

**3 SEM TDC STSH (CBCS) C 6**

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( Held in April–May, 2021 )

STATISTICS

( Core )

Paper : C–6

**( Survey Sampling and Indian Official Statistics )**

*Full Marks : 50*

*Pass Marks : 20*

*Time : 2 hours*

*The figures in the margin indicate full marks  
for the questions*

1. Select the correct alternative out of the given ones : 1×5=5

(a) The difference between the value of a statistic obtained from a random sample and the corresponding population parameter value is called

- (i) non-sampling error
- (ii) sampling error
- (iii) standard error
- (iv) None of the above

(b) If  $N$  is the size of the population,  $n$  is the size of the sample, then in case of SRSWR, the total number of possible sample is

(i)  $N$

$n$

(ii)  $N^n$

(iii)  $\frac{1}{N^n}$

(iv) None of the above

(c) Stratified random sample is a type of

- (i) unrestricted sample
- (ii) subjective sample
- (iii) purposive sample
- (iv) restricted sample

(d) In cluster sampling, it is desirable to have

- (i) as great a heterogeneity as possible within clusters
- (ii) as small a difference as possible between clusters
- (iii) Both (i) and (ii)
- (iv) None of the above

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- (e) The central statistical organization (CSO) was set up by the Government of India in the year
- (i) 1961
  - (ii) 1951
  - (iii) 1965
  - (iv) None of the above

2. Answer the following questions in brief :

2×6=12

- (a) Define population and sampling.
- (b) What is probability sampling?
- (c) What is proportional allocation in stratified random sampling?
- (d) What are the drawbacks of cluster sampling?
- (e) State the circumstances when systematic sampling is optimum.
- (f) What are CSO and NSSO?

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( Turn Over )

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3. Answer any *two* of the following :

- (a) What is simple random sampling? What are its limitations? Under what circumstances can we consider SRSWOR more efficient than SRSWR and how? 2+2+4=8

- (b) What is stratification? Under what situation stratified random sampling is preferred to simple random sampling? What are the different methods of allocation of the samples? Discuss any one. 2+1+2+3=8

- (c) In case of SRSWOR, prove that

$$\text{var}(\bar{y}_n) = \left(\frac{1}{n} - \frac{1}{N}\right)s^2 \quad 8$$

4. Answer any *one* of the following :

- (a) Explain the method of systematic sampling. Obtain an unbiased estimator of the population mean. 5+5=10

- (b) Describe cluster sampling. In what situation the cluster sampling be preferred? What sampling design is used to select clusters from a population? 5+3+2=10

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( Continued )

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(c) Write short notes on the following :  
5+5=10

(i) Ratio and regression methods of estimation

(ii) Concept of sub-sampling

5. Write short notes on any *one* of the following : 7

(a) Present official statistical system in India

(b) National sample survey office (NSSO) and national statistical commission

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