UNIVERSITY OF NORTH BENGAL

B.Sc. General Part-II Examination, 2021

STATISTICS

PAPER-IV (NEW SYLLABUS)

Full Marks: 50

ASSIGNMENT

The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.
All symbols are of usual significance.

1. Answer ***all*** questions: $1 \times 10 = 10$

    (a) What is population?
    (b) What is sample?
    (c) What is sample size?
    (d) What is parameter?
    (e) What is statistics?
    (f) What do you mean by degrees of freedom?
    (g) What is sampling distribution?
    (h) What is the pdf form of chi-square distribution?
    (i) What is the pdf form of student-t distribution?
    (j) What is the pdf form of F distribution?

2. Answer ***all*** questions: $6 \times 4 = 24$

    (a) If $x_1, x_2, \ldots \ldots, x_n$ are n standard normal variants, then show that $\sum x_i^2$ follows Chi-square distribution with n df .

    (b) Derive the formulae for expectation and standard error of sample proportion in simple random sampling with replacement (SRSWR) from a finite population.

    (c) Derive the formulae for expectation and standard error of sample proportion in simple random sampling without replacement (SRSWOR) from a finite population.

    (d) Show that the mean of the samples of size n from a normal (μ, σ^2) population is itself normally distributed with mean μ and variance σ^2/n .

3. Answer ***all*** questions: $8 \times 2 = 16$

    (a) What is meant by stratified random sampling? Explain the procedure, uses and advantages of stratification.

    (b) Describe the important characteristics of standard normal and F-distribution.

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