cash & Bank (in transit)	9,440	2,860
			Prepaid Direct wages		50
			Material at site		175

{5 M}

Answer: 3 (a)

(i) Statement showing the apportionment of joint costs to A, B and X

Products	A	B	X	Total
Output (kg)	18,000	10,000	54,000	
Sales value at the point of split off (Rs.)	9,00,000 (Rs. 50 x 18,000)	4,00,000 (Rs. 40 x 10,000)	5,40,000 (Rs. 10 x 54,000)	18,40,000
Joint cost apportionment on the basis of sales value at the point of split off (Rs.)	6,30,000 $\left(\frac{\text{Rs. } 12,88,000}{\text{Rs. } 18,40,000} \times \text{Rs. } 9,00,000\right)$	2,80,000 $\left(\frac{\text{Rs. } 12,88,000}{\text{Rs. } 18,40,000} \times \text{Rs. } 4,00,000\right)$	3,78,000 $\left(\frac{\text{Rs. } 12,88,000}{\text{Rs. } 18,40,000} \times \text{Rs. } 5,40,000\right)$	12,88,000

{2 M}

(ii) Statement showing the cost per kg. of each product (indicating joint cost; further processing cost and total cost separately)

Products	A	B	X
Joint costs apportioned (Rs.) : (I)	6,30,000	2,80,000	3,78,000
Production (kg) : (II)	18,000	10,000	54,000
Joint cost per kg (Rs.): (I ÷ II)	35	28	7
Further processing Cost per kg. (Rs.)	10 $\left(\frac{\text{Rs. } 1,80,000}{18,000 \text{ kg}}\right)$	15 $\left(\frac{\text{Rs. } 1,50,000}{10,000 \text{ kg}}\right)$	2 $\left(\frac{\text{Rs. } 1,08,000}{54,000 \text{ kg}}\right)$
Total cost per kg (Rs.)	45	43	9

{2 M}

(iii) Statement showing the product wise and total profit for the period

Products	A	B	X	Total
Sales value (Rs.)	12,24,000	2,50,000	7,92,000	
Add: Closing stock value (Rs.) (Refer to Working note 2)	45,000	2,15,000	90,000	
Value of production (Rs.)	12,69,000	4,65,000	8,82,000	26,16,000
Apportionment of joint cost (Rs.)	6,30,000	2,80,000	3,78,000	
Add: Further processing cost (Rs.)	1,80,000	1,50,000	1,08,000	
Total cost (Rs.)	8,10,000	4,30,000	4,86,000	17,26,000
Profit (Rs.)	4,59,000	35,000	3,96,000	8,90,000

{2 M}

Working Notes :

1.

Products	**A**	**B**	**X**
Sales value (Rs.)	12,24,000	2,50,000	7,92,000
Quantity sold (Kgs.)	17,000	5,000	44,000
Selling price Rs./kg	72 $\left(\frac{\text{Rs. } 12,24,000}{17,000 \text{ kg}}\right)$	50 $\left(\frac{\text{Rs. } 2,50,000}{5,000 \text{ kg}}\right)$	18 $\left(\frac{\text{Rs. } 7,92,000}{44,000 \text{ kg}}\right)$

{1 M}

2. Valuation of closing stock:

Since the selling price per kg of products A, B and X is more than their total costs, therefore closing stock will be valued at cost.

Products	**A**	**B**	**X**	**Total**
Closing stock (kgs.)	1,000	5,000	10,000	
Cost per kg (Rs.)	45	43	9	
Closing stock value (Rs.)	45,000 (Rs. 45 x 1,000 kg)	2,15,000 (Rs. 43 x 5,000 kg)	90,000 (Rs. 9x10,000 kg)	35,000

{1 M}

(iv) Calculations for processing decision

Products	**A**	**B**	**X**
Selling price per kg at the point of split off (Rs.)	50	40	10
Selling price per kg after further processing (Rs.) (Refer to working Note 1)	72	50	18
Incremental selling price per kg (Rs.)	22	10	8
Less: Further processing cost per kg (Rs.)	(10)	(15)	(2)
Incremental profit (loss) per kg (Rs.)	12	(5)	6

{2 M}

Product A and X has an incremental profit per unit after further processing, hence, these two products may be further processed. However, further processing of product B is not profitable hence, product B shall be sold at split off point.

Answer:

(b) (a) Material price variance:
= (Standard price – Actual Price) × Actual quantity
= (Rs. 4 – Rs. 4.10) × 5,000 = Rs. 500 Adv. **{1 M}**

(b) Material usage variance:
= (Std. quantity for actual output – Actual qtty.) × Std. price
= (600 × 5 – 3,500) × 4 = Rs. 2,000 Adv. **{1 M}**

(c) Labour Rate Variance:
= (Standard rate – Actual rate) × Actual hours
= (Rs.10 – Rs.9) × 1,700 = Rs. 1,700 Fav. **{1 M}**

(d) Labour Efficiency Variance:
= (Standard hours for actual output – Actual hours) × Standard rate
= (600 × 3 – 1,700) × Rs.10
= Rs. 1,000 Fav. **{1 M}**

(e) Variable Overhead Expenditure Variance
= (Actual Hours × Standard Rate) – Actual Overhead
= (1,700 ×Rs. 1) – Rs. 1,900
= Rs. 200 Adv. **{1 M}**

(f) Variable Overhead Efficiency Variance:
= Std. hours for actual output – Actual hours) × Std. rate
= (600 × 3 – 1,700) × Rs.1 = Rs.100 Fav. **{1 M}**

(g) Fixed Overhead Expenditure Variance:
= (Budgeted overhead – Actual overhead)
= (1,800 × 0.50 – 900) = Nil **{1 M}**

(h) Fixed Overhead Volume Variance:
= (Std. hours for actual output – Budgeted hours) × Std. rate
= (600 × 3 – 1,800) × Rs. 0.50 = Nil **{1 M}**

(i) Fixed Overhead Capacity Variance:
= (Budgeted hours – Actual Hours) × Standard rate
= (1,800 – 1,700) × Rs. 0.50 = Rs. 50 Adv. **{1 M}**

(j) Fixed Overhead Efficiency Variance:
= (Std. hours for actual output – Actual hours) × Standard rate
= (600 × 3 – 1,700) × Rs. 0.50 = Rs. 50 Fav. **{1 M}**

Answer: 4

(a) (i) Evaluation of Option (i)

Selling Price = Rs. 1800 + Rs. 200 = Rs. 2,000 Sales = 2000 x 60% = 1200 Pieces

	Rs.
Sales (1,200 pieces @ Rs. 2,000)	24,00,000
Less: Direct Material $\left(\frac{\text{Rs. } 5{,}94{,}200}{1{,}500 \text{ units}} \times 1{,}200\right)$	4,75,360
Direct Labour $\left(\frac{\text{Rs. } 4{,}42{,}600}{1{,}500 \text{ units}} \times 1{,}200\right)$	3,54,080
Variable Overhead $\left(\frac{\text{Rs. } 11{,}97{,}000 \times 60\%}{1{,}500 \text{ units}} \times 1{,}200\right)$	5,74,560
Contribution	9,96,000
Less: Fixed cost (Rs. 11,97,000 x 40%)	4,78,800
Profit	5,17,200

If price has been increased by 11.11% (increases by 200 on 1,800) sales goes down by 20% (decreased by 300 on 1,500). Change in demand is greater than change in price. Since the variable costs are still same profit has been arose to Rs. 5,17,200 in-spite of high elasticity of demand. PH gems would not be able to sustain this policy on account of change if any in variable costs. **{5 M}**

(ii) Evaluation of Option (ii)

	Rs.
Sales	1,800.00
Less: Direct Material $\left(\frac{\text{Rs. } 5,94,200}{1,500}\right)$	396.13
Cost of Tie PIN	18.00
Direct Labour $\left(\frac{\text{Rs. } 4,42,600}{1,500}\right)$	295.07
Variable Overhead $\left(\frac{\text{Rs. } 11,97,000 \times 60\%}{1,500}\right)$	478.80
Contribution	612.00
P/V Ratio (Rs. 612/1800 x 100)	34.0%

{5 M}

Sales to required earn a profit of 20%

$$\text{Sales} = \frac{\text{Rs. } 4,78,800 + 0.20 \text{ of Sales}}{34.00\ \%}$$

Sales = Rs. 34,20,000 or 1,900 units (Rs. 34,20,000/1800)

To earn profit 20% on sales of readymade suit (along with TIE PIN) company has to sold 1,900 units i.e. 95% of the full capacity. This sales level of 1,900 units is justified only if variable cost is constant. Any upside in variable cost would impact profitability, to achieve the desired profitability. Production has to be increased but the scope is limited to 5% only.

Answer:

(b) (i) Preparation of Production Budget (in units)

	October	November	December	January
Demand for the month (Nos.)	40,000	35,000	45,000	60,000
Add: 20% of next month's demand	7,000	9,000	12,000	13,000
Less: Opening Stock	(9,500)	(7,000)	(9,000)	(12,000)
Vehicles to be produced	37,500	37,000	48,000	61,000

{3 M}

(ii) Preparation of Purchase budget for Part-X

	October	November	December
Production for the month (Nos.)	37,500	37,000	48,000
Add: 40% of next month's production	14,800 (40% of 37,000)	19,200 (40% of 48,000)	24,400 (40% of 61,000)
	52,300	56,200	72,400
No. of units required for production	2,09,200 (52300 × 4 units)	2,24,800 (56200 × 4 units)	2,89,600 (72,400 × 4 units)
Less: Opening Stock	(48,000)	(59,200) (14800 × 4 units)	(76,800) (19200 × 4 units)
No. of units to be purchased	1,61,200	1,65,600	2,12,800

{3 M}

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

	October	November	December	Total
Sales in nos.	40,000	35,000	45,000	1,20,000
Net Selling Price per unit*	7,28,535	7,28,535	7,28,535	
Sales Revenue (Rs. in lakh)	2,91,414	2,54,987.25	3,27,840.75	8,74,242
Less: Cost of Sales (Rs. in lakh) (Sales unit × Cost per unit)	2,28,560	1,99,990.00	2,57,130.00	6,85,680
Gross Profit (Rs. in lakh)	62,854	54,997.25	70,710.75	1,88,562

{4 M}

* Net Selling price unit = Rs. 8,57,100 – 15% commission on Rs. 8,57,100 = Rs. 7,28,535.

Answer: 5

(a) 1.

	Annual cost of each employee	Rs.
1.	Salary (30,000×12)	3,60,000
2.	Bonus (25% of Salary)	90,000
3.	Employees Contribution to PF (15% of Salary)	54,000
4.	Employers welfare (661500/175)	3,780
	Total Annual Cost	5,07,780

{3 M}

2.

Effective Working hours (310 days × 8 hours)	2480 hours
Less: Leave days (30 days × 8 hours)	240 hours*
Available Working hours	2240 hours
Less: Normal Loss @	70 hours
	2170 hours

{3 M}

Employee Cost per hour $\frac{507780}{2170} = \text{Rs. } 234$

*It is assumed 310 working days are without taking leave permitted into consideration {2 M}

3. Cost of abnormal idle time per employee = Rs. 234× 50 hours= Rs. 11700 {2 M}

Alternative solution for Part (2) and (3)

(2) Calculation of Employee cost per hour:

Working hours per annum	2,480 *
Less: Normal Idle time hours	70
Effective hours	2,410
Employee cost	5,07,780
Employee cost per hour	210.70

***It is assumed 310 working days are after adjusting leave permitted during the year.**

(3) Cost of Abnormal idle time per employee:

Abnormal Idle time hours	50
Employee cost per hour	210.70
Cost of Abnormal idle time (210.70 ×50)	10,534.85

(b) Calculation of Cost of Production of Arnav Metallic for the period…..

Particulars	**Amount (Rs.)**
Raw materials purchased	**64,00,000**
Add: Opening stock	**2,88,000**
Less: Closing stock	**(4,46,000)**
Material consumed	**62,42,000**
Wages paid	**23,20,000**
Prime cost	**85,62,000**
Repair and maintenance cost of plant & machinery	**9,80,500**
Insurance premium paid for inventories	**26,000**
Insurance premium paid for plant & machinery	**96,000**
Quality control cost	**86,000**
Research & development cost	**92,600**
Administrative overheads related with factory and production	**9,00,000**
	1,07,43,100
Add: Opening value of W-I-P	**4,06,000**
Less: Closing value of W-I-P	**(6,02,100)**
	1,05,47,000
Less: Amount realised by selling scrap	**(9,200)**
Add: Primary packing cost	**10,200**
Cost of Production	**1,05,48,000**

{1/2 M Each}

Notes:
(i) Other administrative overhead does not form part of cost of production.
(ii) Salary paid to Director (Technical) is an administrative cost.

{1/2 M}

Answer 6:

(a) (a) Discretionary Cost Centre: The cost centre whose output cannot be measured in financial terms, thus input-output ratio cannot be defined. The cost of input is compared with allocated budget for the activity. Example of discretionary cost centres are Research & Development department, Advertisement department where output of these department cannot be measured with certainty and co- related with cost incurred on inputs.

(b) Investment Centres: These are the responsibility centres which are not only responsible for profitability but also has the authority to make capital investment decisions. The performance of these responsibility centres are measured on the basis of Return on Investment (ROI) besides profit. Examples of investment centres are Maharatna, Navratna and Miniratna companies of Public Sector Undertakings of Central Government.

{5 M}

Answer:

(b) Cost plus contracts have the following advantages:

(a) The Contractor is assured of a fixed percentage of profit. There is no risk of incurring any loss on the contract.

(b) It is useful specially when the work to be done is not definitely fixed at the time of making the estimate.

(c) Contractee can ensure himself about 'the cost of the contract', as he is empowered to examine the books and documents of the contractor to ascertain the veracity of the cost of the contract.

{5 M}

Answer:

(c) The advantages of zero-based budgeting are as follows: **{5 M}**

- It provides a systematic approach for the evaluation of different activities and rank them in order of preference for the allocation of scarce resources.
- It ensures that the various functions undertaken by the organization are critical for the achievement of its objectives and are being performed in the best possible way.
- It provides an opportunity to the management to allocate resources for various activities only after having a thorough cost-benefit-analysis. The chances of arbitrary cuts and enhancement are thus avoided.
- The areas of wasteful expenditure can be easily identified and eliminated.
- Departmental budgets are closely linked with corporation objectives.
- The technique can also be used for the introduction and implementation of the system of 'management by objective.' Thus, it cannot only be used for fulfillment of the objectives of traditional budgeting but it can also be used for a variety of other purposes.

Answer:

(d) This product costing system is used when an entity produces more than one variant of final product using different materials but with similar conversion activities. Which means conversion activities are similar for all the product variants but materials differ significantly. Operation Costing method is also known as Hybrid product costing system as materials costs are accumulated by job order or batch wise but conversion costs i.e. labour and overheads costs are accumulated by department, and process costing methods are used to assign these costs to products. Moreover, under operation costing, conversion costs are applied to products using a predetermined application rate. This predetermined rate is based on budgeted conversion costs. **{5 M}**

The two example of industries are Ready made garments and Jewellery making.

***