MBSC-3.1D

Sl. No.

III Semester M.B.A. Degree Examination, October/November - 2025
MANAGEMENT (Elective - D)
Operations Research and Analytics
(CBCS Scheme)

Time : 3 Hours **Maximum Marks : 80**

SECTION - A

Answer any Five questions. Each question carries 5 marks. **(5×5=25)**

1. What is operation research?
2. Briefly Explain the concept of duality in LLP.
3. Briefly explain types of failure in replacement.
4. What is sequencing? State the assumption of sequencing?
5. Write a note on cluster analysis.
6. What do you mean by 'Queuing Theory? State its applications.
7. State the objectives of simulation technique.

SECTION - B

Answer any Four questions. Each question carries 10 marks. **(4×10=40)**

8. What are the situations which make the replacement of an item necessary? Explain with suitable examples.
9. Explain the Characteristics of operation research approach.
10. Explain the application of Business Analytics.
11. Explain statistical quality control techniques.
12. In railway marshalling yard, goods trains arrive at a rote of 30 trains per day. Assuming that the inter arrival time follows an exponential distribution and the service time (the time taken to hump a train) distribution is also exponential with an average of 36 minutes. Calculate.

    a) Expected queue size (line length)

    b) Probability that the queue size exceeds 10.

    In the input of train's increases to an average of 33 per day, what will be the change in (i) and (ii) ?

[P.T.O.

13. Solve the following Transportation problem

	1	2	3	*Supply*
1	2	4	3	10
2	6	1	4	20
Demand	20	20	20	

SECTION - C

14. Case (Compulsory) **(1×15=15)**

Find an optimal sequence for the following sequencing problems of four jobs and five machines when passing is not allowed of which processing time (in hours) is given below

Job	Machine				
	M1	M2	M3	M4	M5
A	7	5	2	8	9
B	6	6	4	5	10
C	5	4	5	6	8
D	8	3	3	2	6

Also find the total elapsed time.

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