OEST111

Reg. No. | | | | | | | | |

I Semester UG All Courses Degree Examination,

February/March - 2024

STATISTICS

Statistical Methods (OE)

(CBCS - NEP Scheme Freshers and Repeaters)

Time : 2½ Hours **Maximum Marks : 60**

Instructions to Candidates:

1. Answer any **Eight** questions from **Section - A** and any **Three** questions from **Section - B.**
2. Scientific **calculators** are allowed.

SECTION - A

I. Answer any **Eight** questions from the following. **(8×3=24)**

1. Explain the different methods of sampling.
2. Distinguish between quantitative and qualitative data.
3. Discuss the graphical representation of statistical data.
4. Mention the merits and de-merits of Arithmetic mean.
5. Give the classical definition of probability. Prove that $P(A)=1-P(A^c)$ where A is any event.
6. Define conditional probability and state the multiplication theorem of probability for two events.
7. Mention the features of Poisson distribution.
8. Define chi-square distribution and state their applications.
9. Define :
   i. null hypothesis
   ii. alternative hypothesis
   iii. Composite hypothesis
10. Write the test procedure for testing single population mean.

[P.T.O.

SECTION - B

II. Answer any **Three** questions from the following. **(3×12=36)**

11. a) What is primary data? Explain the methods of collecting the primary data.

    b) Represent the following data regarding daily wages of workers of a factory by drawing the histogram.

Daily wages ($)	10-14	15-19	20-24	25-29	30-34
No. of workers	150	120	300	400	500

(6+6)

12. a) For the following distribution on mileage (km per liter) of 50 cars of the same model was tested by a manufacturer, find mean, median and mode.

Mileage (km/l)	15	20	22	17	30
No. of cars	6	9	4	10	7

    b) Calculate standard deviation for the following data :

X :	0-10	10-20	20-30	30-40	40-50	50-60
F :	18	34	22	25	13	11

(6+6)

13. a) What is correlation? Mention the types of correlation.

    b) Eight tomato plants of same variety were selected at random and treated, weekly with solution in which X grams of fertilizer was dissolved in a fixed quantity of water. The yield Y kilograms of tomato was recorded.

Plants	A	B	C	D	E	F	G	H
X	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5
Y	3.9	4.4	5.8	6.6	7.0	7.1	7.3	7.7

    i. Plot scatter diagram of Y against X ii) Calculate the equation of regression lineY on X.

    ii. Estimate the yield of plant treated weekly with 2.2 grams of fertilizer. **(2+10)**

14. a) Find the probability of getting a six in three tosses of an unbiased dice using binomial distribution.

    b) A box has 5 white, 4 red, and 3 green balls, 2 balls are drawn at random from the box, find the probability that they are,

    i. of the same color.

    ii. of different color

    iii. 1 green and 1 white. **(6+6)**

15. a) Test whether the two population means are differ significantly at 5% level of significance for the following data given in the table. (Table value +/- 1.96)

II	I	Sample number
5	10	Sample size
4	15	Sample mean
100	90	Sum of the squares of deviation from mean

    b) Discuss the test procedure for testing the significance of single population proportion. **(8+4)**