B.A. (Honours) Examination, 2023
Semester—IV
Subject: Economics
Course-SECC-2((Statistical Methods II)

Time: 2 hours

Full Marks: 25

Questions are of value as indicated in the margin

Answer any five of the following questions.

1. (a)   What do you mean by "sampling fluctuations" of a statistic?
    (b)   Find the standard error of sample mean when you draw a sample of given size from a finite population by the method of 'SRSWOR'. $1 + 4 = 5$

2. Distinguish between simple random sample with replacement and stratified simple random sampling.   5

3. Prove that sample mean is BLUE of population mean in case of iid sample observations from a simple population.   5

4. (a)   State the Neyman-Fisher factorization theorem.

    (b)   Define Chi-square distribution. State any two of its properties. $2 + (2+1) = 5$

5. When an estimator is said to be consistent for estimating an unknown parameter? What are the necessary and sufficient conditions for an estimator to be consistent for a parameter? $3 + 2 = 5$

6. Explain the maximum likelihood method of point estimation. State any two properties of maximum likelihood estimator.   5

7. When a population follows normal distribution, find the 95% confidence interval for the unknown parameter mean.   5

8. Consider the following data regarding the height(X) and weight(Y) of 8 individuals.

Serial No.	1	2	3	4	5	6	7	8
X	65	63	67	64	68	62	70	66
Y	68	66	68	65	69	66	68	65

   (a) Find the co-variance between X and Y.
   (b) Find the coefficient of correlation between X and Y. $2 + 3 = 5$