Paper 15 – Strategic Cost Management and Decision Making

Paper 15 - Strategic Cost Management and Decision Making

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

Section A

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

(i) A company has the capacity of production of 80,000 units and presently sells 20,000 units at ₹ 100 each. The demand is sensitive to selling price and it has been observed that with every reduction of ₹ 10 in selling price the demand is doubled. What should be the target cost at full capacity if profit margin on sale is taken as 25%?

(a) ₹ 75 (b) ₹ 90 (c) ₹ 60 (d) ₹ 25

(ii) If the direct labour cost is reduced by 20% with every doubling of output, what will be the cost of labour for the sixteenth unit produced as an approximate percentage of the cost of the first unit produced?

(a) 51.2% (b) 40.96% (c) 62% (d) None of these

(iii) A company determines its selling price by marking 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

(iv) B Ltd. Has earned net profit of ₹ 1 lakh, and its overall P/V ratio and margin of safety are 25% and 50% respectively. What is the total fixed cost of the company?

(a) ₹ 2,50,000 (b) ₹ 2,00,000 (c) ₹ 3,00,000 (d) ₹ 1,00,000

(v) A company has 2,000 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

(vi) The total cost of manufacturing a component is as under at a capacity of 50,000 units of production:

	₹
Prime cost	10.00
Variable overheads	2.40
Fixed Overheads	4.00
	16.40

The selling price is ₹ 21 per unit. The variable selling and administrative expenses is 60 paise per component extra. During the next quarter only 10,000 units can be produced and sold. Management plans to shut down the plant estimating that the fixed manufacturing cost can be reduced to ₹ 74,000 per quarter. When the plant is

operating, the fixed overheads are incurred at a uniform rate throughout the year. Additional costs of plant shutdown for the quarter are estimated at ₹ 14,000.
The shut down pint for the quarter in units of product will be :
(a) ₹ 25,000 (b) ₹ 14,000 (c) ₹ 11,000 (d) ₹ 20,000

(vii) A company manufactures two products using common material handling facility. The total budgeted material handling cost is ₹ 60,000. The other details are:

	Product X	Product Y
Number of units produced	30	30
Material moves per product line	5	15
Direct labour hour per unit	200	200

Under activity based costing system the material handling cost to be allocated to product X (per unit) would be:
(a) ₹ 1,000 (b) ₹ 500 (c) ₹ 1,500 (d) ₹ 2,500

(viii) A company operates throughput accounting system. The details of product X per unit are as under.

Selling Price	₹ 50
Material Cost	₹ 20
Conversion cost	₹ 15
Time on bottleneck resources	10 minutes

The return per hour for product X is:
(a) ₹ 210 (b) ₹ 300 (c) ₹ 180 (d) ₹ 90

(ix) The information relating to the direct material cost of a company is as under:

	₹
Standard price per unit	3.60
Actual quantity purchased in units	1,600
Standard quantity allowed for actual production in units	1.450
Material price variance on purchase (favourable)	240

What is the actual purchase price per unit?
(a) ₹ 3.45 (b) ₹ 3.75 (c) ₹ 3.20 (d) ₹ 3.25

(x) If the time taken to produce the first unit of a product is 4000 hrs, what will be the total time taken to produce the 5th to 8th unit of the product, when a 90% learning curve applies?
(a) 10,500 hours (b) 12,968 hours (c) 9,560 hours (d) 10,368 hours

Section B
Answer any five questions from Question No. 2 to 8
Each question carries 16 marks. 5 × 16 = 80 M

2. (a) A2Z p.l.c supports the concept of tero technology or life cycle costing for new investment decisions covering its engineering activities. The financial side of this philosophy is now well established and its principles extended to all other areas of decision making.

The company is to replace a number of its machines and the Production Manager is torn between the Exe Machine, a more expensive machine with a life of 12 years, and the Wye machine with an estimated life of 6 years. If the Wye machine is chosen it is likely that it would be replaced at the end of 6 years by another Wye machine.

The pattern of maintenance and running costs differs between the two types of machine and relevant data are shown below:

	Exe	**Wye**
Purchase price	₹ 19,000	₹ 13,000
Trade-in value/breakup/scrap	₹ 3,000	₹ 3,000
Annual repair costs	₹ 2,000	₹ 2,600
Overhaul costs	(at year 8) ₹ 4,000	(at year 4) ₹ 2,000
Estimated financing costs averaged over machine life	10%p.a	10% p.a.

You are required to: recommend with supporting figures, which machine to purchase, stating any assumptions made. **[8]**

(b) (i) A machine which originally cost ₹ 12,000 has an estimated life of 10 years and it depreciated at the rate of ₹ 1,200 per year. It has been unused for some time, however, as expected production orders did not materialise.

A special order has now been received which would require the use of the machine for two months.

The current net realisable value of the machine is ₹ 8,000. If it is used for the job, its value is expected to fall to ₹ 7,500. The net book value of the machine is ₹ 8,400. Routine maintenance of the machine currently costs ₹ 40 per month. With use, the cost of maintenance and repairs would increase to ₹ 60 per month.

What would be the relevant cost of using the machine for the order so that it can be charged as the minimum price for the order?

(ii) X 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 require the following materials:

Materials	**Total units required**	**Units already in stock**	**Book Value of units in stock**	**Realizable Value**	**Replacement Cost**
			₹/unit	**₹/unit**	**₹/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

A. 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.

B. 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 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 to be specially incurred besides the relevant cost of material is ₹ 550. **[2 + 6 = 8]**

3. A small-scale manufacturing unit has employed skilled persons for doing pressing and welding operations on various products. The welders produce two different products, W_1 and W_2. The press operators also produce two products, P_1 and P_2. Due to specific

skill requirements, the press operators can't do welding job and vice-versa. The labour hours and cost data in respect of the above 4 products are as under.

	W_1	W_2	P_1	P_2
Hours per unit	4	4	5	2
Price per unit (₹)	50	50	80	65
Direct Material per unit (₹)	18	22	35	45
Direct Labour Rate per hour	₹ 4	₹ 4	₹ 4	₹ 4
Variable Overheads per unit	₹ 2	₹ 2	₹ 3	₹ 3

The unit incurs ₹ 50,000 per annum on fixed costs for producing the above products. The available labour hours for welding are 20,000 and for pressing 16,000.

The unit has also observed that the market can absorb minimum 2,000 units of W_1 2,500 units of W_2 1,800 units of P_1 and 2,200 units of P_2. The demand keeps on fluctuating. The manager of the shop has, therefore suggested that the workers should be trained to do either of welding or pressing job so that any excess demand can be fulfilled. It is estimated that this decision will increase the burden of fixed costs by ₹ 5,000 p.a.

Required:

(a) Present the figures of optimum product mix assuming that the minimum marketable quantity is produced before the workers are trained and after they are trained.
(b) Prepare profitability statement for optimum product mix under both the above conditions and recommend whether it is advisable to train employees. **[16]**

4. **(a)** The budgeted output of a single product manufacturing company for 2016-17 was 5,000 units. The financial results in respect of actual output of 4,800 units achieved during the year were as under:

Direct Material	₹ 29,700
Direct Wages	44,700
Variable overheads	72,750
Fixed overheads	39,000
Profit	36,600
Sales	2,22,750

The standard direct wage rate is ₹ 4.50 per hour and the standard variable overhead rate is ₹ 7.50 per hour.

The cost accounts recorded the following variances for the year.

Variances	Favourable	Adverse
Material Price	₹ ——	₹ 300
Material usage	——	600
Wage rate	750	—
Labour efficiency	——	2,250
Variable overhead expense	3,000	——
Variable overhead efficiency	——	3,750
Fixed overhead expense	——	1,500
Selling price	6,750	——

Required to:

(i) Prepare a statement showing the original budget.
(ii) Prepare the standard product cost sheet per unit.

(iii) Prepare a statement showing the reconciliation of originally budgeted profit and actual profit. **[4 + 4 + 4 = 12]**

(b) Distinguish Standard Costing from Budgetary Control. **[4]**

5. (a) Division A is a profit centre which produces three products X, Y and Z. Each product has an external market.

	X	Y	Z
External market price per unit	₹ 48	₹ 46	₹ 40
Variable cost of production in division A	₹ 33	₹ 24	₹ 28
Labour hours required per unit in division A	3	4	2

Product Y can be transferred to Division B, but the maximum quantity that might be required for transfer is 300 units of Y.

	X	Y	Z
The maximum external sales are:	800 units	500 units	300 units

Instead of receiving transfers of Product Y from Division A, Division B could buy similar product in the open market at a slightly cheaper price of ₹ 45 per unit.

What should the transfer price be for each unit for 300 units of Y, if the total labour hours available in Division A are?

(i) 3800 hours (ii) 5600 hours. **[5 + 5 = 10]**

(b) What is Bench trending and how does it differ from Bench Marking? **[6]**

6. (a) A Small retailer has studied the weekly receipts and payments over the past 200 weeks and has developed the following set of information:

Weekly Receipts	**Probability**	**Weekly Payments**	**Probability**
(₹)		(₹)	
3000	0.20	4000	0.30
5000	0.30	6000	0.40
7000	0.40	8000	0.20
12000	0.10	10000	0.10

Using the following set of random numbers, simulate the weekly pattern of receipts and payments for the 12 weeks of the next quarter, assuming further that the beginning bank balance is ₹ 8000. What is the estimated balance at the end of the 12 weekly period? What is the highest weekly balance during the quarter? What is the average weekly balance for the quarter?

Random Numbers

For Receipts	03	91	38	55	17	46	32	43	69	72	24	22
For payment	61	96	30	32	03	88	48	28	88	18	71	99

According to the given information, the random number interval is assigned to both the receipts and the payments. **[8]**

(b) A captain of a cricket team has to allot five middle batting positions to five batsmen. The average runs scored by each batsman at these positions are as follows:

Batting Position						
Batsmen		III	IV	V	VI	VII

	A	40	40	35	25	50
	B	42	30	16	25	27
	C	50	48	40	60	50
	D	20	19	20	18	25
	E	58	60	59	55	53

Make the assignment so that the expected total average runs scored by these batsmen are maximum. **[8]**

7. **(a)** A civil engineering firm has to bid for the construction of a dam. The activities and time estimates are given below:

Activity	DURATION		
	Optimistic	**Most likely**	**Pessimistic**
1 – 2	14	17	25
2 – 3	14	18	21
2 – 4	13	15	18
2 – 8	16	19	28
3 – 4 (dummy)			
3 – 5	15	18	27
4 – 6	13	17	21
5 – 7 (dummy)			
5 – 9	14	18	20
6 – 7 (dummy)			
6 – 8 (dummy)			
7 – 9	16	20	41
8 – 9	14	16	22

The policy of the firm with respect to submitting bids is to bid the minimum amount that will provide a 95% of probability of at best breaking even. The fixed costs for the project are 8 lakhs and the variable costs are ₹ 9,000 everyday spent working on the project. The duration is in days and the costs are in terms of rupees.

What amount should the firm bid under this policy? (You may perform the calculations on duration etc. upto two decimal places). **[10]**

(b) A firm manufacturers and sells two products Alpha and Beta. Each unit of Alpha requires 1 hour of machining and 2 hours of skilled labour, whereas each unit of Rate uses 2 hours of machining and 1 hour of labour. For the coming month the machine capacity is limited to 720 machine hours and the skilled labour is limited to 780 hours. Not more than 320 units of Alpha can be sold in the market during a month. Unit contribution from Alpha is ₹ 6 and from Beta is ₹ 4.
Develop a suitable model that will enable determination of the optimal product mix to maximize the contribution. **[6]**

8. Write short notes on any four out of the following five questions. **[4 × 4 = 16]**

(a) Six Sigma
(b) Kaizen Costing
(c) Value Analysis
(d) Business Process Re-engineering.
(e) Socio Economic Costing