140105

I Semester M.B.A. (Day & Evening) Degree Examination, April/May - 2026

MANAGEMENT

Business Statistics

(CBCS Scheme, 2025)

ACHARYA INSTITUTE OF GRADUATE STUDIES
LIBRARY
Date:
BANGALORE-107

Time : 3 Hours Maximum Marks : 70

SECTION - A

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

1. Illustrate how graphical representations such as histograms and ogives help managers interpret business data.
2. Explain the concept of hypothesis testing and distinguish between Type I and Type II errors.
3. An analysis of monthly wages paid to workers in 2 firms namely ; A and B belonging to the same industry gave the following results:

Particulars	Firm A	Firm B
No. of wage Earners	535	610
Average monthly wage	62.5	57.5
Variance of the distribution	120	135

   a) Which firm pays larger amount as monthly wages?

   b) In which firm you find a greater variability in individual wages.

4. Machine A produces 60% of total output and Machine B produces 40%. Defective rates are 3% and 5% respectively. If a randomly selected product is defective, find the probability that it was produced by Machine B.
5. An economist is interested in estimating the average monthly household expenditure on food items by the household of a town. Based on the past data it is estimated that the standard deviation of the population on the monthly expenditure on food items is Rs.l00. With allowable errors set at Rs. 14, estimate the sample size required at 90% confidence.
6. The average delivery time of an e-commerce company is 5 days with standard deviation 1.2 days. Assume normal distribution. Find:

   a) Probability delivery takes more than 6 days

   b) Percentage of deliveries completed between 4 and 6 days

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7. Customer preference for payment mode across age groups. Use the X^2 test to find out whether there is any association between the customer age group and their preference mode of payment

Age Group	Cash	Card	UPI
Below 30	20	25	35
30-50	30	40	20
Above 50	45	20	15

SECTION - B

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

8. Analyze the role of measures of central tendency and dispersion in interpreting business performance data. Illustrate with managerial examples.

9. The following data relate to the scores obtained by 9 salesmen of a company in an intelligence test and their weekly sales (in Rs 1000's)

Salesmen	A	B	C	D	E	F	G	H	I
Test Scores	50	60	50	60	80	50	80	40	70
Weekly Scores	30	60	40	50	60	30	70	50	60

a) Obtain the regression equation of sales on intelligence test scores of the salesmen

b) If the intelligence test score of a salesmen is 65, what would be his expected weekly sales

10. Ram often flies from Town A and Town B. He can use the airport bus which costs Rs. 25 but if he takes it, there is a 0.08 chance that he will miss the flight. The stay in a hotel costs Rs. 270 with a 0.96 chance of being on time for the flight. For Rs. 350 he can use a taxi which has a 0.99 chance of being on time for the flight. If Mr. X catches the plane on time, he will conclude a business transaction which will produce a profit of Rs. 10,000 otherwise he will lose it. Which mode of transport should Mr. X use? Answer on the basis of EMV criterion.

11. Three Machines are used in the packaging of 10kg of Wheat Flour. Each machine is designed to pack on an average of 10kg flour per bag. Sample of 6 bags were selected from each machine and the amount of wheat packaged in each bag is shown below:

Machine I	15.8	15.9	16.2	16.7	16.3	15.8
Machine II	16.5	16	15.4	15.9	16.2	16.1
Machine III	15.7	16.4	16.2	15.9	15.7	16.3

Use 5% level of significance to test hypothesis that the amount of wheat packaged by the three machines is the same by applying the Kruskal-Wallis test

SECTION - C

12. **(Compulsory) Case Study:** **(1×15=15)**

A Manufacturing company wants to study whether production output differs significantly based on machine type and shift timing. The daily output (units produced) is recorded as follows:

Shift	**Machine A**	**Machine B**	**Machine C**
Morning	52	48	50
Afternoon	55	51	49
Night	58	54	53

At 5% level of significance, test:

a) Whether there is a significant difference in output among machines .

b) Whether there is a significant difference among shifts.