UG/3rd Sem/STAT(G)/T/19

2019

B.Sc.

3rd Semester Examination

STATISTICS (General)

Paper - DSC 1C-T

INTRODUCTION TO STATISTICAL INFERENCE

Full Marks : 40 Time : 2 Hours

The figures in the margin indicate full Marks.
Candidates are required to give their answers in their own words as far as practicable.
Illustrate the answers wherever necessary.

Group - A

1. Answer any *five* questions : 2×5=10

(a) Define size and level of significance of a test.

(b) Write the properties of the t-distribution.

(c) What do you mean by a confidence interval ?

(d) Define the terms : Replication and randomization.

[Turn Over]

(e) Define the errors which appear in the context of testing of a hypothesis.

(f) What is the p-value ?

(g) Explain the terms : Estimation and Testing of Hypothesis.

(h) State different assumptions in ANOVA.

2. Answer any *four* questions : 5×4=20

(a) Describe the sign test.

(b) Let $x_1, x_2, ..., x_n$ be a random sample from a normal distribution with known mean μ and unknown variance σ^2. Obtain on exact test for σ^2 against two-sided alternative.

(c) Briefly describe the analysis of completely randomized design.

(d) Let $X_1, X_2, ..., X_m$ and $Y_1, Y_2, ... Y_n$ be two independent random samples from $N(\mu_1, \sigma_1^2)$ and $N(\mu_2, \sigma_2^2)$, respectively. Obtain an exact test for $H_0 : \mu_1 = \mu_2$ against $H_1 : \mu_1 < \mu_2$ when σ_1^2 and σ_2^2 are unknown.

(e) Suppose a random sample of size n is drawn from a population for which the proportion of individual having a character A, say p, is unknown. Obtain a test for $H_0 : p = p_0$ against $H_1 : p > p_0$.

(f) Obtain critical difference for comparing means of two classes in one-way classified data.

3. Answer any *one* question : $10 \times 1 = 10$

(a) Give the layout and analysis of randomized block design.

(b) How do you test for or set confidence limits to, the ratio of two variances ? Consider the case of two independent univariate normal distributions.
