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# TCS–471

## B. TECH. (CSE)

## (FOURTH SEMESTER)

## MID SEMESTER

## EXAMINATION, March, 2024

## STATISTICAL DATA ANALYSIS WITH R

**Time : 1½ Hours**

**Maximum Marks : 50**

Note : (i) Answer all the questions by choosing any *one* of the sub-questions.

(ii) Each sub-question carries 10 marks.

1. (a) (i) If the mean of 4 numbers, 2, 6, 7 and a is 15 and also the mean of other 5 numbers, 6, 18, 1, a, b is 50. What is the value of b ? (CO1)

*P. T. O.*

(ii) While checking the value of 20 observations, it was noted that 125 was wrongly noted as 25 while calculating the mean and then the mean was 60. Find the correct mean.

(CO1)

OR

(b) Describe univariate, bivariate, and multivariate analysis with example. (CO1)

2. (a) (i) The probability that a managed 60 will live to be 70 is 0.65. What is the probability that out of 10 men, now 60, atleast 7 will live to be 70 ? (CO2)

(ii) Three people are selected at random. Find the probability that all three are born on Sunday. (CO2)

OR

(b) What is probability distribution ? Also explain the importance of probability distribution in statistics. (CO2)



3. (a) If the probability of a bad reaction from a certain injection is 0.001 then what is the change that out of 2000 individuals :(CO2)

(i) exactly 3

(ii) more than 2

(iii) none

(iv) more than 1 individual will get a bad reaction ?

OR

(b) A sample of 100 dry battery cells tested to find the length of life produced the following results. Mean = $\mu$ = 12 hours, standard deviation = $\sigma$ = 3 hours. Assuming that the data are normally distributed, what percentage of battery cells are expressed to have the life : (a) more than 15 hours, (b) less than 6 hours, and (c) between 10 hours and 14 hours.

(CO2)

***P. T. O.***

4. (a) An airplane knows that 5 percent of the people making reservations on a certain flight will not show up. Consequently, their policy is to sell 52 tickets for a flight that can hold only 50 passengers. What is the probability that there will be a seat available for every passenger who shows up ? (CO2)

OR

(b) The diameter an electric cable is assumed to be continuous random variable with probability density function : (CO2)

$$f(x) = 6x(1-x)$$

$$0 <= x <= 1$$

(i) Check that the above is a p.d.f.

(ii) Find the mean and variance

5. (a) What is the difference between : (CO1)

(i) Descriptive and Inferential Statistics

(ii) Measure of central tendency and measure of variability

(iii) Population and sample



OR

(b) Explain the following terms : (CO1)

(i) Prediction error

(ii) Outlier

(iii) Correlation

(iv) Regression

(v) Covariance