Reg. No ..... Name **25P2066**

M. A. DEGREE END SEMESTER EXAMINATION - APRIL 2025

SEMESTER 2 : ECONOMICS

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

(For Regular - 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 is the confidence interval for population mean μ of N(μ,σ) when σ is unknown (R)
2. If f(x) = kx ; 0≤x≤1. Find the value of k (A)
3. Distinguish population and sample (R)
4. Give two applications of chi-square distribution (R)
5. Distinguish simple and composite hypothesis (R)
6. State frequency definition of probability (R)
7. Define (1) Interval estimation (b) confidence interval (R)
8. Write the test 'statistic' for testing the mean of a normal distribution with known standard deviation (R)
9. Distinguish Type I and Type II errors (R)
10. State and prove addtion theorem of expectation. (R)

(1 x 8 = 8)

PART B

Answer any 6 questions **Weights: 2**

11. Briefly explain two important applications of t distribution. (R)
12. Explain (1) significance level and power of a test (2) Type I and Type II errors (3) one tailed and two tailed tests (4) Null and Alternative hypothesis (R)
13. Define 't' distribution. A random sample of size 15 from a normal population with mean 12 is found to have variance $s^2 = 5$. Find the probability that the mean of the sample is less than 10. (A)
14. The mean and variance of a binomal distribution are 3 and 2 respectively. Find the distribution. Also find P(x=0) (A)
15. Distinguish between point estimation and interval estimation. Show that the sample mean is always an unbiased estimator of the Population mean (R)
16. The following table gives data regarding election of candidates to an office. Is attitude towards election influenced by economic status of workers? (A, CO 4)

Attitude towards election	Economic Status	
Favourable	50	155
Not favourable	90	110

17. Derive the formula for confidence interval for the population mean of $N(\mu, \sigma)$, (R)

(a) when the population variance is known (b) when the population variance is unknown

18. Define Poisson distribution. What are its important properties. (R)

(2 x 6 = 12)

PART C

Answer any 2 questions **Weights: 5**

19. Explain the two sample t-test. The daily wages (in Rs.) of some randomly selected workers from two firms of the same type are given below. On the basis of the samples, can it be concluded that the mean wages of the workers of the two firms are the same. Assume wages follow normal distribution. (A)

Sample I : 300,350,280,320,260,340

Sample II : 260,400,340,280,360,350,150,280

20. Explain the term estimation? What are the properties of a good estimator. Explain with suitable examples. (U)

21. (i) Explain Chi-square test of indepedence (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

22. Define normal distribution. What are the important features of it? The monthly wages of 1500 workers of a firm follow normal distribution with mean Rs.7000/- and standard Rs.300/- Determine the number of workers getting (i) a wage in between Rs.6700/- and Rs.7450/- (ii) a wage greater than Rs.6600/- (A)

(5 x 2 = 10)

OBE: Questions to Course Outcome Mapping

CO	Course Outcome Description	CL	Questions	Total Wt.
CO 4	Understand null and alternative hypotheses, simple and composite hypotheses, one tailed and two tailed tests. Type I and Type II errors. Critical and acceptance regions of a test, significance level and power of a test. Testing the mean of a population, large sample tests and small sample tests, Testing the difference between two means of independent and paired samples, testing the proportion of a population, Chi-square test of independence.	A	16	2

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