2021

STATISTICS — GENERAL

Fourth Paper

(Group-A)

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.

Section-1

1. Answer ***any four*** questions: 2×4

(a) If a factor has 10 levels and each level has 5 observations, then what is the degrees of freedom of error sum of squares in case of one-way ANOVA and if observed F> tabulated F, then what conclusion do you make?

(b) Distinguish between 'sample' and 'population'.

(c) State two advantages of stratified random sampling.

(d) What are random numbers?

(e) What is sampling fluctuation?

(f) Write down the expression for sum of square to error in one-way classified data with n observations and k classes.

(g) Write the fixed effect model for one-way classified data with all assumptions.

(h) What do you understand by local control in design of experiments?

Section-2

Answer ***any three*** questions

2. Describe in details, the technique of ANOVA for two-way classified data with one observation per cell under fixed effects model. 14

3. Derive an unbiased estimator of the mean of a finite population and find its standard error in case of stratified sampling. Also find an unbiased estimator of the standard error. 4+5+5

4. Describe the layout and analysis of a CRD stating clearly all the assumptions. What are the disadvantages of a CRD and how are these problems solved? 10+4

5. Describe Randomization, Replication and Local control in connection with design of experiments. How is the Principle local control applied in LSD? Write down the ANOVA table in case of LSD. 6+4+4

6. What do you mean by SRSWR and SRSWOR? Show that for both SRSWR and SRSWOR, sample mean is an unbiased estimator of population mean. Find the variance of the sample mean in case of both the situations. 4+4+6

Please Turn Over

7. Write short notes on ***any two***: 7+7

(a) Biases in sample survey

(b) Systematic sampling

(c) Critical difference.

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