Paper 9 - Operations Management & Information Systems

Time allowed-3hrs   Full Marks: 100

Section I
(Operations Management)
Answer Question No. 1 which is compulsory and answer any two from the rest, under Section I.

Working Notes should form part of the answer.

1. (a) State whether the following statements are true or false: (1 x 7 =7)

   (i)   Plastic coating is less durable than painting.
   (ii) A work stoppage generally reduces the cost of production.
   (iii) Annealing involves heating and cooling operations.
   (iv) A transistor is a semiconductor device commonly used as an amplifier or an electrically controlled switch.
   (v)   In a network analysis, a job which the slack time is zero is known as non-critical job.
   (vi) Decisions under uncertainty are not always obvious.
   (vii) Quality of lot submitted for inspection is the percentage of defectives actually present in it.

   (b) Expand the following abbreviations: (1 x 7 =7)

   (i)   CAE
   (ii) LTPD
   (iii) LRC
   (iv) BCWS
   (v)   CPOF
   (vi) COPQ
   (vii) WBS

2. (a) An electric company which generates and distributes electricity conducted a study on the life of poles. The repatriate life data are given in the following table:

Life data of electric poles

Year after installation:	1	2	3	4	5	6	7	8	9	10
Percentage poles failing:	1	2	3	5	7	12	20	30	16	4

   (i) If the company now installs 5,000 poles and follows a policy of replacing poles only when they fail, how many poles are expected to be replaced each year during the next ten years?
        To simplify the computation assume that failures occur and replacements are made only at the end of a year.
   (ii) If the cost of replacing individually is ₹ 160 per pole and if we have a common group replacement policy it costs ₹ 80 per pole, find out the optimal period for group replacement.   7

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

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**

(c) A department of a company has to process a large number of components/month. The process equipment time required is 30 minutes/component and the manual skilled manpower required is 10 minutes/component. The following additional data is available:

	Availability/month	Efficiency of utilization
Equipment hour	400	80%
Skilled manpower hours	250	65%

What is the maximum possible production under the current conditions? **4**

3. (a) List the basic steps in Strategic Bench trending. **5**
   (b) Explain the term "Idea Generation". **4**
   (c) Explain how Technology and Economics interact with each other? **5**
   (d) What are the elements of lean production? **4**

4. (a) Draw the network for the following activities and find critical path and total duration of project.

Activity	Duration (months)	Activity	Duration (months)
1-2	2.5	4-5	2.0
2-3	2.5	5-6	3.0
2-4	1.5	6-7	1.5
3-4	1.0	5-7	1.5
3-5	1.0		

8

(b) What are the merits of Delphi method of forecasting technique? **5**
(c) Calculate EBQ from the details: Monthly demand -4000 units, setting up costs per batch - ₹200, cost of manufacture per unit - ₹60, rate of interest – 10% p.a. **3**
(d) What are the disadvantages of Vertical Integration? **2**

<div align="center">

Section II
Information System
Answer Question No. 5 which is compulsory and answer any two from the rest, under Section II.

</div>

5. (a) Fill in the blanks given below : **(1 x 10 =10)**

   (i)   An ------------ software does the analysis of information from data warehouse.
   (ii) The basic aim of ---------------- in data structure is to eliminate redundancy and inconsistent dependency.
   (iii) Tree topology is a combination of --------- topologies.

(iv) ---------------- is the reverse process to convert the scrambled form of text into readable text.

(v) Half-duplex is a mode of data ---------------.

(vi) DBMS reduces data -------------.

(vii) ----------- file contains the information which are permanent in nature.

(viii) ------------ which is made up of dummy transaction data containing both valid and invalid conditions.

(ix) Electronic data interchange is the ------------- transmission of data between organizations by electronic means.

(x) -------------- means that due to digital revolution almost all digital devices can communicate with one another.

(b) Expand the following abbreviations: (1 x 4 =4)
   (i)   BPM
   (ii) UoD
   (iii) ISAM
   (iv) URL

6. Write short notes: (2 x 9 =18)
   (a) Entity Integrity
   (b) Normalization
   (c) Procedural DML
   (d) Conceptual Schema
   (e) Virtual Reality
   (f) DDP
   (g) Automated Storage and Retrieval Systems (ASRS)
   (h) Deterministic system
   (i) Executive Information System (EIS)

7. (a) Write down the importance of Marketing Information System. 5
   (b) Mention the characteristics of good quality information. 3
   (c) State the concept of Search Engines. 4
   (d) "Quality can be viewed as hinging on two major factors." What are the factors? 2
   (e) List the General Mode of Configuration. 4

8. (a) What are the important activities related to setting up of base in ERP System? 6
   (b) State where the Information Technology Act, 2000 is not applicable. 6
   (c) What are the advantages of Computer Based Information System (CBIS)? 4
   (d) Define Electronic Financial Transaction (EFT). 2