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 x 2 = 20]

(i) A company has forecast sales and cost of sales for the coming year as ₹ 25 lakhs and ₹ 18 lakhs respectively.
The inventory turnover has been taken as 9 times per year. In case the inventory turnover increases to 12 times and the short term interest rate on working capital is taken as 10%, what will be saving in cost?
(a) ₹ 10,000 (b) ₹ 20,000 (c) ₹ 15,000 (d) ₹ 5,000

(ii) Which of the following would decrease unit contribution margin the most?
(a) 15% decrease in selling price (b) 15% increase in variable costs
(c) 15% decrease in variable costs (d) 15% decrease in fixed costs

(iii) When allocating service department costs 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.

(iv) A company produces two joint products, P and V. In a year, further processing costs beyond split-off point spent were ₹ 8,000 and ₹ 12,000 for 800 units of P and 400 units of V respectively. P sells at ₹ 25 and V sells at ₹ 50 per unit. A sum of ₹ 9,000 of joint cost were allocated to product P based on the net realization method. What were the total joint cost in the year?
(a) ₹ 20,000 (b) ₹ 10,000 (c) ₹ 15,000 (d) None of these

(v) A company is to market a new product. It can produce up to 1,50,000 units of this product. The following are the estimated cost data:

	Fixed Cost	Variable Cost
For production up to 75,000 units	₹ 8,00,000	60%
Exceeding 75,000 units	₹ 12,00,000	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

(vi) The following details relate to two competing companies, Alps and Himalayas, for identical projects:

I. The net present value (NPV) of Alps is ₹ 20,000 and its internal rate of return (IRR) is 18%.

II. For the same life period, Himalayas' estimated cash flows are:

Year	₹ '000
0	(450)
1	300
2	200
3	100

And its cost of capital is 15%.

Which one of the following combinations is correct concerning the NPV and the IRR of the two projects?

Projects	
Alps	**Himalayas**
A) Higher NPV	Higher IRR
B) Higher NPV	Lower IRR
C) Lower NPV	Higher IRR
D) Lower NPV	Lower IRR

(vii) Nulook Ltd. Uses a JIT system and back flush accounting. It does not use a raw material stock control account During May, 8000 units were produced and sold. The standard cost per unit is ₹ 100; this includes materials of ₹ 45. During May, ₹ 4,80,000 of conversion costs were incurred.

The debit balance on cost of goods sold account for May was

(a) ₹ 8,00,000 (b) ₹ 8,40,000 (c) ₹ 8,80,000 (d) ₹ 9,20,000

(viii) 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

(ix) In calculating the life cycle costs of a product, which of the following items would be included?

A. Planning and concept design costs
B. Preliminary and detailed design costs
C. Testing costs
D. Production costs
E. Distribution costs

(a) All of the above (b) D and E (c) B, D and E (d) D

(x) Back flush costing is most likely to be used when

(a) Management desires sequential tracking of costs
(b) A Just-in-Time inventory philosophy has been adopted
(c) The company carries significant amount of inventory
(d) Actual production costs are debited to work-in-progress.

Section B

Answer any five questions from Question No. 2 to 8
Each question carries 16 marks. [5 x 16 = 80]

2. (a) Desktop Co. manufactures and sells 7,500 units of a product. The full Cost per unit is ₹ 100. The Company has fixed Its price so as to earn a 20% return on an Investment of ₹ 9,00,000.

Required:

(i) Calculate the Selling Price per unit from the above. Also, calculate the mark-up % on the Full Cost per unit.

(ii) If the Selling Price as calculated above represents a mark- up% of 40% on Variable Cost per unit. Calculate the Variable Cost per unit.

(iii) Calculate the Company's Income if it had increased the Selling Price to ₹ 115. At this price, the Company would have sold 6,750 units. Should the company have increased the Selling price to ₹ 230? **[2+2+2=6]**

(b) A local Government authority owns and operates a leisure centre with numerous sporting facilities, residential accommodation, a cafeteria and a sports shop. The summer season lasts for 20 weeks including a peak period of 6 weeks corresponding to the school holidays. The following budgets have been prepared for the next summer season:

Accommodation:

60 single rooms let on a daily basis.

35 double rooms let on a daily basis at 160% of the single room rate.

Room rate:

Fixed costs ₹ 29,900.

Variable costs ₹ 4 per single room per day and ₹ 6.40 per double room per day

Sports centre:

Residential guests each pay ₹ 2 per day and casual visitors ₹ 3 per day for the use of facilities. Fixed costs ₹ 15,500.

Sports Shop:

Estimated contribution ₹ 1 per person per day.

Fixed costs ₹ 8,250.

Cafeteria:

Estimated contribution ₹ 1.50 per person per day.

Fixed costs ₹ 12,750.

During the summer season the centre is open 7 day a week and the Following activity levels are anticipated.

Double rooms fully booked for the whole season.

Single rooms fully booked for the peak period but at only 80% of Capacity during the rest of the season.

30 casual visitors per day on average.

You are required to:

i) Calculate the charges for single and double rooms assuming that the authority wishes to make a ₹ 10,000 profit on accommodation.

ii) Calculate the anticipated total profit for the leisure centre as a whole for the season. **[5+5=10]**

3. A firm has two machines, namely, machine 'P' and machine 'Q'. Machine 'P' can be used for the production of either product 'A' or product 'B' or both. Machine 'Q' can be used for the production of either product 'X' or product 'Y' or both. In order to maintain customer relations a minimum quantity of 1500 units each of 'A' and 'B' and 1200 units each of 'X' and 'Y' should be produced by the firm.

The production and cost data for 2016 are as under:

Machine hours available P - 4500 hours

Q - 5100 hours

	PRODUCTS			
	A	**B**	**X**	**Y**
Machine used	**P**	**P**	**Q**	**Q**
Machine hours required per unit of out put	1.0	1.25	1.25	0.8
Selling price per unit	₹ 200	₹ 250	₹ 300	₹ 256
Direct material per unit	80	100	100	80
Direct labour per machine hour	90	80	100	125
Variable overhead per machine hour	12	12	20	20

Fixed overheads are ₹ 4 lacs per annum. An additional expenditure involving a fixed overhead of ₹ 25,000 per annum will convert the machine P and Q into a versatile centre such that any four of the products can be manufactured on these two machines. The rate of output on these machines and direct wage rate will, however, remain the same. Required:

i) Set an optimal product mix subject to minimum market commitments both before and after the conversion of the machines into a versatile centre.
ii) Evaluate the profitability under the two sets or product mixes.
iii) Advise the management whether the conversion of machine should be undertaken or not. **[7+7+2=16]**

4. **(a)** Despite the increase in the sales price of its sole product to the extent of 20%, a company finds that it has incurred a loss during the year 2012-13 to the extent of ₹ 4 lakhs as against a profit of ₹ 5 lakhs made in 2011-12. This adverse situation is attributed mainly to the increase in prices of materials and overheads, the increase over the previous year being on the average, 15% and 10% respectively.
The following figures are extracted from the books of the company:

	31-3-2012	31-3-2013
Sales	1,20,00,000	1,29,60,000
Cost of Sales:		
Material	80,00,000	91,10,000
Variable overhead	20,00,000	24,00,000
Fixed overhead	15,00,000	18,50,000

Required: Analyze the variances over the year in order to bring out the reasons for the fall in profit. **[12]**

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

5. **(a)** A Company with two manufacturing divisions 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 orders 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 his 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. **[3+(1+1)+3= 8]**

(b) The budgeted overheads and cost driver volumes of XYZ are as follows.

Cost Pool	Budgeted Overheads (₹)	Cost Driver	Budgeted Volume
Material procurement	5,80,000	No. of orders	1,100
Material handling	2,50,000	No. of movements	680
Set-up	4,15,000	No. of set ups	520
Maintenance	9,70,000	Maintenance hours	8,400
Quality control	1,76,000	No. of inspection	900
Machinery	7,20,000	No. of machine hours	24,000

The company has produced a batch of 2,600 components of AX-15, its material cost was ₹ 1,30,000 and labor cost ₹ 2,45,000. The usage activities of the said batch are as follows.

Material orders – 26, maintenance hours – 690, material movements – 18, inspection – 28, set ups – 25, machine hours – 1,800

Calculate – cost driver rates that are used for tracing appropriate amount of overheads to the said batch and ascertain the cost of batch of components using activity Based Costing.

[8]

6. **(a)** A firm received an order to make and supply eight units of standard product which involves intricate labor operations. The first unit was made in 10 hours. It is understood that this type of operations is subject to 80% learning rate. The workers are getting a wages rate of ₹ 12 per hour.
(i) What is the total time and labour cost required to execute the above order?
(ii) If a repeat order of 24 units is also received from the same customer, what is the labour cost necessary for the second order? **[3+3=6]**

(b) A Company has 4 factories F_1,F_2,F_3 and F_4, manufacturing the same product. Production and raw material costs differ from factory to factory and are given in the table below in the first two rows. The transportation costs from the factories to the sales depots S_1, S_2 and S_3 are also given. The last two columns in the table below give the sales price and total requirements at each depot and the production capacity of each factory is given in the last row.

	F_1	F_2	F_3	F_4	Sales Price/Unit (₹)	Requirement
Production Cost/Unit (₹)	15	18	14	13		
Raw Materials Cost/Unit (₹)	10	9	12	9		
Transportation Cost/Unit (₹)						
S_1	3	9	5	4	34	80

S_2	1	7	4	5	32	120
S_3	5	8	3	6	31	150
Production capacity	10	150	50	100		

Determine the optimal solution and the associated profit by using the Vogel's Approximation Method (VAM). **[10]**

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

(b) A Factory manufactures 3 products which are processed through 3 different production stages. The time required to manufacture one unit of each of the three products and the daily capacity of the stages are given in the following table:

State	Time/unit in minutes			
	Product	Product 2	Product 3	Stage capacity (minutes)
1	1	2	1	430
2	3	-	2	460
3	1	4	-	420
Profit/unit	₹ 3	₹ 2	₹ 5	

Formulate LPP. **[8]**

8. Write short notes on any four out of the following 5 questions. **[4x4=16]**
(a) Throughput Accounting
(b) Lean Accounting
(c) Cost Control Vs. Cost Reduction
(d) Total Quality Management (TQM)
(e) Benefits of ERP.