

2024/TDC (CBCS)/EVEN/SEM/
STSDSC/GEC-401T/080

TDC (CBCS) Even Semester Exam., 2024

STATISTICS

(4th Semester)

Course No. : STSDSC/GEC-401T

(Sample Survey and Design of Experiment)

Full Marks : 50

Pass Marks : 20

Time : 3 hours

The figures in the margin indicate full marks
for the questions

UNIT—I

1. Answer any three questions from the
following : 1×3=3

(a) Define parameter.

(b) Define statistic.

(c) What is simple random sampling?

(d) Define an unbiased estimator.

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(Turn Over)



2. Answer any one question from the following : 2

- (a) State some merits of sample survey.
- (b) What is pilot survey?

3. Answer any one question from the following : 5

- (a) Discuss the principles of sample survey.
- (b) Discuss briefly how non-sampling errors occur in a survey.

UNIT—II

4. Answer any three questions from the following : 1×3=3

- (a) What are purposive and judgement samplings?
- (b) Define stratified random sampling.
- (c) What is the difference between SRSWR and SRSWOR?
- (d) Name some non-sampling errors.

5. Answer any one question from the following : 2

- (a) In stratified random sampling, how will you decide about the number of strata into which the population should be stratified?
- (b) Show that in stratified random sampling sample mean is an unbiased estimator of population mean.

6. Answer any one question from the following : 5

- (a) Define proportional allocation and derive the formula for the variance of the sample mean under proportional allocation.
- (b) Prove that in SRSWOR sample mean square is an unbiased estimate of population mean square.

UNIT—III

7. Answer any three questions from the following : 1×3=3

- (a) What is systematic sampling?
- (b) Write some disadvantages of systematic sampling.

(4)

(c) Define ANOVA.

(d) Write the assumptions of one-way ANOVA.

8. Answer any *one* question from the following : 2

(a) Write some advantages of ANOVA.

(b) Write the underlying hypothesis and assumptions of two-way ANOVA.

9. Answer any *one* question from the following : 5

(a) Estimate the parameters of one-way ANOVA for fixed effect model.

(b) Give the analysis of two-way classified data with one observation per cell.

UNIT—IV

10. Answer any *three* questions from the following : $1 \times 3 = 3$

(a) What are the basic principles of design of experiment?

(b) Write the fixed effect model for CRD.

(c) Define treatment contrast.

(d) What is factorial experiment?

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(Continued)

(5)

11. Answer any *one* question from the following : 2

(a) Write fixed effect model for RBD, its underlying assumptions and hypothesis.

(b) Write a note on missing plot technique.

12. Answer any *one* question from the following : 5

(a) Define main effect and interaction effect in factorial experiment.

(b) Briefly discuss the analysis of CRD.

UNIT—V

13. Answer any *three* questions from the following : $1 \times 3 = 3$

(a) What was decadal population growth of India in 2011 Census?

(b) What is official statistics?

(c) Write the full form of NSSO.

(d) Which office of the Central Government does decennial census?

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14. Answer any *one* question from the following : 2

(a) Discuss briefly a method of collection of official statistics.

(b) Name various agencies responsible for data collection and publication in India.

15. Answer any *one* question from the following : 5

(a) Write in brief how population census is conducted in India.

(b) Describe the roles of CSO and NSO.
