

**Paper- 15 : MANAGEMENT ACCOUNTING – ENTERPRISE PERFORMANCE MANAGEMENT**

**Time Allowed: 3**

**Hours Full Marks: 100**

**The figures in the margin on the right side indicate full marks.**

**Attempt Question No. 1 (carrying 25 marks), which is compulsory and any five more questions (each carrying 15 marks) from the rest.**

**Please: (i) Answer all part of a question at one place only.**

**(ii) Open a new page for answer to a new question.**

**Working Notes should form part of the answer.**

**Whenever necessary, suitable assumptions should be made and indicated in answer by the candidates.**

- 1. (a) In each of the cases given below, only one is the most appropriate option. Indicate the correct answer (=1 mark) and show your workings/reasons briefly in support of your answer (=1 mark): [2×5=10]**

**(i)** A company makes and sells a single product. The selling price and marginal revenue equations are :

$$\text{Selling Price} = ₹ 100 - ₹ 0.001X$$

$$\text{Marginal Revenue} = ₹ 100 - ₹ 0.002X$$

Where X is the product the company makes. The variable costs amount to ₹20 per unit and the fixed costs are ₹2,00,000.

In order to maximize the profit, the selling price should be:

- A. ₹ 25
- B. ₹ 30
- C. ₹ 40
- D. ₹ 60

**(ii)** A particular job requires 1,600 kgs of material - X.

1,000 kgs. of the particular material is currently in stock.

The original price of the material - X was ₹ 600 but current resale value of the same has been determined as ₹ 400. If the current replacement price of the material - X is ₹ 1.20 per kg., the relevant cost of the material - X required for the job would be :

- A. ₹ 1,920
- B. ₹ 600
- C. ₹1,120
- D. None of these.

**(iii)** Vipul Ltd., is preparing its Sales Budget for the coming 3 months. The Sales Department has given an estimate that Sales will be 2,40,000 units, if the monsoon is good and 1,60,000 units if the monsoon is poor. The probability that the monsoon will be poor is 0.3. The expected Sales Volume for next quarter would be:

- A. 1,68,000 units
- B. 1,60,000 units
- C. 2,16,000 units
- D. None of these.

**(iv)** Kalpit 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

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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.

- (v) A company has budgeted break-even sales revenue of ₹16,00,000 and fixed costs of ₹6,40,000 for the next period. The sales revenue needed to achieve a profit of ₹1,00,000 in the period will be
- A. ₹ 7,40,000
  - B. ₹ 9,25,000
  - C. ₹ 6,40,000
  - D. ₹ 18,50,000

**(b) Define the following terms in one/two sentences:**

[1×5=5]

- (i) Vat analysis;
- (ii) Detector;
- (iii) Control Chart ;
- (iv) Query tools;
- (v) Generic Benchmarking.

**(c) Expand the following abbreviations:**

[1×5=5]

- (i) CPOF;
- (ii) EMS;
- (iii) CER;
- (iv) FMECA;
- (v) FAST.

**(d) Fill in the blanks with the appropriate word out of the options indicated in the bracket against each statement:**

[1×5=5]

- (i) Instead of (accepting / not accepting) the current practice, Zero Base Budgeting creates a challenging and questioning attitude.
- (ii) Finite Capacity Scheduling (FCS) is an extension of [Capacity Requirement Planning (CRP)/ Manufacturing Resource Planning (MRP)].
- (iii) Marginal Cost is a (constant/ variable) ratio which may be expressed in terms of an amount per unit of output.
- (iv) In a Transportation Problem, when the quantities are allocated to cost cells within the matrix and if such allocations are less than the number of rows plus number of columns plus one, such situation is known as (unbalanced/ degeneracy).
- (v) A relative measure of (standard deviation/dispersion) is the coefficient of variation.

**2. (a) What are the stages involved in the creation of a Balanced Score Card?**

[5]

- (b) Yummy Food have observed from a market survey that they can sell a special type of packed snack at a price of ₹ 50 per pack during festive season only.

However, for this purpose they will have to make a fresh investment of ₹3,00,000 in equipment. The variable cost of production would be ₹25 p.u. The variable cost of production would come down to ₹20 if the investment is made for ₹6,00,000. The likely sales to be achieved are as under:

Volume	Probability
10,000	0.30
20,000	0.50
30,000	0.20

There will be no residual value of investments at the end of the festive season. Should the company go ahead and invest? [3]

- (c) A Mutual Fund has cash resources of ₹200 million for investment in a diversified portfolio. Table below shows the opportunities available, their estimated annual yields, risk factor and term period details.  
Formulate a Linear Programming Model to find the optimal portfolio that will maximize return, considering the following policy guidelines:
- All the funds available may be invested.
  - Weighted average period of at least five years as planning horizon.
  - Weighted average risk factor not to exceed 0.20
  - Investment in real estate and speculative stocks to be not more than 25% of the monies invested in total.

Investment type	Annual yield (percentage)	Risk factor	Term period (years)
Bank deposit	9.5	0.02	6
Treasury notes	8.5	0.01	4
Corporate deposit	12.0	0.08	3
Blue-chip stock	15.0	0.25	5
Speculative stocks	32.5	0.45	3
Real estate	35.0	0.40	10

[7]

3. (a) The frequency distribution of Contribution per Unit, Annual Demand and Investment requirement of a manufacturing Company were found as below –

Contribution per Unit (₹)	3	5	7	9	10
Relative frequency	0.1	0.2	0.4	0.2	0.1

Annual demand (in 1000 units)	20	25	30	35	40	45	50
Relative frequency	0.05	0.10	0.20	0.30	0.20	0.10	0.05

Required Investment (₹000s)	1,750	2,000	2,500
Relative frequency	0.25	0.50	0.25

Consider the random number 93, 03, 51, 59, 77, 61, 71, 62, 99, 15 for simulating 10 run, to

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estimate the Percentage of Return on Investment ( $ROI = \frac{\text{Cash inflow}}{\text{Investment}} \times 100$ ) for each run. Find the average ROI. [10]

**(b)** What is lean manufacturing? Briefly describe the lean/JIT system. [5]

- 4. (a)** A Company paid ₹2,00,000 and acquired a machine on 1-10-2010. Its annual operation cost is ₹ 15,000 excluding depreciation. The machine will have a 5-year useful life with zero terminal value.

The machine was just put on trial and was used for one day when the supplier offered a different model to do the same job. The annual operating cost of the revised model is ₹ 9,000 exclusive of depreciation. The new machine will cost ₹24,000. The old machine can be sold for ₹10,000. The cost of removal of the old machine is ₹2,000. The new machine will also have a five-year life with zero terminal value. Sales will be ₹2,50,000 per annum and all other cash costs will be ₹2,10,000 per annum regardless of the decision to change the machine. The machine is installed in a separate building and the written down value of the building is ₹5,00,000. If this building is sold now, it will fetch ₹10 lakhs but the company proposes to use the building for installing the machine.

You are required to explain whether each item of income or expense or cost stated above is relevant or not in deciding on the replacement of the machine. [4]

**(b)** Five Swimmers are eligible to compete in a relay team that should have four swimmers swimming different styles- backstroke, breaststroke, free style and butterfly. The time taken for the five swimmers - Anand, Balu, Chandru, Deepak and Eswar – to cover a distance of 100 metres in various swimming styles are given below in minutes: seconds. Anand swims backstroke in 1:09, breaststroke in 1:15 and has never competed in free style or butterfly. Balu is a free style specialist averaging 1:01 for 100 metres but can also swim breaststroke in 1:16 and butterfly in 1:20. Chandru swims all styles, backstroke 1:10, breaststroke 1:12, free style 1:05 and butterfly 1:20. Deepak swims only butterfly at 1:11 while Eswar swims backstroke 1:20, breaststroke 1:16, free style 1:06 and butterfly 1:10. Which swimmers should be assigned to which swimming style? Who will not be in the team? [8]

**(c)** State what is Cause – Effect Diagram and when should it be used? [3]

- 5. (a)** What are the characteristics and Principles of Business Re-engineering Process? [5]

**(b)** Best Ltd. 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:

- 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 ₹230. At this price, the Company would have sold 13,500 units. Should the Company have increased the selling price to ₹230?

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- iv. 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? [6]

**(c)** What are the options for Demand Stimulation? [4]

6. **(a)** For a particular product, the following output is planned for the next 6 months:-

Month	Output in units
1	100
2	150
3	300
4	300
5	500
6	150

The constant capacity of production per month in normal time is 200 units at an output cost of ₹15 per unit. Production carried out by overtime working, which will have to be limited to 50 units per month, will incur an output cost of ₹25 per unit. Any excess requirement of production unit will have to be obtained from a subcontractor at an output cost of ₹30 per unit.

The company policy prevents utilizing back orders.

The Inventory Carrying Cost is ₹5 per unit.

Calculate cost of aggregate plan. [8]

**(b)**

A Company produces three products A, B and C. The following information is available for a period:

Product	A	B	C	Throughput Accounting Ratio
Contribution (₹ per unit) (Sales – Direct Materials)	30	25	15	
Machine hours required per unit of production:				
Machine 1	10 hours	2 hours	4 hours	133.33%
Machine 2	15 hours	3 hours	6 hours	200.00%
Machine 3	5 hours	1 hour	2 hours	66.67%

Estimated Sales Demand for A, B and C are 500 units each and machine capacity is limited to 6,000 hours for each machine. You are required to analyze the above information and apply Theory of Constraints process to remove the constraints. How many units of each product will be made? [4]

**(c)** List the characteristics of MCS. [3]

7. **(a)** A review, made by the top management of W & W Ltd. which makes only one product, of the result of the first quarter of the year revealed the following:

Sales in units	20,000
Loss	₹20,000
Fixed cost (for the year ₹2,40,000)	₹60,000

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Variable cost per unit	₹8.00
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The Finance Manager who feels perturbed suggests that the company should at least break even in the second quarter with a drive for increased sales. Towards this, the company should introduce better packing which will increase the cost by ₹0.50 per unit.

The Sales Manager has an alternative proposal. For the second quarter additional sales promotion expenses can be increased to the extent of ₹10,000 and a profit of ₹10,000 can be aimed at during the period with increased sales.

The Production Manager feels otherwise. To improve the demand, the selling price per unit has to be reduced by 3%. As a result the sales volume can be increased to attain a profit level of ₹8,000 for the quarter.

The Manager Director asks you as a Cost Accountant to evaluate the three proposals and calculate the additional sales volume that would be required in each case, in order to help him to take a decision.

**[10]**

**(b)** Outline the limitations of Standard Costing.

**[5]**

**8. Write Short Notes on any three out of the following:**

**[3x5=15]**

- (a)** Kaizen Costing;
- (b)** Value Chain Analysis;
- (c)** "Zero Defects" and "Rights First Time";
- (d)** Budget Process and its impact on human behavior.