Reg. No ..... Name **26P270**

M. A. DEGREE END SEMESTER EXAMINATION - APRIL 2026

SEMESTER 2 : ECONOMICS

COURSE : **24P2ECOT10 : STATISTICAL TOOLS FOR ECONOMIC ANALYSIS**

(For Regular 2025 Admission and Improvement/Supplementary 2024 Admission)

Time : Three Hours Max. Weights: 30

(Use of Scientific calculators and statistical tables are permitted)

PART A

Answer any 8 questions **Weight: 1**

1. What do you mean by sampling distribution of a statistic. (U)
2. Define Neyman condition for sufficiency. (R)
3. The mean and variance of Binomial variate X are 16 and 8 . Find P(X=0). (U)
4. Write down the test statistic and critical region for testing the mean of a normal population, $H_0 : \mu = \mu_0$ when the population variance is unknown. (R)
5. A random variable X takes values 1 and 2 with corresponding probabilities 1/3 and 2/3. Find E(X)? (A)
6. Give an account of Level of significance. (R)
7. Define (1) efficiency and (2) sufficiency of estimators. (U)
8. Define binomial distribution and point out its mean and variance. (R)
9. Define (a) Statistic and (b) Parameter. (U)
10. Define significance level and power of a test. (R)

(1 x 8 = 8)

PART B

Answer any 6 questions **Weights: 2**

11. Explain how t test is used for paired comparison of difference of means. (U)
12. Find the mean and variance of the following distribution (A)

X	:	0	1	2	3
f(x)	:	0.3	0.2	0.1	0.4

13. Explain the method of moments in point estimation. Also check whether sample mean $\bar{x}$ is a moment estimate of A in the case of poisson population with parameter λ. (U)
14. A sample of 100 students is taken from the students of a college with heights having standard deviation 10 cm. The mean height of the sample of students was found to be 168.8 cm. Can we accept the assumption that the mean height of the students of the college is 170 cm. (A)
15. For the Binomial distribution with parameters n and p examine the unbiasedness and consistency of the sample mean $\bar{x}$ in estimating the parameter P. (R)
16. Explain the method of testing the significance of the difference between a sample mean and population mean. (U)
17. Explain the theorems on expectation. (U)
18. Define Chi-square, 't' and F distributions. What are the important applications for these distribution? (R)

(2 x 6 = 12)

PART C

Answer any 2 questions **Weights: 5**

19. Show that (a) $\bar{x}$ is an unbiased and consistent estimator of a population mean, λ of a Poisson population (b) also show that $\frac{n\bar{x}}{n+1}$ is not an unbiased but a consistent estimator of λ of a Poisson population. (U)

20. Define Poisson distribution. Derive mean and variance of Poisson distribution. (R)

21. Describe the 't' test for testing the equality of two means stating clearly the assumptions involved based on (i) independent samples (ii) depent samples. (R)

22. (i) Explain Chi-square test of independence (ii) The following table show the association among 1,000 school boys of their general ability and their mathematical ability. Examine whether they are independent. (A)

Mathematical ability	General Ability		
	Good	Fair	Poor
Good	44	22	4
Fair	265	257	178
poor	41	91	98

(5 x 2 = 10)

OBE: Questions to Course Outcome Mapping

CO	Course Outcome Description	CL	Questions	Total Wt.

Cognitive Level (CL): Cr - CREATE; E - EVALUATE; An - ANALYZE; A - APPLY; U - UNDERSTAND; R - REMEMBER;