SAMPLE SURVEYS, DESIGN AND ANALYSIS OF EXPERIMENTS - II

Time Allowed : Three Hours **Maximum Marks : 100**

Note : The candidates are required to attempt ONE question each from Sections A, B, C and D carrying 20 marks each and the entire Section E consisting of 10 short answer type questions carrying 2 marks each.

SECTION – A

1. (a) What are sampling-errors ? Discuss the factors contributing to them.
   (b) What are non-sampling errors ? Discuss the contributory factors to non-sampling errors. 10, 10

2. (a) What is a random sample ? How would you draw a random sample from a population ?
   (b) How would you estimate population mean and find standard error of such estimate by SRSWOR. 10,10

SECTION - B

3. (a) How would you estimate population mean using stratified random sampling ?
   (b) How would you use ratio method of estimation of population mean and find standard error of such estimate ? 10, 10

4. (a) How would you use systematic sampling in estimating population mean ?
   (b) How would you use regression method of estimation in population mean and find standard error of such estimate ? 10,10

SECTION - C

5. (a) What is design of experiment ? Discuss the need of it.
   (b) Discuss the basic principles of design of experiments. 10,10

6. Give the analysis of variance of two way classified data with multiple but equal number of per cell under fixed effect model. Also give the assumptions of such analysis. 20

SECTION - D

7. (a) How the principles of design of experiments are used in RBD ?
   (b) How the principles of design of experiments are used in LSD ? 10, 10

8. (a) Explain the statistical analysis of factorial design 2^3.
   (b) Discuss the Yates method of computing factorial effects in 2^2 and 2^3 factorial design. 12, 8

SECTION - E
(Compulsory)

9. Answer in short :
   (a) Define sampling frame.
   (b) Define sampling unit
   (c) How would you define a linear model ?
   (d) Give the merits and the demerits of RBD.
   (e) Differentiate between simple and factorial experiment.
   (f) Differentiate between parameter and statistic.
   (g) Define inductive inference.
   (h) Differentiate between probability sampling and non-probability sampling.
   (i) Show that main effects and interaction are orthogonal contrasts in 2^2-design.
   (j) What is the difference between fixed effect model and random effect model ? 2×10=20