Paper 9- Operation Management and Information Systems

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Full Marks : 100 **Time allowed: 3 hours**

Section – A

I. Answer the following question which is compulsory:

1. Answer any five of the following questions. **[5×2=10]**

(a) What is lead time?
(b) Define product mix.
(c) Define routine maintenance.
(d) What does sigma value indicates?
(e) What KAIZEN mean?
(f) What is open system?
(g) Define primary key.
(h) What is Iconic model?

2. Match the following: **[5×2=10]**

List A	List B
A. Inventory control	(i) Maintenance store
B. Availability of vital spare parts essentially To meet an emergency like break down	(ii) stock level
C. Voluntary group to identify problems	(iii) Acceptance test
D. Knowledge base	(iv) quality circle
E. Carried out by end user	(v) expert system

3. Statement whether the following statements are True/False: **[5]**

(a) An operating system is defined as a configuration of resources for the provision of goods or services.
(b) Product layout is also known as straight line layout.
(c) Private key is used to create a digital signature.
(d) Database approach increasing redundancy.
(e) Readymade software is one, which meets the full – customized requirements of a specific organization.

4. Fill in the blanks with one word or two: **[5×1=5]**

(a) efficiency = (_____ / actual hours) x 100.
(b) _____ study is concerned with the determination of the amount of time required to perform a unit of work.
(c) processed data is known as _____
(d) data which described about another data is _____.
(e) database management is responsibility of _____

Section – B

II. Answer any three questions from the following: **[15×3=45]**

1. (a) Machines A and B are both capable of processing the product. The following information is given:

Particulars	Machine A	Machine B
Investment	₹ 75,000	₹ 80,000
Interest on capital Invested	10%	15%
Hourly charge (wage + power)	₹ 10	₹ 8
Pieces produced per hour	5	8
Annual operating hours	2000	2000

Which machine will give the lower cost per unit of production, if run for the whole year? If only 4000 prices are to be produced in a year, which machine would give the lower cost per piece? **[6]**

(b) From the following time series data of sale project the sales for the next three years.

Year	2009	2010	2011	2012	2013	2014	2015
Sales ('000 units)	80	90	92	83	94	99	92

Project the trend values for 2016,2017 and 2018. **[9]**

2. (a) The following jobs are waiting to be processed in a turning shop today (July, 23). The estimates of the time needed to complete the jobs are as follows:

Jobs (j)	Due date	Processing time (t_1) in days
1	July 31	
2	August 2	
3	August 16	
4	July 29	
5	August 30	

Sequence the jobs based on the minimum critical ratio. **[7]**

(b) A bakery keeps stock of a popular brand of cakes. Previous experience shows the daily demand pattern for the item with associated probabilities, as given:

Daily demand (no.s)	0	10	20	30	40	50
Probability	0.01	0.20	0.15	0.50	0.12	0.02

Use the following sequence of random numbers to simulate the demand for next 10 days. Also find out the average demand per day
Random Numbers: 25,39,65,76,12,05,73,89,19,49. **[8]**

3. (a) Priyanshu enterprise has three factories at locations A, B and C which supply three warehouses located at D,E and F. Monthly factory capacities are 10,80 and 15 units respectively. Monthly warehouse requirements are 75,20 and 50 units respectively. Unit shipping costs (in ₹) are given in the following table.

	To	D	E	F
	A	5	1	7
From	B	6	4	6
	C	3	2	5

The penalty costs for not satisfying demand at the warehouses D,E and F are ₹5, ₹3 and ₹2 per unit respectively. Determine the optimum distribution for priyanshu, using any of the known algorithms. **[8]**

(b) What are the factors, which influence plant layout? **[7]**

4. **(a)** Explain various methods of LPP? **[7]**
(b) What are the major process decision? **[8]**

Section – C

III. Answer any two questions from the following:

1. **(a)** Explain characteristics of an information system? **[8]**
(b) Discuss fact finding techniques used by a system analyst? **[7]**

2. **(a)** Explain different types of database backups? **[8]**
(b) what are the basic features of an MIS? **[7]**

3. **(a)** Explain ERP with E-commerce? **[8]**
(b) Explain about EDI? **[7]**