

U.G. 3rd Semester Examination - 2021**STATISTICS****[PROGRAMME]****Course Code : STAT-G-CC-1C****(Basics of Statistical Inference)**

Full Marks : 50 (40+10)

Time : $2\frac{1}{2}$ Hours*The figures in the right-hand margin indicate marks.**Candidates are required to give their answers in their own words as far as practicable.**Notations and symbols have their usual meaning.*

1. Answer any **five** questions: 2×5=10
- Define mean square error of an estimator.
 - What is level of significance of a test?
 - Give a measure of association for a contingency table.
 - When is signed rank test used?
 - Give a $100(1-\alpha)\%$ confidence interval for the variance of a normal population when population mean μ is known.
 - Which test is used in Analysis of Variance?

g) What are the basic principles of Design of Experiments?

h) When is CRD used?

2. Answer any **two** questions: 5×2=10

- Define an unbiased estimator. When is such an estimator said to be the best? For a normal population, what will be the best unbiased estimator of the population variance when the mean is unknown?
- Describe a procedure for testing independence of two attributes in a 2×2 contingency table. When is Yates' correction used?
- Describe median test and mention its use.
- How would you test for the mean of normal population when the variance is unknown? Also give a $100(1-\alpha)\%$ confidence interval for the unknown mean.

3. Answer any **two** questions: 10×2=20

- Discuss the p-value approach of test of significance. How can you test for the mean of a Poisson distribution using this approach? 5

- ii) Discuss how you can set up a confidence interval for the difference of means of two normal populations. 5
- b) Write down the linear model and carry out the analysis of a Randomized Block Design.
- c)
 - i) Discuss the two types of error associated with a hypothesis testing problem. How are the probabilities of these errors controlled? 5
 - ii) Write a note on Wilcoxon's two-sample test. 5
- d)
 - i) Describe how you can test for the goodness of fit. 5
 - ii) What is confidence interval of a real parameter? Set up a $100(1-\alpha)\%$ confidence interval for the ratio of the standard deviations of two normal populations. 5

[Internal Assessment: 10]
