(b) A random sample of 50 values from a normal population show that standard deviation is 15. Test the hypothesis that whether population standard deviation, σ = 10 is significant at 1% level of significance. (4+4)+6=14

UNIT-V

9. Explain χ^2 test of goodness of fit. State the conditions for the validity of test of goodness of fit. 8+6=14

10. Write short notes on the following : 7+7=14

(a) Sign test

(b) ANOVA and its usefulness.

★★★

χ^2

PG (CBCS) EVEN SEMESTER EXAMINATION, 2024

ECONOMICS

2nd Semester

Course No. : ECOCC - 205 (O)

(Statistics for Economics)

Full Marks : 70

Pass Marks : 28

Time : 3 hours

The figures in the margin indicate full marks for the questions

(Answer five questions taking one from each unit)

UNIT-I

1. (a) Show that the product moment correlation coefficient lies between - 1 and + 1.

(b) Distinguish between product moment correlation coefficient.

(c) What is a regression line? Why are there two regression lines? Discuss. 5+3+(2+4)=14

2. (a) Show that two independent variables are uncorrleated but the converse is not true.

(b) Discuss the concept of partial correlation coefficient and multiple correlation coefficient.

(c) The simple correlation coefficients between temperature (X_1), corn yield (X_2) and rainfall (X_3)

(Turn Over)

are r_{12}=0.59, r_{13}=0.46 and r_{23}= 0.77

Calculate $r_{12.3}$ and $r_{23.1}$ 5+4+5=14

UNIT-II

3. (a) Define mathematical expectation. Show that $\overline{X} = E(X)$

   (b) Distinguish between probability mass function and probability density function.

   (c) The distribution function of a random variable X is given by

$$\begin{aligned} F(x) &= 1-(1+x)e^{-x} \quad \forall\, x \geq 0 \\ &= 0 \quad \forall\, x < 0 \end{aligned}$$

(3+3)+4+4=14

4. (a) Distinguish between binomial distribution and poisson distribution.

   (b) State the properties of normal distribution.

   (c) The mean and variance of a binomial distribution with parameters n and p are 16 and 8. Find the values of

   (i) P (X = 0) and (ii) P (X ≤ 1)

4+5+5=14

UNIT-III

5. Write short notes on the following (any two) 7+7=14

   (i) SRSWR vs SRSWOR

   (ii) Simple random sampling vs startified random sampling

   (iii) Properties of a point estimator

6. (a) Define the following terms:

   (i) Sampling error

   (ii) Standard error

   (iii) Sampling distribution

   (iv) Statistic

   (b) Show that in case of simple random sampling, sample mean is an unbiased estimator of population mean. (2+2+2+2)+6=14

UNIT-IV

7. (a) Define the following terms :

   (i) Null hypothesis

   (ii) Level of significance

   (iii) Power of a test

   (iv) Test statistic

   (b) A random sample of 27 pairs of observations from a normal population provided a correlation coefficient of 0.6. Is this value significant at 5 per cent level of significance? Given, the tabulated value of the appropriate test statistic in this case of 5% level of significance and at relevent degrees of freedom is 2.06.

(2+2+2+2)+6=14

8. (a) Write short notes on the following :

   (i) Applications of Large Sample Test

   (ii) One tailed test vs Two tailed test