MB-116D

Sl.No. :

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Third Semester M.B.A. Degree Examination, May - 2025
(SLM Scheme)(NON - CBCS)
MANAGEMENT
Elective - D : Operations
Operations Research and Analytics

Time : 3 Hours **Max. Marks : 80**

SECTION - A

Answer any Five sub-questions. Each Sub question carries Three marks.

[5 × 3 = 15]

Q1) a) What is Duality in Linear Programming?

b) What is OLAP?

c) What do you understand by Big Data management?

d) Define Healthcare Analytics.

e) Write any three advantages of Predictive analytics.

f) Why do we use the Monte Carlo simulation method?

g) What is cluster Analysis?

SECTION - B

Answer any four questions. Each question carries Five marks. **[4 × 5 = 20]**

Q2) What is Data Mining and how does it differ from traditional data analysis methods?

Q3) Assign the five jobs to the five machines so as to maximize the total expected

	1	2	3	4	5
A	2	0	5	2	4
B	1	4	0	2	0
C	3	0	0	0	2
D	4	0	4	5	0
E	0	2	4	0	5

Q4) What are the best practices for effective data visualization?

Q5) What are some benefits and limitations of using Excel for business analytics?

Q6) Explain the concept of transition probabilities in Markov Analysis.

Q7) Write the dual for the following primal problems

Maximize $Z = -5x_1 + 2x_2$

$-x_1 + x_2 \leq -2$

$2x_1 + 3x_2 \leq 5$

$x_1, x_2 \geq 0$

SECTION - C

Answer any three questions. Each question carries Ten marks. [3 × 10 = 30]

Q8) What is data classification and how is it applied in organizing large datasets for analysis?

Q9) Describe the different types of Business Analytics and provide examples of their applications.

Q10) How does Replacement Theory guide decision-making in determining the optimal time to replace equipment that deteriorates over time?

Q11) What are the limitations of the Monte Carlo Simulation and how might these limitations impact the results of a simulation study?

Q12) Special Bakery keeps stocks of popular brands of cake. Daily demand based on previous experience is given below

Daily Demand	5	10	15	20	25	30
Probability	0.01	0.20	0.15	0.50	0.12	0.02

Random numbers 25, 39, 65, 76, 12, 05, 73, 89, 19, 49. Using the sequence, simulate the demand for the next 10 days. Calculate average daily demand.

SECTION D

Q13) **Case (Compulsory)** **[1 × 15 =15]**

Solve the linear programming problem

Maximum $Z = 5x_1 + 3x_2$

Subject to constraint

$3x_1 + 5x_2 \leq 15$

$5x_1 + 2x_2 \leq 10$

$x_1, x_2 \geq 0$

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