

2022

STATISTICS — GENERAL

Paper : GE/CC-4

(Applications of Statistics)

Full Marks : 50

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own words
as far as practicable.*

1. Answer **any five** questions : 2×5
 - (a) Consider a population containing four units {1, 2, 3, 4}. Write all possible simple random samples without replacement.
 - (b) Define Simple Random Sampling.
 - (c) What is proportional allocation in Stratified Sampling?
 - (d) What is Cost of Living Index number?
 - (e) What are different components of a time series?
 - (f) Define Crude Death Rate.
 - (g) What is Live Birth?
 - (h) Write down two formulae for price index.

 2. Answer **any two** of the following : 5×2
 - (a) Distinguish between seasonal and cyclical components of a time series, with an example.
 - (b) Distinguish between probabilistic and non-probabilistic samplings with examples.
 - (c) Give brief description of a complete *Life Table*.

 3. Answer **any three** of the following :
 - (a) For a simple random sample of size n without replacement from a population of size N , show that the sample mean is an unbiased estimator of population mean. Also derive the standard error of the sample mean. 4+6
 - (b) Describe Stratified Sampling Scheme. In this context, explain the idea of optimum allocation. 5+5
 - (c) Define Fisher's Index Number. Show that Fisher's Index Number satisfies 'Time Reversal' and 'Factor Reversal' Tests and comment. 2+6+2
 - (d) Describe two methods of determining trend equation of a time series data. 5+5
 - (e) Define GRR and NRR as measures of population growth and compare their performances. Interpret the case : $GRR = 1.59$. Also argue that $GRR > NRR$. 6+2+2
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