Paper 15- Strategic Cost Management - Decision Making

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Full Marks: 100 **Time Allowed: 3 Hours**

This paper contains two sections **A** and **B**. **Section A** is compulsory and contains question No.1 for 20 marks. **Section B** contains question Nos. 2 to 8, each carrying 16 marks. Answer any five questions from **Section B**.

Section – A [20 Marks]

1. Choose the most appropriate answer to the following questions giving justification [10x2=20]

(i) 120 units of semi-conductors are required to be sold to earn a profit of ₹1,00,000 in a monopoly market. The fixed cost for the period is ₹80,000. The contribution in the monopoly market is as high as 3/4th of its variable cost. Determine the target selling price per unit.

(a) ₹4500
(b) ₹3250
(c) ₹4000
(d) ₹3500

(ii) Abhishek Ltd. operates Throughput Accounting System. The details of product A per unit are as under:

Particulars	Details
Selling Price	₹150
Material Cost	₹60
Conversion Cost	₹40
Time to Bottleneck Resources	10 minutes

The return per hour for product A is

(a) ₹540
(b) ₹300
(c) ₹240
(d) ₹180

(iii) Sara Ltd. is to market a new product. It can produce up to 3,00,000 units of this product. The following are the estimated cost data:

Particulars	Fixed Cost	Variable Cost
For Production up to 1,50,000 units	₹16,00,000	60%
Exceeding 1,50,000 units	₹24,00,000	50%

Sale price is expected to be ₹25 per unit.

How many units must the company sell to break even?

(a) 1,00,000 units
(b) 1,11,000 units
(c) 1,27,000 units
(d) 75,000 units

(iv) Sarathi Ltd. makes components and sells internally to its subsidiary and also to external market. The external market price is ₹48 per component, which gives a contribution of 40% of sales. For external sales, variable costs include ₹3 per unit for distribution costs. This is, however not incurred in internal sales. There are no capacity constraints. To maximize company profit, the transfer price to subsidiary should be:

(a) ₹19.20
(b) ₹25.80
(c) ₹28.80
(d) None of these

(v) A manufacturing company uses two types of materials- A and B, for manufacture of a standard product. The following information is given:

	Standard Mix			**Actual mix**	
Materials A	240 Kg	@ ₹5 = ₹1200		224 Kg	@ ₹5 = ₹1120
Materials B	160 Kg	@ ₹10 = ₹1600		176 Kg	@ ₹10 = ₹1760
	400 Kg	₹2800		400 Kg	₹2880
30% loss	120 Kg		25% loss	100 Kg	
	280 Kg	₹2800		300 Kg	₹2880

Direct Materials Mix Variance is:

(a) ₹ 80 (fav.)
(b) ₹ 80 (unfav.)
(c) ₹ 160 (fav.)
(d) ₹ 160 (unfav.)

(vi) Which of the following is/are scope of Uniform Costing:

(a) In a single enterprise having a number of branches or units, each of which may be a separate manufacturing unit
(b) In a number of concerns in the same industry bound together through a trade association or otherwise
(c) In industries which are diverse in nature
(d) Both (a) and (b)

(vii) Which of the following is not a Limitation of Inter-Firm Comparison:

(a) Information about the organisation is made available freely with the fear of disclosure of confidential data to outside market or public
(b) Non-availability of a suitable base for comparison
(c) Absence of a proper system of Cost Accounting so that the costing figures supplied may not be relied upon for comparison purposes
(d) The top management may not be convinced of the utility of inter-firm comparison

(viii) Rudra Ltd. manufactures a product whose time for the first unit is 10000 hours. It experiences a learning curve of 80%, What will be the total time taken in hours for unit 5 to 8?

(a) 40960 hours
(b) 32000 hours
(c) 15360 hours
(d) 20000 hours

(ix) Which of the following is a valid constraint for a linear programming problem?

(a) $6x^2 + 8x + 2 = 0$
(b) $10x_1 + 4x_2 \leq 20$
(c) $8x_x + 6x_2 > 14$
(d) $(24_{x1} + 8_{x2})/6_{x2} \leq 16_{x1}$

(x) Which of the following is/are the method/s of solving an assignment problem:

(a) Complete Enumeration Method
(b) Transportation Method
(c) Both (a) and (b)
(d) Simplified Method

Section – B

Answer any five questions. [16×5= 80]

2. (a) Sweet Ltd. has sales of 4,00,000 units at a price of ₹100.00 per unit and profit of ₹140.00 Lakhs in the current year. Due to stiff competition, next year the Company has to reduce its price of product @ 3% to achieve same target volume of sales. The cost structure and profit for the current year is given as below:

Particulars	(₹ Lakhs)
Direct Material	100.00
Direct Wages	80.00
Variable Factory Overheads	30.00
Fixed Overheads including Sales & Admin Expenses	50.00
Total Cost	**260.00**

To achieve the Target Cost to maintain the same profit, the Company is evaluating the proposal to reduce Labour Cost and Fixed Factory Overheads. A Vendor supplying the Machine suitable for the Company's operations has offered an advanced technology Semi-Automatic Machine of ₹20 Lakhs as replacement of Old Machine worth ₹6 Lakhs. The Vendor is agreeable to take back the Old Machine at ₹2 Lakhs only. The Company's policy is to charge depreciation at 15% on WDV. The Maintenance Charge of the Existing Machine is ₹2 Lakh per annum whereas there will be warranty of services free of cost for

the New Machine first two years. There are 7 Supervisors whose Salary is ₹3 Lakhs per annum. The New Machine having Conveyor Belt is expected to help in cost cutting measures in the following ways -

(1) Improve Productivity of workers by 10%
(2) Cut-down Material Wastage by 5%
(3) Elimination of services of Supervisors because of automatic facilities of the machine
(4) Saving in Packaging Cost by ₹2 Lakhs.

Assuming Cost of Capital to be 15%, calculate how many Supervisors should be removed from the production activities to achieve the Target Cost. **[6]**

(b) The accountant of XYZ Ltd. has prepared the following estimate on the basis of which he has advised that a contract should not be accepted at the price offered. The estimate (₹) was as follows:

Material X in stock at original cost	1,50,000
Material Y on order at contract price	1,80,000
Material Z to be ordered at current price	3,00,000
Skilled Labour	5,40,000
Unskilled Labour	3,00,000
Supervisory Cost	1,00,000
General Overheads	1,80,000
Total Cost	**17,50,000**
Price offered	14,00,000
Net Loss (Price offered – Total Cost)	**3,50,000**

The following details are available about the cost components listed above.

a. Material X is an obsolete material. It can be used on another product W, the material for which is available at ₹1,35,000 (Material X requires some adaptation to be used which costs ₹15,000). It may take some time before W's order is confirmed. Until then storage will cost ₹12,000.
b. Material Y is ordered for some other product which is no longer required. It now has a residual value of ₹1,55,000.
c. Skilled labour can work on other contracts which are presently operated by semi-skilled labour at a cost of ₹4,00,000
d. Unskilled labour are specifically employed for this contract.
e. Supervisory staff will remain whether or not the contract is accepted. Only two them can replace other positions where the salary is ₹50,000.
f. Overheads are charged at 33⅓% of skilled labour. Only ₹1,25,000 would be avoidable.

You are required to answer the following questions using relevant cost approach:

(i) Relevant costs of material X, Y and Z
(ii) Relevant cost of labour-skilled and unskilled
(iii) Relevant cost of Supervisory cost and General overheads
(iv) If the contract is accepted, what would be the resulting financial impact on XYZ's profit. **[10]**

3. An agro-based farm is planning its production for next year. The following is relating to the current year:

Product/Crop	M	N	O	P
Area Occupied (Acres)	125	100	150	125
Yield per acre (ton)	50	40	45	60
Selling Price per ton (₹)	100	125	150	135
Variable Cost per acre (₹)				
Seeds	150	125	225	200
Pesticides	75	100	150	125
Fertilizers	62.50	37.50	50	62.50
Cultivation	62.50	37.50	50	62.50
Direct Wages	2000	2250	2500	2850

Fixed overhead per annum ₹13,44,000. The land that is being used for the production of O and P can be used for either crop. But not for M and N; the land that is being used for the production of M and N can be used for either crop, but not for O and P. In order to provide adequate market service, the company must produce each year at least 1,000 tons of each of M and N and 900 tons each of O and P.

Required:

(i) Determine the profit for the production mix fulfilling market commitment.

(ii) Assuming the land could be cultivated to produce any of the four products and there was no market commitment, calculate the profit amount of most profitable crop and break-even point of most profitable crop in terms of acres and sales value. **[16]**

4. **(a)** The following is a flexible budget of FB Co. Ltd. for a production department:

Particulars	Level of Activity		
Direct Labour Hours	4000	5000	6000
Number of Units	8000	10000	12000
Fixed Overhead (₹)	5000	5000	5000
Variable Overhead (₹)	800	1000	1200
Total Overheads (₹)	5800	6000	6200

Normal Level of activity was 5000 direct labour hours.

Actual Results were:

Direct Labour hours – 4800

Variable Overhead – ₹900

Output in Units – 10400

Fixed Overhead – ₹5100

Compute Fixed overhead cost variance, Fixed overhead volume variance, Fixed overhead expenditure variance, Variable overhead cost variance, Variable overhead efficiency variance, Variable overhead expenditure variance and Efficiency, Capacity and Activity ratios. **[10]**

(b) State any six limitations of standard costing. **[6]**

5. **(a)** A company is organized on decentralized lines, with each manufacturing division operating as a separate profit centre. Each division has full authority to decide on sale of the division's output to outsiders and to other divisions.

Division C has always purchased its requirements of a component from Division A but when informed that Division A was increasing its selling price to ₹150, the manager of Division C decided to look at outside suppliers. Division C can buy the components from an outside supplier for ₹135. But Division A refuses to lower its price in view of its need to maintain its return on the investment. The top management has the following information:

C's annual purchase of the component: 1,000 units

A's variable costs per unit: ₹120

A's fixed cost per unit: ₹20

Required:

(i) Will the company as a whole benefit, if Division C buys the component at ₹135 from an outside supplier?

(ii) If Division A did not produce the material for Division C, it could use the facilities for other activities resulting in a cash operating savings of ₹18,000. Should Division C then purchase from outside sources?

(iii) Suppose there is no alternative use of Division A's facilities and the market price per unit for the component drops by ₹20. Should Division C now buy from outside? **[3+4+3]**

(b) Describe the Pre-requisites of Benchmarking. **[6]**

6. **(a)** Mr. Partha, a businessman, is considering taking over a certain new business. Based on past information and his own knowledge of the business, he works out the probability distributions of the daily costs and sales revenue, as given here:

Cost (in ₹)	Probability	Sales (in ₹)	Probability
85000	0.10	95000	0.10
90000	0.10	100000	0.10
95000	0.40	105000	0.20
100000	0.20	110000	0.40
105000	0.20	115000	0.15
		120000	0.05

Use the following sequences of random numbers to be used for estimating costs and revenues. Obtain the probability distribution of the daily net revenue.

Sequence 1: 81, 83, 27, 81, 35, 91, 72, 90 62, 28, 26, 25, 91, 62, 82, 02, 12, 38, 10, 18.

Sequence 2: 38, 71, 37, 28, 70, 82, 18, 71, 91, 58, 48, 38, 71, 93, 02, 91, 73, 17, 09, 04.

[10]

(b) A computer centre has got three expert programmers. The centre needs three expert programmers. The centre needs three application programmes to be developed. The Head of the computer centre, after studying carefully the programmes to be developed, estimated the computer time in minutes required by the experts to the application programmes as follows:

		Programmes		
		A	B	C
Programmers	1	1200	1000	800
	2	800	900	1100
	3	1100	1400	1200

Assign the programmers to the programmes in such a way that the total computer time is least. **[6]**

7. (a) A project schedule consists of the following activities with the time estimates noted against each activity:

Activity	Time	Activity	Time
1-2	4	5-6	4
1-3	1	5-7	8
2-4	1	6-8	1
3-4	1	7-8	2
3-5	6	8-10	5
4-9	5	9-10	7

(i) Construct a PERT network and compute T_E T_L and for each event,
(ii) Find the critical path,
(iii) Obtain the total and free floats of each activity. **[8]**

(b) Mr. Ashis, a dealer of cement has two warehouses M and N with stocks of 30000 and 20000 bags of cement respectively. Three customers A, B and C have placed order on the dealer for 15000, 20000 and 15000 bags respectively. Costs of transportation per 1000 bags of cement from different warehouses to different customers are given below:

	Transportation Cost (₹ '00) per 1000 bags		
To	A	B	C
From			
M	40	20	20
N	20	60	40

The dealer wants to find how to fulfil the orders so that the transportation cost is minimum. Formulate the problem. **[8]**

8. Write short notes on any four of the following: 4×4=16

(a) Explain the limitations of Backflush accounting.
(b) State the Characteristics of Re-engineering Process and Seven Principles of BPR.
(c) Differentiate between Lean Accounting and Traditional Standard Costing.
(d) Explain the 4P's of TQM.
(e) Describe the usefulness of Pareto Analysis.