Paper 9 - Operations Management & Information System

Full Marks: 100 **Time allowed-3hrs**

This paper contains 3 questions. All questions are compulsory, subject to instruction provided against each question. All workings must form part of your answer. Assumptions, if any, must be clearly indicted.

Question No. 1 : Answer all questions. [20 marks]

1. (a) 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. 2
   (b) Define Total Productivity. 2
   (c) Define the three levels of quality. 2
   (d) What do you mean by Pragmatic JIT? 2
   (e) What are the disadvantages of Vertical Integration. 2
   (f) Define MDD as a sequencing rule for single facility. 2
   (g) Define the term Virtual Reality. 2
   (h) What is DDP? 2
   (i) Write the shortcomings of SDLC. 2
   (j) "Quality can be viewed as hinging on two major factors." What are the factors? 2

2. Answer any three questions.

(a) (i) List the basic steps in Strategic Bench trending. 6
(ii) Explain the term "Idea Generation". 4
(iii) Explain how Technology and Economics interact with each other? 6

(b) (i) 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

(ii) 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. 8

(iii) What are the elements of lean production? 4

(c) (i) 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: 7

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

- **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.
- **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.**

(ii) What are the merits of Delphi method of forecasting technique? 5

(iii) What are the advantages of KAIZEN technique? 4

(d) (i) 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		

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(ii) The demand for computers has been rising rapidly since 2005. The following data are for one of the metropolitan cities. Fit a quadratic curve to the data and forecast the demand during years 2014, 2015, 2016, 2017 and 2018. 8

Year	Demand ('000)
2005	25
2006	35
2007	50
2008	65
2009	85
2010	115
2011	150
2012	205
2013	285

3. Answer any two questions.

(a) (i) What are the advantages of Computer Based Information System (CBIS)? 4

(ii) State the concept of Search Engines. 4

(iii) Write down the importance of Marketing Information System. 5

(iv) Mention the characteristics of good quality information. 3

(b) (i) What are the impediments in introducing E-commerce? 4

(ii) In a payroll system, the employee master file is being designed to have records of fixed length consisting of the following fields:

Field Name	Maximum field size
Employee Number	5
Employee Name	36
Designation	10
Date of birth	5
Date of joining	5
Selection code	5
Qualification	20
Training codes	10
Scale of pay	10

The Employee Master has 2000 employee records presently. Once an employee leaves, his record is deleted. However, it is estimated that there may be fresh recruitment upto 15% of present strength in future. The file management software also requires an overhead of 20% for minimizing probabilities of collision and overflow conditions. Compute the total file space requirement after allowing for 10% contingency factor on total. 6

(iii) "There can be many specialists in a database environment". Name at least four such specialists and mention the duties of any two of them who may be considered essential. [2+4]

(c) (i) What are the important activities related to setting up of base in ERP System? 6

(ii) Explain the Cash Management module of an ERP system. 2

(iii) Define Electronic Financial Transaction(EFT). 2

(iv) State where the Information Technology Act, 2000 is not applicable. 6