Paper 15 – Strategic Cost Management and Decision Making

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

Section A

1. Answer the following and each question carries 2 marks. [10×2= 20]

(i) A Ltd., developing a new product, makes a model for testing and goes for regular production. From past experience of similar models, it is known that a 90% learning curve applies. If the time taken to make the model is 300 hours, what will be the total time taken to produce 3rd to 4th unit of the product?

(a) 540 hours (b) 486 hours (c) 432 hours (d) None of the above

(ii) ABC Ltd., has current PBIT of ₹19.20 Lakhs on total assets of ₹96 Lakhs. The company proposes to increase assets by ₹24 Lakhs, which is estimated to increase operating profit before depreciation by ₹8.40lakhs-a net increase in Depreciation by ₹4.80 Lakhs. This will result in ROI.

(a) To decrease by 1 % (b) To increase by 1% (c) To remain same

(d) None of the above

(iii) The single price of the selling product manufactured by a company is fixed at ₹1500 per unit. In the coming year, 500 units of the product are likely to be sold. If the total value of investments of the company is ₹15 lakhs and it has a target ROI of 15%, the target cost would be:

(a) ₹9.30 (b) ₹9.50 (c) ₹1050 (d) None of these

(iv) A particular job required 800 kgs of material – P.
500 kgs. of the particular material is currently in stock.
The original price of the material – P was ₹300 but current resale value of the same has been determined as ₹200. If the current replacement price of the material – P is ₹0.80 per kg., the relevant cost of the material – P required for the job would be:
(a) ₹640 (b) ₹440 (c) ₹300 (d) None of these

(v) A company determines its selling price by making up variable costs 60%. In addition, the company uses frequent selling price mark down to stimulate sales. If the mark down average 10%, what is the company's contribution margin ratio?

(a) 30.6% (b) 44% (c) 86.4% (d) None of these

(vi) A company has 2000 units of an obsolete item which are carried in inventory at the original purchase price of ₹30,000. If these items are reworked for ₹10,000, they can be sold for ₹18,000. Alternatively, they can be sold as scrap for ₹3,000 in the market. In a decision model used to analyze the reworking proposal, the opportunity cost should be taken as :

(a) ₹ 8,000 (b) ₹ 12,000 (c) ₹ 3,000 (d) ₹ 10,000

(vii) A company has estimated the selling prices and the variable costs of one of its products as under :

Probability	Selling price (per unit)	Probability	Variable cost (per unit)
0.25	60	0.25	30
0.45	75	0.40	45
0.30	90	0.35	60

The company will be able to produce and sell 4,000 units in a month irrespective of the selling price. The selling price and variable cost per unit are independent of each other.

The specific fixed cost relating to this product is ₹20,000. The probability that the monthly net profit of the product will be ≥ ₹1,20,000 is

(a) 0.2525 (b) 0.4512 (c) 0.3825 (d) 0.3075

(viii) When allocation service department cost to production departments, the method that does not consider different cost behavior patterns is the

(a) Step method (b) Reciprocal method (c) Single rate-method
(d) Dual rate-method

(ix) ASHLIN LTD., has developed a new product just complete the manufacture of first four units of the product. The fist unit took 2 hours to manufacture and the first four units together took 5.12 hours to produce. The Learning Curve rate is

(a) 83.50% (b) 80.00% (c) 75.50% (d) None of (a), (b) or (c)

(x) ANKIT LTD., operates Throughput Accounting System. The details of product A per unit are as under:

Selling Price	₹75
Material Cost	₹30
Conversion Cost	₹20
Time to bottleneck resources	10 minutes

The return per hour for product A is

(a) ₹270 (b) ₹150 (c) ₹120 (d) ₹90

Section B

Answer any five questions from Question No. 2 to 8

Each question carries 16 marks. **5 ×16 = 80 M**

2. (a) K & Co. manufactures and sells 15,000 units of a product. The Full Cost per unit is ₹200. The Company has fixed its price so as to earn a 20% Return on an Investment of ₹18,00,000.

Required:

1. Calculate the Selling Price per unit from the above. Also, calculate the Mark-up % on the Full Cost per unit.
2. If the Selling Price as calculated above represents a Mark-up % of 40% on Variable cost per unit, calculate the Variable cost per unit.
3. Calculate the Company's Income if it had increased the Selling Price to ₹230. At this price, the company would have sold 13,500 units. Should the Company have increased the Selling price to ₹230?
4. In response to competitive pressures, the Company must reduce the price to ₹210 next year, in order to achieve sales of 15,000 units. The Company also plans to reduce its investment to ₹16,50,000. If a 20% Return on Investment should be maintained, what is the Target Cost per unit for the next year? [8]

(b) M Ltd. has been approached by a customer who would like a special job to be done for him and is willing to pay ₹22,000 for it. The job would required the following materials.

Materials	Total units required	Units already in stock	Book value of units in stock (₹/unit)	Realisable value (₹/unit)	Replacement cost (₹/unit)
A	1,000	0	-	-	6
B	1,000	600	2	2.5	5
C	1,000	700	3	2.5	4
D	200	200	4	6	9

(I) Material B is used regularly by X Ltd., and if stocks were required for this job, they would need to be replaced to meet other production demand.

(II) Materials C and D are in stock as the result of previous excess purchase and they have a restricted use. No other use could be found for material C but material D could be used in another job as substitute for 300 units of material, which currently cost ₹5 per unit (of which the company has no units in stock at the moment). What are the relevant costs of material, in deciding whether or not to accept the contract? Assume all other expenses on this contract are to be specially uncured besides the relevant cost of material is ₹550. [8]

3. (a) S. H. Ltd., a cycle manufacturing company, has drawn up a programme for the manufacture of a new product for the purpose of fuller utilization of its capacity. The scheme envisages the manufacture of baby tricycle fitted with a bell. The company estimates the sales of tricycles at 10,000 during the first year and expects that from the second year onwards the sales estimates will stabilize at 20,000 tricycles. Since the company has no provision for the manufacture of the small bells specially required for the tricycles, the requirement of the bells is initially proposed to be met by way of purchase from the market at ₹8 each. However, if the company desires to manufacture the bell in its factory by installation of new equipment, it has two alternative proposals as under:

	Installation of Super X Machine	Installation of Janta Machine
Initial cost of machine	₹3,00,000	₹2,00,000
Life	10 Years	10 Years
Fixed overheads other than depreciation on machines (per annum)	₹54,000	₹28,000
Variable expenses per bell	₹4.00	₹5.00
Depreciation on machine should be charged on straight line basis.		

Required:

(i) For each of the two levels of output namely 10,000 and 20,000 bells state with suitable workings whether the company should purchase the bells from market or install new equipment for manufacture of bells. If your decision is in favour of the installation of new equipment, which of the two new machines should be installed?

(ii) What would be your decision in case the forecast of requirement from the second year onwards is estimated at 40,000 bells instead of 20,000 bells.

(iii) At what volume of bells will the installation of the two machines break even. [11]

3. (b) Company A can manufacture 1,000 units bicycles in a month for a fixed cost of ₹3,00,000. The variable cost is ₹500 per unit. Its current demand is 600 units which it sales at ₹1,000 per unit. It is approached by Company B for an order of 200 units of ₹700 per unit.
Should the Company A accept the order? Give your views as a CMA. [5]

4. (a) A factory has a key resource (bottleneck) of Facility A which is available for 31,300 minutes per week. Budgeted factory costs and data on two products, X and Y, are shown below:

Product	Selling Price/Unit	Material Cost/Unit	Time in Facility A
X	₹35	₹20.00	5 minutes
Y	₹35	₹17.50	10 minutes

Budgeted factory costs per week:

	₹
Budgeted labour	25,000
Indirect labour	12,500
Power	1,750
Depreciation	22,500
Space costs	8,000
Engineering	3,500
Administration	5,000

Actual production during the last week is 4,750 units of product X and 650 units of product Y. Actual factory cost was ₹78,250.

Calculate:

(i) Total factory costs (TFC)
(ii) Cost per Factory Minute
(iii) Return per Factory Minute for both products
(iv) TA ratios for both products
(v) Throughput cost per the week
(vi) Efficiency ratio [12]

4. (b) What is inter firm comparison? [4]

5. (a) A Company with two manufacturing division is organised on profit centre basis. Division 'A' is the only source for the supply of a component that is used in Division B in the manufacture of a product KLIM. One such part is used each unit of the product KLIM. As the demand for the product is not steady. Division B can obtain order for increased quantities only by spending more on sales promotion and by reducing the selling prices. The manager of Division B has accordingly prepared the following forecast of sales quantities and selling prices.

Sales units per day	Average Selling price per unit of KLIM (₹)
1,000	5.25
2,000	3.98
3,000	3.30
4,000	2.78
5,000	2.40
6,000	2.01

The manufacturing cost of KLIM in Division B is ₹3,750 first 1,000 units and ₹750 per 1,000 units in excess of 1,000 units.

Division A incurs a total cost of ₹1,500 per day for an output to 1,000 components and the total costs will increase by ₹900 per day for every additional 1,000 components manufactured. The Manager of Division A states that the operating results of Division will be optimised if the transfer price of the component is set at ₹1.20 per unit and he has accordingly set the aforesaid transfer price for his supplies of the component to Division A.

You are required:

(i) Prepare a schedule showing the profitability at each level of output for Division A and Division B
(ii) Find the profitability of the company as a whole at the output level which
  (A) Division A's net profit is maximum.
  (B) Division B's net profit is maximum.
(iii) If the company is not organised on profit centre basis, what level of output will be chosen to yield the maximum profit. [8]

5. (b) T. Limited makes three main products, using broadly the same production methods and equipment for each. A conventional product costing system is used at present,

although and Activity Based Costing (ABC) system is being considered. Details of the three products, for typical period are:

	Labour Hours per	Machine Hours per unit	Material per unit	Volumes unit
Product X	½	1 ½	₹20	750
Product Y	1 ½	1	12	1,250
Product Z	1	3	25	7,000

Direct labour costs ₹6 per hour and production overheads are absorbed on a machine hour basis. The rate for the period is ₹28 per machine hour.

You are required:

(a) to calculate the cost per unit for each product using conventional methods.

Further analysis shows that the total of production overheads can be divided a follows

	%
Costs relating to set-ups	35
Costs relating machinery	20
Costs relating materials handling	15
Costs relating to inspection	30
Total production overhead	100%

The following activity volumes are associated with the product line for the period as a whole.

Total activities for the period

	Number of Set-ups	Number of movements of materials	Number of Inspections
Product X	75	12	150
Product Y	115	21	180
Product Z	480	87	670
	670	120	1,000

You are required:

(b) To calculate the cost per unit for each product using ABC principles; c) to comment on the reasons for any differences in the costs in your answers to (a) and (b). [8]

6. (a) The Everest Ltd., which has a satisfactory preventive maintenances system in its plant has installed a new Hot Air Generator based on electricity instead of fuel oil for drying its finished products. The Hot Air Generator required periodic shutdown maintenance. If the shutdown is scheduled yearly, the cost of maintenance will be as under:

Maintenance Cost	Probability
₹15,000	0.3
₹20,000	0.4
₹25,000	0.3

The costs are expected to be almost linear, i.e., if the shutdown is scheduled twice a year the maintenance cost will be double.

There is no previous experience regarding the time taken between breakdowns. Costs associated with breakdown will vary depending upon the periodicity of maintenance. The probability distribution of breakdown cost is estimated as under:

Breakdown Costs per annum	Shutdown once a year	Shutdown twice a year
₹75,000	0.2	0.5
₹80,000	0.5	0.3
₹1,00,000	0.3	0.2

Simulate the total costs – maintenance and breakdown costs – and recommend whether shutdown overhauling should be resorted to once a year or twice a year? [8]

6. (b) A company has four zones open and four salesmen available for assignment. The zones are not equally rich in their sales potentials. It is estimated that a typical salesman operating in each zone would bring in the following annual sales:
Zone: A:1,26,000 : Zone B:1,05,000 ; Zone C:84,000; Zone D:63,000.
The four salesmen are also considered to differ in ability. It is estimated that working under the same condition their yearly sales would be proportionately as follows:
Salesman P:7; Salesman Q:5; Salesman R:5; Salesman S:4. If the criterion is maximum expected total sales, the intuitive answer is to assign the best salesman to the richest zone, the next best to the second richest zone and so on. Verify this by the method of assignment. [8]

7. (a) The following table gives data on normal time & cost and crash time& cost for a project.

Activity	Normal		Crash	
	Time (days)	Cost (₹)	Time (days)	Cost (₹)
1 – 2	6	600	4	1,000
1 – 3	4	600	2	2,000
2 – 4	5	500	3	1,500
2 – 5	3	450	1	650
3 – 4	6	900	4	2,000
4 – 6	8	800	4	3,000
5 – 6	4	400	2	1,000
6 – 7	3	450	2	800

The direct cost per day is ₹100
(i) Draw the network and identify the critical path [8]
(ii) What are the normal project duration and associated cost?

7. (b) Four products A, B, C and D have ₹5, ₹7, ₹3 and ₹9 profitability respectively. First type of material (limited supply of 800 kg) is required by A, B, C, and D at 4 kg, 3 kg, 8 kg, and 2 kg, respectively per unit. Second type of material has a limited supply of 300 kg, and is for A, B, C, and D at 1 kg, 2 kg, 0 kg, and 1 kg per unit. Supply of other types of material consumed is unlimited. Machine hours available are 500 hours and requirements are 8, 5, 0, and 4 hours for A, B, C, and D each per unit. Labour hours are limited to 900 hours and requirements are 3, 2, 1 and 5 hours for it profitability? Formulate this as Linear Programming Problem. You are not required to solve the LPP. [8]

8. Write Short note (any four) [4×4]
(a) Cost Driver.
(b) Cost Control Vs cost Reduction.
(c) Application of Simulation.
(d) Activity Based Management.
(e) Value Engineering.
(f) Skimming Pricing Policy.