Paper 9 - Operations Management and Information Systems

Section –A

[Question no. 1 is Compulsory and any 4 from the rest]

1. Answer the following questions: [6 × 2]

   (a) The time study of a machinery operation recorded cycle times of 9.0, 8.0, 7.0 and 8.0 minutes. The analyst rated the observed worker as 90%. The firm uses a 0.12 allowance fraction, compute the standard time.
   (b) What is Process Flexibility?
   (c) Define Qualified Worker.
   (d) What are the two directions of vertical integration?
   (e) What are the salient points of the Activity-On –Node convention?
   (f) What is Predictive Maintenance?

2. (a) Machines X and Y are both capable of manufacturing a product. They compare as follows:

Particulars	Machine X	Machine Y
Investment	₹ 1,00,000	₹ 1,60,000
Interest on capital invested	15% per annum	15% per annum
Hourly charges (wages + power)	₹ 10	₹ 8
No. of pieces produced per hour	5	8
Annual operating hours	2000	2000

   (i) Which machine will have the lower cost per unit of output, if run for the whole year?
   (ii) If only 4000 pieces are to be produced in a year, which machine would have the lower cost per piece? [4+4]
   (b) State the benefits of Work Study. [4]

3. (a) ORTIS INVESTMENT MANAGEMENT LTD. (a Mutual Fund company) has ₹ 40 lakh available for investment in Government Bonds, Blue Chip Stocks, Speculative Stocks and Short Term Deposits. The annual expected return and risk factor are given below:

Type of investment	Annual Expected Return (%) (0 to 100)	Risk Factor
Government bonds	12	12
Blue chip Stocks	20	24
Speculative Stocks	25	50
Short terms Deposits	8	5

   The Company (OIML) is required to keep at least ₹ 5 lakh in short term deposits and not to exceed average risk factor of 40. Speculative stocks must be at most 25% of the total amount invested.
   Required:
   How should ORTIS INVESTMENT MANAGEMENT LTD. invest the funds so as to maximize its total expected Annual Return?
   Formulate this as a Linear Programming Problem. You are not required to solve the L.P.P.
   [10]
   (b) Explain the need for acceptance sampling. [2]

4. (a) Location S would result in annual fixed costs of ₹ 3,00,000 variable costs of ₹ 63 per unit and revenues ₹ 68 per unit. Annual fixed costs at Location T are ₹ 8,00,000, variable costs are ₹32 per unit and revenues ₹68 per unit. Sales volume is estimated to be 25,000 units/year. Calculate BEP for each location and determine which location will be attractive. [5]

   (b) What is Quality Control? Mention six objectives of Quality Control. [1+6]

5. A company trading in motor vehicles spares wishes to determine the level of stock it should carry for the item in its range. Demand is not certain and replenishment of stock takes 3 days. For one item X, the following information is obtained:

Demand (Units/day)	1	2	3	4	5
Probability	0.10	0.20	0.30	0.30	0.10

Each time an order is placed, the company incurs an ordering cost of ₹ 20 per order. The company also incurs carrying cost of ₹ 2.50 per unit per day. The inventory carrying cost is calculated on the basis of average stock.
The manager of the company wishes to compare two options for his inventory decision:
A. Order 12 units when the inventory at the beginning of the day plus order outstanding is less than 12 units.
B. Order 10 units when the inventory at the beginning of the day plus order outstanding is less than 10 units.
Currently (on the first day) the company has a stock of 17 units. The sequence of random number to be used is 08, 91, 25, 18, 40, 27, 85, 75, 32, and 52. You are required to carry out a simulation run over a period 10 days, recommended which option the manager should choose. [12]

6. (a) Write short note on Systematic Layout Planning. [6]
   (b) "JIT manufacturing includes many activities." Briefly discuss the activities. [6]

Section – B

Question No. 7 is compulsory and any 4 from the rest

7. (a) Define Bus
   (b) Need for EBCDIC Code
   (c) Define Extranet
   (d) Define Biometric Security [4 × 2]

8. (a) Briefly describe any four program design tools. [6]
   (b) What are the advantages of Sequential File Organisation? [2]

9. (a) What are the different categories of tests that a programmer typically performs on a program unit? [5]
   (b) Write down the characteristics of usefulness of information. [3]

10. (a) Write a short note on Data Dictionary. [4]
    (b) Discuss the different types of implementation strategies. [4]

11. (a) Discuss in brief Master Data Management of an ERP System. [2]
    (b) What does configuration of an ERP system deals with? [2]

    (c) One of the important factors for the success for MIS is the quality of software. List out the criteria, which the software must fulfill for the basis of selection apart from meeting the user specific functional specifications? **[2]**

    (d) Write short note on Business Information System. **[2]**

12. (a) Write down the objectives of The Information Technology Act, 2000. **[4]**

    (b) What does Section 72 of The Information Technology Amendment Act 2008 deals with? **[2]**

    (c) Define Electronic Financial Transaction (EFT). **[2]**