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601

B. E. (Sixth Semester) EXAMINATION, June, 2012

(Common for AU, IP/IEM, ME & TX Engg. Branch)

OPERATIONS MANAGEMENT

Time : Three Hours

Maximum Marks : 100

Minimum Pass Marks : 35

Note : Attempt all questions. All questions carry equal marks. Each question has three parts, attempt any *two* out of them. Assume suitable data, if required.

1. (a) Explain the Porter's five forces model. How is this model useful in deciding business strategy ? 10

   (b) Explain the production strategy of make to order (MTO), make to stock (MTS) and assemble to order (ATO) with suitable examples. 10

   (c) Write short notes on any *two* of the following : 10

   (i) ERP

   (ii) Productivity

   (iii) WIP

2. (a) What requirements should be fulfilled by product design ? Explain brief the factors determining the design of a product. 10

P. T. O.

(b) What is meant by standardisation ? How does it help in designing a product ? State the advantages and limitations of standardisation. 10

(c) What do you mean by Design of Manufacuring (DFM) ? What are its objectives and benefits ? Explain how DFM can affect the profitability of an organization. 10

3. (a) An aircraft has four active, independent and identical engines, two each on both the wings. Engine reliability is 0·98. Calculate the reliability of the aircraft flying safely when. 10

(i) All four engines must function properly for aircraft to fly safely.

(ii) One engine on each wing must function properly for aircraft to fly safely.

(iii) Any *one* engine is sufficient for aircraft to fly safely.

(b) The maintenance cost and resale value per year of a machine whose purchase price is ₹7,000 is given below :

Year	Maintenance Cost in (₹	Resale Value in (₹
1	900	4,000
2	1,200	2,000
3	1,600	1,200
4	2,100	600
5	2,800	500
6	3,700	400
7	4,700	400
8	5,900	400

When should the machine be replaced ? 10

(c) How quality improvement is related to cost reduction ? Explain in detail taking suitable example. 10

4. (a) How does a good plant layout help to improve productivity ? What are the merits and limitation of CRAFT ? What modification do you suggest ? 10

(b) What are Inventories ? What is the need of Optimizing Inventory Levels ? What are different types of inventories classified based on purpose of stocking ? 10

(c) How is the problem of locating a single plant different from that of locating an additional plant in an existing system of production facilities ? In location choice, under what conditions must the criterion be maximum profit ? Maximum revenue and minimum relevant costs ? 10

5. (a) What do you understand by aggregate plan and master production scheduling ? Explain how the aggregate plans and master production schedules serve as initiators of action in other functional activities of the organization. 10

(b) A firm producing paint, plans to use simple exponential smoothing to forecast weekly demand and has collected the past data for 15 weeks as shown below : 10

Week No.	Actual demand
1	30
2	35
3	20
4	15
5	10
6	10
7	15
8	20
9	30
10	35
11	30
12	10
13	12
14	20
15	30

Compute the forecast value using $\alpha = 0{\cdot}2$ for 16th week, simple moving average may be used for determining forecast of 15th week.

(c) Write short notes on any *two* of the following : 10

(i) JIT lean manufacturing

(ii) Kanban and CONWIP shopfloor controls

(iii) Kaizen

(iv) Causal and Delphi methods