2021

STATISTICS — HONOURS

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 - I

Answer *any two* from *question nos.* **1-4** and *one* from *question nos.* **5** and **6**.

1. Discuss the problem of choice of base period in constructing index numbers.   5

2. Show that Laspeyres' index number may be looked upon as weighted average of price relatives.   5

3. Briefly describe the function of Central Statistical Office (CSO) in regard to the statistical system in India.   5

4. Discuss the functions of Statistical Offices in the States.   5

5. (a) Show that Edgeworth–Marshall price index number formula satisfies the time reversal test.

   (b) Show that Fisher's ideal index number formula satisfies the factor reversal test.

   (c) Describe the problem of 'choice of commodities' and 'collection of data' in connection with construction of index numbers.   4+4+7

6. (a) Which distribution is used for graduating the lower part of the income distribution? Obtain the mean and variance of the distribution.

   (b) Write a note on Lorenz Curve approach to measure income inequality.

   (c) Distinguish between the 'production approach' and the 'income approach' of computing national income.   (1+2+2)+4+6

Section - II

Answer *any two* from *question nos.* **7-10** and *one* from *question nos.* **11** and **12**.

7. Explain the concepts of assignable and chance causes of variation in a manufacturing process.   5

8. Describe how '3σ-limits' and 'probability limits' are used in setting limits on control charts.   5

9. How one can construct control chart for process mean?   5

Please Turn Over

10. Define producer's risk and consumer's risk in relation to product control. 5

11. (a) Explain the theoretical basis of control charts.

(b) Construct control charts for fraction defectives and number of defects when standards are not available. 5+(5+5)

12. (a) In connection with sampling inspection plan, define the following terms :

(i) Operation characteristic

(ii) Average outgoing quality limit.

(b) Describe a single sampling plan for attributes.

(c) Give an outline of the method of determining parameters in a single sampling attribute plan by Average quality protection approach. (2+2)+5+6