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) Fill in the blanks given below:**   **[1 x 4 =4]**

   (i) ------------- is the process of polishing a work, after grinding, by means of abrasive materials to give fine finish.
   (ii) -------------- is a method of Job Evaluation.
   (iii) The adoption of JIT normally requires to improve ----------------.
   (iv) KAIZEN is a --------- strategy of continuous improvement.

   (b) Expand the following abbreviations: **[1 x 5 =5]**

   (i) MTM
   (ii) MBO
   (iii) AQL
   (iv) MTBF
   (v) SCM

   (c) State whether following statements are true or false: **[1 x 5 =5]**

   (i) A pump moves liquids from higher pressure to lower pressure.
   (ii) Technology has been one of the main drivers of globalization of business.
   (iii) Project cost increases as the duration of the project increases.
   (iv) Quality of lot submitted for inspection is the percentage of defectives actually present in it.
   (v) Z Chart is used in Quality Control.

2. **(i)** Describe the factors influencing Product Design.   **[5]**

   (ii) H Industries is planning to set up a new plant. Following is a table showing alternative locations and respective costs (in ₹)

Costs	Location 1	Location 2	Location 3	Location 4	Location 5
Transport,₹ per unit of production	1.00	1.50	1.35	1.65	1.70
Power, ₹ per unit of production	1.25	0.65	1.05	1.20	0.75
Investment in Land*	50 lakhs	35 lakhs	40 lakhs	20 lakhs	30 Lakhs
Building Construction*	130 lakhs	110 lakhs	120 lakhs	90 lakhs	100 Lakhs
Equipment (capital cost), ₹ per unit of production					

volume	2.50	2.80	2.00	3.00	4.50
Location Taxes, etc.	10 lakhs	8 lakhs	12 lakhs	9 lakhs	20 lakhs
Wages (average),₹ per unit of production	0.90	1.00	1.40	0.90	0.80

*to be costed at 15% per annum

If the volume of production is to be 5,00,000 units, what is the preferred location? If the volume is expanded to 7,00,000 units, would the decision change? **[6]**

(iii) The annual sale of Computers by a dealer in Chennai are as under:

Year	2010	2011	2012	2013	2014
Sales (thousand units)	3	14	36	4	33

Fit a linear trend equation to the sales figure and estimate the sales for the year 2015. **[7]**

3. (i)A company has four zones open and four marketing managers available for assignments. The zones are not equal in sales potentials. It is estimated that a typical marketing manager operating in each zone would bring in the following annual sales:

Zones	East	West	North	South
Sales (₹)	2,40,000	1,92,000	1,44,000	1,20,000

The four marketing managers are also different in ability. It is estimated that working under the same conditions, their yearly sales would be proportionately as under:

Manager	M	N	O	P
	8	7	5	4

If the criterion is maximum expected total sales, find the optimum assignment and the maximum sales. **[12]**

(ii) List the programmes included in Preventive Maintenance schedule. **[4]**

(iii) Define the term Competitive Benchmarking. **[2]**

4. (i) The Everalert Ltd, which has a satisfactory preventive maintenance system in its plant, has installed a new Hot Air Generator based on electricity instead of fuel oil for drying the finished products. The Hot Air Generator requires periodic shutdown maintenance. If the shutdown is scheduled yearly, the cost of maintenance will be as under:

Maintenance cost	₹ 15,000	₹ 20,000	₹ 25,000
Probability	0.30	0.40	0.30

The costs are expected to be almost linear i.e. if the shutdown is scheduled twice per year, the maintenance cost will be double.

The probability distribution of breakdown cost is estimated as under:

Breakdown costs per annum	₹ 75,000	₹ 80,000	₹ 1,00,000
Shutdown once a year	0.20	0.50	0.30
Shutdown twice a year	0.50	0.30	0.20

Stimulate the total costs - maintenance and breakdown - and recommend whether the shutdown should be resorted once or twice a year.

Random numbers

Maintenance costs (shut down once a year)	27, 44, 22, 32, 97
Maintenance costs (shut down twice a year)	42, 04, 82, 38, 91
Breakdown costs (shut down once a year)	03, 50, 73, 87, 59
Breakdown costs (shut down twice a year)	54, 65, 49, 03, 56

[10]

(ii) Draw the network for the following activities and find critical path and total duration of project:

Activity	Dependence	Duration (days)	Activity	Dependence	Duration (Days)
A	-	6	G	C, D	3
B	-	3	H	E	5
C	A	5	I	C ,D	5
D	A	4	J	G,H	2
E	B	3	K	F	3
F	B	2	L	J,K	2

[8]

Section II
Information System

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

5. (a) Fill in the blanks given below : [1 x 5 =5]
   (i) Oracle is based on a concept of -------- Technology.
   (ii) ------------ has become a standard practice among many organizations as a way to add flexibility to chain.
   (iii) File activity = ----------- / Number of records in the file.
   (iv) --------- is a redundant digit derived from some mathematical relation, out of other digits of the code, which is incorporated in the code itself to ensure correctness of code.
   (v) After Bootstrapping, Operating System from ---------- is loaded into RAM to put the computer in operation.

   (b) Expand the following abbreviations: [1 x 5 =5]
   (i) MOTIS
   (ii) OOPS
   (i) B-ISDN
   (ii) OLE
   (iii) SVGA

   (c) State whether following statements are true or false: [1 x 4 =4]
   (i) Data Mart has no relevance to Data Warehousing.
   (ii) A record is identified by its key field.
   (iii) In fact, the 'effector' is another name for Management Information System (MIS).
   (i) Memory is used to store data, programs and results.

6.   (i) State the advantages of System Development Life Cycle from the perspective of Information System Audit. **[4]**
    (ii) Describe Firewall and state its advantages. **[5]**
    (iii) Define Database Administrator. **[4]**
    (iv) In a Purchasing Order Processing system, a purchase order record has the following fields:

Field Name	Maximum Field Size
Purchase order number	6
Vendor Code	3
Order-quality	5
Order date	6
Record Deletion maker	1

It is estimated that at any point of time, the outstanding Purchase Order file would have a maximum of 750 outstanding purchase order records in the file (once material is received, the purchase order record is purged from the file.) However, there may be a 15% increase in the total number of records in near future. The file management software also requires an overhead of 20% for minimizing probabilities of collision and overflow conditions. Compute the total file space requirements after allowing for 10% contingency factor on the total. **[5]**

7.   (i) Describe the term On-line Analytical Processing. **[6]**
    (ii) 'A successful BPR implementation brings significant improvement to productivity, customer service and bottom –line.'- State the implementation phases. **[8]**
    (iii) List the sub-systems under the Sales and Distribution Module of an ERP system. **[4]**

8.   (i) Describe the composition of the Cyber Appellate Tribunal. **[5]**
    (ii) List the main reasons for the spread of E-commerce. **[6]**
    (iii) 'According to Section 30 of the Information Technology Act,2000, Certifying Authority shall follow certain procedures in respect of Digital Signatures.'- List the procedures. **[4]**
    (ii) Discuss the purposes of Telnet. **[3]**