Paper 9- OPERATIONS MANAGEMENT & 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 demonstrated capacity?
(b) Define critical path.
(c) Define Quality Circle.
(d) What is P-D-C-A Cycle?
(e) Define entropy.
(f) What do you mean by DSS?
(g) What is iconic scale model?

2. Match the following: [5×1=5]

	List A		List B
A.	Load Control	**1)**	Product Mix determination
B.	Linear Programming (LP)	**2)**	Transportation Application
C.	Vogel's Approximation Method (VAM)	**3)**	Bottleneck Center
D.	Information	**4)**	Digital Signature
E.	Primary Key	**5)**	Refined data

3. Statement whether the following statements are True/False: [5×1=5]

(a) An operating system is defined as a configuration of resources for the provision of goods or services.
(b) Critical path is the shortest path from beginning of the project to ending of the project.
(c) An open system is a self contained one and normally a rigid one.
(d) MRP is a marketing technique.
(e) Industrial Engineering is a staff function.

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

(a) _____ are the largest ERP solution provider.
(b) Processed data is known as _____.
(c) Database management is responsibility of _____.
(d) _____ is a single purpose machine tools designed for cutting gears.
(e) Expand OLTP _____ .

Section – B

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

1. (a) The work-study engineer carries out the work sampling study for 120 hours. The following observations were made for a machine shop:

Total number of observations	7000
No. of Idle activities	1200

Ratio between manual to machine elements	3:1
Total number of jobs produced during study	800 units
Rest and personal allowances	17%

Compute the standard time for the job. **[7]**

(b) A fleet owner finds from his past records that the costs per year of running a vehicle whose purchase price is ₹50,000 are as under:

Year	1	2	3	4	5	6	7
Running Cost (₹)	5,000	6,000	7,000	9,000	11,500	16,000	18,000
Resale Value (₹)	30,000	15,000	7,500	3,750	2,000	2,000	2,000

Thereafter, running cost increases by ₹2,000, but resale value remains constant at ₹2,000. At what age is a replacement due? **[8]**

2. (a) Production Manager of a unit wants to know from what quantity he can use automatic machine against semi-automatic machine.

Data	Automatic	Semi-automatic
Time for the job	4 mins	10 mins
Set up time	4 hrs	3 hrs
Cost per hour	₹40	₹24

Calculate the break-even point. **[5]**

(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 (nos.)	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. **[10]**

3. (a) State the eight most Common Benchmarking errors. **[8]**

(b) PQR Company has kept records of breakdowns of its machines for 300 days work year as shown below:

No. of breakdown	Frequency in days
0	40
1	150
2	70
3	30
4	10
	300

The firm estimates that each breakdown costs ₹650 and is considering adopting a preventive maintenance program which would cost ₹200 per day and limit the number of breakdown to an average of one per day. What is the expected annual savings from preventive maintenance program? **[7]**

4. (a) A department works on 8 hours shift, 288 days a year and has the usage data of a machine, as given below:

Product	Annual Demand (units)	Processing time (Standard time in hours)
A	325	5.0
B	450	4.0
C	550	6.0

Calculate (i) processing time needed in hours to produce products A, B, and C, (ii) Annual production capacity of one machine in standard hours, and (iii) Number of machines required. **[8]**

(b) Discuss the objectives of the Material Requirement Planning. **[7]**

Section – C

III. Answer any two question form the following: [15×2=30]

1. (a) Explain Relational Data Base Management System. **[6]**
(b) List the tangible benefits of ERP. **[5]**
(c) State when DBMS should not be used. **[4]**

2. (a) Define EIs and List the special features of and EIS. **[2+5=7]**
(b) List the major constraints in operating MIS. **[8]**

3. (a) List the advantages & disadvantages in E-commerce. **[8]**
(b) State the benefit of Business Intelligence (BI). **[7]**