

Time Allowed : 3 Hours

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 (each carrying 15 marks) from the rest.

1. (a) State whether the following statements are 'True' or 'False'. If false, you are to put up the correct statement. 1x5
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|---|-----|
| (i) In fact, the 'effector' is another name for Management Information System(MIS). | (0) |
| (ii) The concept of value analysis was first conceived by Jerry Kaufman. | (0) |
| (iii) 'Symbiotic relationship' is one in which the cooperative action of semi-independent sub-systems taken together produces a total output greater than the sum of their outputs taken independently. | (0) |
| (iv) A 'level strategy', one of Aggregate Planning strategies, implies matching demand and capacity period by period. | (0) |
| (v) Balance Score Card is a performance measurement tool for controlling individual productivity. | (0) |
- (b) Choose the most appropriate one from the stated options and write it down: 1x5
- | | |
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| (i) The concept of Management Control System (MCS) should be credited to
A. Joseph Maciariello and Calvin Kirby;
B. Calvin Kirby and L.Von Bertalanffy;
C. Joseph Maciariello and Jack Welch;
D. Jack Welch and Robert Anthony. | (0) |
| (ii) The structural decision components of the operations strategy are
A. Capacity, organization and workforce;
B. Capacity, facilities, vertical integration & technology;
C. Capacity, organization and technology;
D. Technology, organization and information systems. | (0) |
| (iii) Back Flush Costing is most likely to be used when
A. Management desires sequential tracking of costs;
B. JIT inventory Philosophy has been adopted;
C. Company carries significant amount of inventory;
D. Actual production costs are debited to work-in-progress. | (0) |
| (iv) The phrases 'zero defects' and 'right first time' were coined by
A. Kaoru Ishikawa;
B. Philip Crosby;
C. Peter Drucker;
D. None of the above. | (0) |
| (v) A company's approach to a make-or-buy decision –
A. depends on whether the company is operating at or below normal volumes;
B. involves an analysis of avoidable costs; | (0) |

- C. should use absorption costing;
D. should use Activity-Based Costing.

(c) Define the following terms, in not more than two sentences: 2x5

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|----------------------------|-----|
| (i) Learning curve effect; | (0) |
| (ii) Quality circle; | (0) |
| (iii) Operations strategy; | (0) |
| (iv) Linear programming; | (0) |
| (v) Cost driver. | (0) |

(d) Write out what the following abbreviations stand for in the context of Enterprise Performance Management: 1x5

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|-------------|-----|
| (i) CRP; | (0) |
| (ii) TOC; | (0) |
| (iii) IBCH; | (0) |
| (iv) QFD; | (0) |
| (v) CWQC. | (0) |

2. (a) The impact of control system on human behavior can be better explained by budgetary control. Explain. 5 (0)

(b) XYZ Ltd., supports the concept of the Life Cycle Costing for new investment decisions, covering its engineering activities. XYZ Ltd. is to replace a number of its machines and the Chief Engineer is to decide between the 'AB' machine, a more expensive machine, with a life of 10 years and the 'CD' machine with an estimated life of 5 years. If the 'CD' machine is chosen, it is likely that it would be replaced at the end of 5 years by another 'CD' machine. The pattern of maintenance and running costs differs between two types of machine and the relevant data are as given below. 10 (0)

	Rs.	
	AB	CD
Purchase price	19,000	13,000
Trade –in–value	3,000	3,000
Annual repair cost	2,000	2,600
Overhaul cost(p.a.)	4,000	2,000
	(at year 8)	(at year 4)
Estimated financing cost averaged over machine life(p.a.)	10%	10%

Required: Recommend, with supporting figures, which machine to be purchased, stating any assumptions made.

[Given PVIF (10,10)	= 0.30
PVIF (10,5)	= 0.62
PVIFA (10,10)	= 6.15
PVIFA (10,5)	= 3.80
PV factor@ 10% for 4 yrs.	= 0.68
PV factor@ 10% for 8 yrs.	= 0.47]

PVIF means present value interest factor.

PVIFA means present value interest factor for an Annuity.

3. (a) Define Bench-mark. Outline the different types of Bench-marking.

6 (0)

(b) An Engineering Company produces product P in its Production shop 'A'. The overhead recovery rate is 100% of direct wages based on the following budgeted figures:

9 (0)

Direct wages:	1,60,000
Variable overheads	64,000
Fixed overheads	96,000

The production plan for the same budget period envisages an output of 18,000 units of P, whose sales and cost data are as under:

	Rs./unit
Selling price:	42
Direct materials	12
Direct wages	8
Total overheads	8

The company proposes to use the balance capacity of shop A after completing the above said production plan for the manufacture of component Q, whose cost data are as under:

	Rs./unit
Direct materials	8
Direct wages	16
Total overheads	16

The component Q is used by the company in the manufacture of some other product in another production department.

The company receives and export order from abroad for the purchase of 2000 units of product P at Rs.30 each. This offer can be accepted by diverting the capacity from component Q. In that event, the company has to buy the component which is available from an outside supplier at a price of Rs.40 each.

You are required to evaluate the alternative courses of action and state with reasons whether the spare capacity should be utilised for the manufacture of

- (i) The component Q or;
- (ii) 2000 units of product P for export and buying of the component Q from the outside supplier.

4. (a) What is Product Life Cycle Costing? State its characteristics and benefits.

1+2+2 (0)

(b) Four products A, B, C and D have Rs.5, Rs.7, Rs.3 and Rs.9 profitability respectively.

10 (0)

First type of material(Limited supply of 800kgs.) is required by A, B, C and D at 4 kgs., 3kgs., 8 kgs., and 2 kgs. respectively per unit.

Second type of material has a limited supply of 300kgs. and is for A, B, C and D at 1 kg, 2 kgs., 0 kg. and 1 kg. per unit. Supply of the other type of materials consumed is not limited. Machine hrs. available are 500 hours and the 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 A, B, C and D respectively.

How should the firm approach so as to maximise its profitability? Formulate this as a linear programming problem. You are not required to solve the LPP.

5. (a) "Purpose of Sensitivity Analysis is to identify the critical variable in the project analysis." — Discuss. 5 (0)

- (b) Domestic political trouble in the country of an overseas supplier is causing concern in your company because it is not known when further supplies of raw material 'X' will be received. The current stock held of this particular raw material is 17,000 kgs., which costs RS.1,36,000.

Based on raw material 'X', your Company makes five different products and the expected demand for each of these, for the next three months, is given below together with other relevant information:

Product Code	Kilogram of raw material 'X'/unit of finished product (Kg.)	Direct labour hours/unit of finished product (Hrs.)	Selling Price/unit (Rs.)	Expected demand over three months (Units)
701	0.7	1.0	26	8,000
702	0.5	0.8	28	7,200
821	1.4	1.5	34	9,000
822	1.3	1.1	38	12,000
937	1.5	1.4	40	10,000

The direct wages rate/hour is Rs.5 and production overhead is based on direct wages cost. The variable overhead absorption rate being 40% and the fixed overhead absorption rate being 60%. Variable selling costs, including sales commission are 15% of selling price.

Budget fixed selling and administration costs are Rs.3,00,000 per annum. Assume that the fixed production overhead incurred will equal the absorbed figure.

You are required to:

- (i) Show what quantity of the raw material on hand ought to be allocated to which products in order to maximize profits for the forthcoming three months.
- (ii) Present a brief statement showing contribution and profit for the forthcoming three months, if your suggestion in (i) is adopted.

6. (a) List out ten steps of quality improvement as has been conceptualised by Philip Crosby. 5 (0)

- (b) A confectioner sells confectionery items. Past data of demand/week in hundred kilograms with frequency is given below: 10 (0)

Demand/week	0	5	10	15	20	25
Frequency	2	11	8	21	5	3

Using the following sequence of random numbers, generate the demand for the next 10 weeks. Also find out the average demand per week.

Random Numbers: 35, 52, 13, 90, 23, 73, 34, 57, 35, 83.

7. (a) A machine, which originally cost Rs.12,000 has an estimated life of 10 years and it depreciated at the rate of Rs.1,200 per year. It has been unused for sometime, 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.

7 (0)

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

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

8 (0)

Materials	Total units required	Units already in stock	Book value of units in stock (Rs./unit)	Realisable value (Rs./unit)	Replacement cost (Rs./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 Rs.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 incurred besides the relevant cost of material is Rs.550.

8. Write short notes on:

3x5

- (a) Drum–Buffer–Rope;
- (b) Six Sigma;
- (c) Philosophy of Quality Circle.

(0)

(0)

(0)