TDC (CBCS) Odd Semester Exam., 2019

ECONOMICS

(3rd Semester)

Course No. : ECOSEC-301T

(Data Analysis)

Full Marks : 50
Pass Marks : 20

Time : 3 hours

The figures in the margin indicate full marks for the questions

Answer **all** questions

UNIT—I

Answer any *three* of the following questions : 1×3=3

(a) Define 'sampling unit'.

(b) Name one source of secondary data.

(c) Give another name for population survey.

(Turn Over)

(d) Mention one precaution in the use of secondary data.

2. Give brief answer to any *one* of the following : 2

(a) Write two advantages of population survey over sampling.

(b) Define random sampling.

3. (a) Discuss three merits and two demerits of secondary data. 5

Or

(b) Distinguish between random sampling with replacement and random sampling without replacement. 5

UNIT—II

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

(a) Expand

$$\sum_{i=1}^{3} x_i$$

(b) What is the geometric mean of the variable x, if $x = a, b$?

(c) Write the formula for standard deviation of x_i, when $i = 1, 2, \ldots, n$.

(d) State the relation among mean, median and mode in a fairly normally distributed population.

5. Give brief answer to any *one* of the following : 2

(a) Mention two advantages of arithmetic mean.

(b) Write two disadvantages of median.

6. (a) Calculate standard deviation from the following distribution : 5

Class	*Frequency*
15–25	4
25–35	11
35–45	19
45–55	14
55–65	0
65–75	2

Or

(b) Prove that for two non-negative observations a and b, $AM \geq GM \geq HM$. 5

UNIT—III

7. Answer any *three* of the following questions : $1 \times 3 = 3$

(a) What is a random experiment?

(b) Define sample space.

(c) What is the probability of getting 'six' from the throw of an unbiased die?

(d) How many possible outcomes are there in each trial of binomial distribution?

8. Give brief answer to any *one* of the following : 2

(a) Define the following :

(i) Mutually exclusive events

(ii) Independent event

(b) The probability function for Poisson distribution is given as

$$f(x) = \frac{e^{-m} m^x}{x!}$$

Find the corresponding values for $f(x)$, when $x = 0, 1, 2, 3$.

9. (a) A card is drawn at random from a well-shuffled pack of 52 cards. Find the probability of the getting—

(i) a black card;

(ii) a red card;

(iii) a king;

(iv) either a king or a queen;

(v) a joker. 5

Or

(b) What is the probability that a leap year selected at random will have 53 Sundays? 5

UNIT—IV

10. Answer any *three* of the following questions : 1×3=3

(a) What is confidence interval?

(b) What is the difference between population mean and sample mean?

(c) If population is to sample, what is 'parameter' is to?

(d) If we have a sample $x = x_1, x_2, \cdots x_n$, what is the sample variance?

(Turn Over)

11. Give brief answer to any *one* of the following : 2

(a) What is the difference between an estimate and an estimator?

(b) Mention any two methods of point estimation.

12. *(a)* If $x_1, x_2, \cdots x_n$ constitute a random sample from an infinite population with variance b^2 and $\bar{x}$ is the sample mean, show that

$$\sum_{i=1}^{n} \frac{(x_i - \bar{x})^2}{n}$$

is a biased estimator of b^2. 5

Or

(b) Explain the properties of consistency and sufficiency of an estimator. 5

UNIT—V

13. Answer any *three* of the following questions : 1×3=3

(a) Define an index number.

(b) If $P_0 = 100$ and $P_1 = 110$, what is the percentage change in the prices, and in which direction?

(c) Write out the formula for Laspeyres' index with usual notation.

(d) What are 'weights' in an index number?

14. Give brief answer to any *one* of the following : 2

(a) State two problems in the construction of an index number.

(b) Write two uses of a cost of living index number.

15. (a) Prove that Fisher's index satisfies both time reversal test and factor reversal test. 5

Or

(b) Construct index numbers using both Laspeyres' and Paasche's methods from the following data : 5

Items	*Quantity*		*Price*	
	Q_0	Q_1	P_0	P_1
A	10	12	12	15
B	5	10	8	10
C	12	16	10	12

★★★