MB-105

Sl. No.

I Semester M.B.A. Degree Examination, May/June - 2026

MANAGEMENT

Statistics and Optimization Techniques

(Non-CBCS Scheme)

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

SECTION - A

Answer any Five sub-questions. Each sub-question carries 3 marks. (5×3=15)

1. a) What is CPM?

b) Define Decision Tree Analysis.

c) What is the Saddle Point of the game?

d) State any two basic rule of probability.

e) What are the merits of mode?

f) What is conditional probability?

g) Distinguish between Correlation and Regression analysis.

SECTION - B

Answer any Four questions. Each question carries 5 marks. (4×5=20)

2. Briefly explain the benefits and limitations of Operation Research.

3. Discuss the applications of Inferential Statistics in management decision making.

4. A Teacher wanted to compare two methods of teaching A and B. He selected at random a sample of 22 students. He grouped them into 11 pairs so that the students in a pair have approximately equal scores on a test. In each pair one student was taught by method A and the other by method B and examined after the course. The marks obtained by them are tabulated below.

Pair	1	2	3	4	5	6	7	8	9	10	11
A	24	29	19	14	30	19	27	30	20	28	11
B	37	35	16	26	23	27	19	20	16	11	21

Calculate the rank order correlation coefficient.

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5. In an organization, out of 200 employees, 40 are having their monthly salary more than Rs. 15,000 and 120 of them are regular takers of Alpha Brand Tea. Out of those 40, who are having their monthly salary more than Rs. 15,000, 20 are regular takers of Alpha Brand Tea. If a particular employee is selected, what is the probability that he is having monthly salary more than Rs. 15,000, if he is a regular taker of Alpha Brand Tea?

6. A project manager has identified following activities, their logical sequence and their duration times in days for completion of a project. How CPM technique can help the manager to plan, schedule and complete the project?

Activity	A	B	C	D	E	F	G
Activity Time	9	8	5	8	7	5	5
Predecessor	-	-	A	A	B	C	D, E

7. The following data give the number of passengers traveling by airplane from one city to another in one week.
115, 122, 129, 113, 124, 132, 120, 110, 116
Calculate the mean and standard deviation.

SECTION - C

Answer any Three questions. Each question carries 10 marks. **(3×10=30)**

8. Explain the classification of queuing models.

9. What are the applications of Binominal, Poison and Normal Distribution?

10. For the below frequency distribution find-

a) Inter quartile range.

b) Quartile deviation and its coefficient.

c) Range and its coefficient.

Class Interval	0-10	10-20	20-30	30-40	40-50	50-60	60-70
Frequency	28	31	18	21	36	49	20

11. Find the Karl Pearson's skewness coefficient for the following data

Year	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
No. of persons	10	40	20	0	10	40	16	14

12. In a research it has been found the demand for automobiles in a city depends mainly, if not entirely, upon the number of families living in that city, below table shows for the sales of automobiles in the five cities for the year 2020 and the number of families living in those cities.

City	No. of families in lakhs (X)	Sale of Automobiles in 000's (Y)
A	6	9
B	2	11
C	10	5
D	4	8
E	8	7

Find the best fit linear regression equation and calculate the sales for the year 2023 for city A which is estimated to have 9 lakhs families assuming that the same relationship holds true. Also find out error and standard error between estimated value of Y and actual value of Y.

SECTION - D

13. Case(Compulsory) **(1×15=15)**

For the PERT problem find the critical path and project duration. What is the probability that the project will be completed in 25 days?

Activity	Predecessor	Time		
		Optimistic	Most Likely	Pessimistic
A	-	2	5	14
B	-	1	10	12
C	A	0	0	6
D	A	1	4	7
E	C	3	10	15
F	D	3	5	7
G	B	1	2	3
H	E, F	5	10	15
I	G	3	6	9
