TB165155F

Reg. No.: .....
Name : .....

B. Sc. DEGREE (C.B.C.S.S.) EXAMINATION, JANUARY 2019
(2016 Admission Supplementary)
SEMESTER V- CORE COURSE (COMPUTER APPLICATIONS)
CAS5B05TB - SAMPLE SURVEY AND DESIGN OF EXPERIMENTS

Time: Three Hours **Maximum Marks: 80**

PART A

I. Answer all questions. Each question carries 1 mark.

1. Define a sampling frame.
2. Mention situations where sampling method alone can be used?
3. What is meant by optimum allocation?
4. What is meant by equal allocation in stratified sampling?
5. Define a design of experiment.
6. Write the linear model for ANOVA(single unit per cell) for CRD

(6X1=6)

PART B

II. Answer any seven questions. Each question carries 2 marks.

7. Differentiate between Census and sampling.
8. In SRSWR, show that sample mean is an unbiased estimator of population mean.
9. Explain linear systematic sampling.
10. State the assumptions used in ANOVA.
11. Define estimability of a linear parametric function.
12. What is meant by Probability sampling?
13. Give any two advantages of Stratified sampling.
14. What are the advantages of LSD?
15. Give the expression for estimating one missing observation in LSD.
16. Give the formula for estimating one missing value in a RBD having b blocks and k treatments with usual notations.

(7X2 = 14)

PART C

III. Answer any five questions. Each question carries 6 marks.

17. Show that the probability that a specified unit of the population being selected at any given draw is equal to the probability of it being selected at the 1st draw?
18. Prove that sample mean square is not an unbiased estimator for population mean square in the case of SRSWR
19. Briefly explain ANOVA of one way classification.
20. Find the relative efficiency of LSD over CRD.

21. Explain Best Linear Unbiased Estimator in Detail.
22. Explain advantages and disadvantages of RBD.
23. Explain Neymann allocation and derive its variance?
24. Derive the variance of stratified random sampling.

(5 x 6 =30)

PART D

III. Answer any two questions. Each question carries 15 marks.

25. In SRSWR, Show that the sample mean is an unbiased estimator of population mean. Derive its sampling variance also?
26. Explain the various steps for the analysis of an RBD with k treatments and b blocks with one observation per experimental unit. Assume y_{ij} is the observation which receives i^{th} treatment in j^{th} block
27. Show that $V_{opt} \leq V_{prop} \leq V_{SR}$ Where V_{opt}, V_{prop} V_{SR} denote the variance of the sample mean under optimum allocation, proportional allocation and simple random sampling?
28. Develop the analysis of a two way classified data.

(2x15=30)