G. VENKATASWAMY NAIDU COLLEGE (AUTONOMOUS), KOVILPATTI – 628 502.

UG DEGREE END SEMESTER EXAMINATIONS - APRIL 2025.
(For those admitted in June 2023 and later)

PROGRAMME AND BRANCH: B.Sc., STATISTICS

SEM	CATEGORY	COMPONENT	COURSE CODE	COURSE TITLE
IV	PART-III	CORE-7	U23ST407	TESTING OF STATISTICAL HYPOTHESIS

Date & Session: 28.04.2025/AN   **Time: 3 hours**   **Maximum: 75 Marks**

Course Outcome	Bloom's K-level	Q. No.	SECTION – A (10 X 1 = 10 Marks) Answer ALL Questions.
CO1	K1	1.	Any hypothesis which is tested for the purpose of rejection under the assumption that is true is called _____. a) Null Hypothesis b) Alternative Hypothesis c) Statistical Hypothesis d) Composite Hypothesis
CO1	K2	2.	A statement made about a population for testing purpose is called? a) Statistic b) Hypothesis c) Level of Significance d) Test-Statistic
CO2	K1	3.	The rejection probability of Null Hypothesis when it is true is called as? a) Level of Confidence b) Level of Significance c) Level of Margin d) Level of Rejection
CO2	K2	4.	If the Critical region is evenly distributed, then the test is referred as? a) Two tailed b) One tailed c) Three tailed d) Zero tailed
CO3	K1	5.	Consider a set of 18 samples from a standard normal distribution. We square each sample and sum all the squares. The number of degrees of freedom for a Chi Square distribution will be? a) 17 b) 18 c) 19 d) 20
CO3	K2	6.	What is the mean of a Chi Square distribution with 6 degrees of freedom? a) 4 b) 12 c) 6 d) 8
CO4	K1	7.	Type 1 error occurs when? a) We reject H0 if it is True b) We reject H0 if it is False c) We accept H0 if it is True d) We accept H0 if it is False
CO4	K2	8.	The probability of Type 1 error is referred as? a) $1-\alpha$ b) β c) α d) $1-\beta$
CO5	K1	9.	Which of the following id non parametric test? a) T- test b) F- test c) ANOVA d) Mann whitney U test
CO5	K2	10.	If you have nominal data which nonparametric statistics should use? a) Chi- square b) Spearman's rho c) The t- test d) wilcoxon

Course Outcome	Bloom's K-level	Q. No.	SECTION – B (5 X 5 = 25 Marks) Answer ALL Questions choosing either (a) or (b)
CO1	K3	11a.	Explain uniformly most powerful test.
			(OR)
CO1	K3	11b.	Write procedure steps in solving testing of hypothesis problem.

CO2	K3	12a.	Explain the Test of Significance for Single mean test.
			(OR)
CO2	K3	12b.	In a Hospital, 200 Babies born, 112 Babies are male. From this case, you accept that Male and Female Baby birth ratios are equal?
CO3	K4	13a.	Explain procedure of test of significance for single proportion.
			(OR)
CO3	K4	13b.	Explain test of significance for the difference of standard deviation.
CO4	K4	14a.	In one sample of 8 observation, the sum of the squares of deviations of the sample values from the sample mean was 84.4 and in the other sample of 10 observation it was 102.6. Test, whether this difference is significant at 5 per cent level.
			(OR)
CO4	K4	14b.	Explain t test for testing the significance of an observed sample correlation.
CO5	K5	15a.	Explain Run test.
			(OR)
CO5	K5	15b.	Explain Median test

Course Outcome	Bloom's K-level	Q. No.	**SECTION – C (5 X 8 = 40 Marks)** **Answer ALL Questions choosing either (a) or (b)**
CO1	K3	16a.	State and prove Neyman Pearson Lemma.
			(OR)
CO1	K3	16b.	Let P be the probability that a coin will fall head in a single toss in order to test $H_0 : p = 1/2$ against $H_1 : p = 3/4$. The coin tossed 5 times and H_0 is rejected if more than 3 heads are obtained. Find the probability of type I error and power of the test.
CO2	K4	17a.	1000 Indians height of mean is 148 cm, variance is 14.5 cm. And also, 1200 Americans height of mean is 154 cm, variance is 11.5 cm. From this data, the Indians and Americans are getting same height or not?
			(OR)
CO2	K4	17b	Explain equality of variance of two normal populations.
CO3	K4	18a.	When the first proof of 392 pages of a book of 1200 pages were read, the distribution of printing mistakes were found to be as follows:

No. of mistakes in a page (x)	0	1	2	3	4	5	6
No. of pages (f)	275	72	30	7	5	2	1

			Fit a poisson distribution to the above data and test the goodness of fit.
			(OR)
CO3	K4	18b.	Explain test of significance for the difference of proportion.
CO4	K5	19a.	A machinist is making engine parts with axle diameters of 0.700 inch. A random sample of 10 parts shows a mean diameter of 0.742 inch with a standard deviation of 0.040 inch, compute the statistics you would use to test whether the work is meeting the specification. Also state how you would proceed further.
			(OR)
CO4	K5	19b.	Write F – test for equality of two population variance.
CO5	K5	20a.	Elaborate Mann-Whitney U-test.
			(OR)
CO5	K5	20b	Explain kolmogorov's Smirnov one sample test.