

2021
B.A./B.Sc.
Third Semester
 GENERIC ELECTIVE
STATISTICS
Course Code: STG 3.11
 (Basics of Statistical Inference)

PART-B
 Total Mark: 30

Answer the following questions.

1. (a) Describe stratified random sampling. 2
 (b) What do you mean by allocation in stratified random sampling? Mention various types of allocation with relative merits and demerits. 2+2=4

 2. (a) Explain median test for testing the population having the same median along with the assumptions. 4
 (b) Discuss paired t-test for difference of means. 2

 3. In a Bernoulli distribution with parameter p , $H_0 : p = \frac{1}{2}$ against $H_1 : p = \frac{1}{2}$ is rejected if more than 3 heads are obtained out of 5 throws of a coin. Find the probability of Type-I, Type-II error and the power of the test. 6

 4. (a) What is meant by replication and what purpose does it serve in experimental designs? 3
 (b) Explain the meaning of 'analysis of variance' and give its uses. 3

 5. A random sample $(X_1, X_2, X_3, X_4, X_5)$ of size 5 is drawn from a normal population with unknown mean μ . Consider the following estimators to estimate μ :
 - (i) $t_1 = \frac{X_1 + X_2 + X_3 + X_4 + X_5}{5}$
 - (ii) $t_2 = \frac{X_1 + X_2}{2} + X_3$
 - (iii) $t_3 = \frac{2X_1 + X_2 + \lambda X_3}{3}$, where λ is such that t_3 is unbiased estimator of μ
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