102100

62205

Reg. No.

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

## MANAGEMENT

## Business Statistics

## (CBCS 2019 Scheme)

## PAPER : 1.5

**Time : 3 Hours** **Maximum Marks : 70**

### SECTION - A

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

1. Describe the methods of presenting data through diagrams and graphs.
2. Explain Spearman's rank correlation with suitable illustration
3. Obtain Mean and Mode from the distribution of marks given below:

| **Marks** | Belo w 10 | Belo w 20 | Belo w 30 | Belo w 40 | Belo w 50 | Belo w 60 | Belo w 70 | Belo w 80 | Belo w 90 |
|---|---|---|---|---|---|---|---|---|---|
| **No. of Students** | 4 | 6 | 24 | 46 | 67 | 86 | 96 | 99 | 100 |

4. The data for 10 years on profit earned (Y) by a company and the dividend paid (X) by it yielded the following summated values in Rs. Lakh;

$\sum X = 15, \sum Y = 110, \sum XY = 400, \sum X^2 = 250,$ *and* $\sum Y^2 = 3200$

Compute Arithmetic mean of X and Y, and value of X when Y is 25

5. A survey undertaken by a charity organization to know the wages of women workers in two factories, A and B, published the following results in their annual report. Test at 0.01 level of significance whether there is a significant difference in the mean wages of women workers in the two factories

| **Factors** | **Factory A** | **Factory B** |
|---|---|---|
| Mean Wages(Rs.) | 100 | 105 |
| Standard Deviation | 16 | 24 |
| No. of workers | 800 | 1600 |

**[P.T.O.**

6. Two different varieties of mushroom were grown on 6 and 7 plots of the same size. At the end of the crop run, the following quantities of yield were observed for the two varieties.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Variety I | 16 | 12 | 11 | 13 | 15 | 17 | -- |
| Variety II | 11 | 11 | 10 | 15 | 14 | 16 | 10 |

Using the Mann-Whitney U test, verity at 0.05 level of significance whether the two varieties of mushroom produce the same yield.

7. The average rainfall in cm during 2018-2025 was recorded as under. Obtain trend rainfall data, using the least square method and estimate the rainfall figures for 2026.

| **Year** | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 |
|---|---|---|---|---|---|---|---|---|
| **Rainfall** | 11 | 13 | 15 | 10 | 14 | 17 | 15 | 20 |

## SECTION - B

**Answer any Three questions from the following each question carries 10 marks.**

**(3×10=30)**

8. Explain the concept of a decision tree. Describe the steps involved in constructing a decision tree and explain its importance in managerial decision-making.

9. The weekly wages of 2000 workmen are normally distributed with mean wage of Rs 70 and wage standard deviation of Rs 5. Estimate the number of workers whose weekly wages are (a) between Rs 70 and Rs 71, (b) between Rs 69 and Rs 73, (c) more than Rs 72, and (d) less than Rs 66.

10. Given below are the price-quantity data, with prices quoted in Rs per Kg and production in quintals. Find (a) Laspeyre's price index, (b) Paasche's price index, and (c) Fisher's ideal index and prove Fisher's ideal index satisfies the time reversal and the factor reversal tests.

| | **2023** | | **2024** | |
|---|---|---|---|---|
| **Item** | **Price** | **Production** | **Price** | **Production** |
| **Cheese** | 15 | 500 | 20 | 600 |
| **Butter** | 18 | 590 | 23 | 640 |
| **Paneer** | 22 | 450 | 24 | 500 |

**11.** Calculate the Karl Pearson's Coefficient of correlation for the following ages of husbands and wives at the time of their marriage and test its significance.

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Age of husband(in years) | 23 | 27 | 28 | 28 | 28 | 30 | 30 | 33 | 35 | 38 |
| Age of wife(in years) | 18 | 20 | 22 | 27 | 21 | 29 | 27 | 29 | 28 | 29 |

## SECTION - C

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

An ITC company has purchased three new machines of different makes and wishes to determine whether one of them is faster than the others in producing a certain output. Five hourly production figures are observed at random from each machine and the results are given in table;

| | **Machine $V_1$** | **Machine $V_2$** | **Machine $V_3$** |
|---|---|---|---|
| | 25 | 31 | 24 |
| **Observations** | 30 | 39 | 30 |
| | 36 | 38 | 28 |
| | 38 | 42 | 25 |
| | 31 | 35 | 28 |

Determine whether the machines are significantly different in their mean speeds. Use $\alpha = 5\%$