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(CBCS)

(6th Semester)

ECONOMICS

TENTH PAPER

(Quantitative Techniques—II)

Full Marks : 75

Time : 3 hours

The figures in the margin indicate full marks for the questions

(SECTION : A—OBJECTIVE)

(Marks : 10)

Tick (✓) the correct answer in the brackets provided :

1×10=10

1. Statistics is the study of

- (a) qualitative facts ()
- (b) quantitative facts ()
- (c) qualitative facts and quantitative facts ()
- (d) None of the above ()

2. The process of drawing a sample from a population is known as

- (a) survey research ()
- (b) census ()
- (c) sampling ()
- (d) None of the above ()

3. Which one of the following is a prerequisite for a good measure of dispersion?

- (a) It should be affected by fluctuation of sampling ()
- (b) It should be easy to calculate ()
- (c) It should not be based on all observations ()
- (d) All of the above ()

4. Standard deviation is the square root of the arithmetic average of the squares of the deviations measured from the

- (a) mean ()
- (b) mode ()
- (c) median ()
- (d) All of the above ()

5. _____ is calculated on the basis of past experience and on experiment conducted.

- (a) Classical probability ()
- (b) Empirical probability ()
- (c) Modern approach to probability ()
- (d) None of the above ()

6. Under the normal curve, 'mean $\pm 3\sigma$ ' covers which of the following areas?

- (a) 64.09% ()
- (b) 68.26% ()
- (c) 95.45% ()
- (d) 99.73% ()

7. Regression coefficient is independent of

- (a) value ()
- (b) scale ()
- (c) origin ()
- (d) both origin and scale ()

8. Which of the following values could not represent a correlation coefficient?

- (a) $r = 0.02$ ()
- (b) $r = 0.53$ ()
- (c) $r = 0.99$ ()
- (d) $r = 1.09$ ()

9. Laspeyres' index formula uses the weight of the

- (a) base year ()
- (b) next year ()
- (c) current year ()
- (d) previous year ()

10. The rise and fall of a time series over periods longer than one year is called

- (a) moving average ()
- (b) cyclical variation ()
- (c) seasonal variation ()
- (d) irregular variation ()

(SECTION : B—SHORT ANSWER)

(Marks : 15)

Answer/Write notes on the following :

3×5=15

UNIT—I

1. Census and sampling method of data collection

OR

2. What is frequency distribution?

UNIT—II

3. What is kurtosis?

OR

4. Define geometric mean.

UNIT—III

5. Classical definition of probability

OR

6. What is binomial distribution?

UNIT—IV

7. Concept of correlation

OR

8. Concept of coefficient of determination in regression analysis

UNIT—V

9. What are the various methods of measuring trend values?

OR

10. What are the limitations of index numbers?

(SECTION : C—DESCRIPTIVE)

(Marks : 50)

Answer the following :

10×5=50

UNIT—I

1. (a) Explain the meaning of statistics in singular sense. 3
(b) Write the importance and uses of statistics. 7

OR

2. (a) Differentiate between primary data and secondary data. 4
(b) Draw pie diagram to represent the following information : 6

<i>District</i>	<i>Area (sq. km)</i>
Mamit	3025
Kolasib	1383
Aizawl	3576
Champhai	3185
Serchhip	1421
Lunglei	4536
Lawngtlai	2557
Saiha	1399

UNIT—II

3. (a) What are the characteristics of a good average? 4
(b) Calculate median from the data given below : 6

<i>Marks</i>	<i>No. of students</i>
0–10	12
10–20	18
20–30	27
30–40	20
40–50	17
50–60	6

OR

4. An analysis of monthly wages of two firms *A* and *B* yielded the following results :

	<i>Firm—A</i>	<i>Firm—B</i>
Number of workers	50	60
Average monthly wage (₹)	60	48
Standard deviation	10	12

- (a) Which firm has a larger wage bill? 2
(b) Which firm has a greater variability in individual wages? 2
(c) Find out the combined standard deviation. 6

UNIT—III

5. (a) State and prove the multiplication theorem of probability. 6
(b) A bag contains 8 red and 5 white balls. Two successive draws of 3 balls are made without replacement. Find the probability that the first draw will produce 3 white balls and second 3 red balls. 4

OR

6. Define Poisson distribution. Explain the properties of Poisson distribution. 4+6=10

UNIT—IV

7. From the following data, determine—
(a) coefficient of correlation;
(b) coefficient of determination.
(c) Comment on the relation between the two variables : 6+2+2=10

<i>X</i>	<i>Y</i>
8	7
2	11
10	5
4	8
6	9

OR

8. Find the most probable price of food items in Lunglei corresponding to a price of ₹ 80 at Aizawl from the following data : 10

	<i>Lunglei</i>	<i>Aizawl</i>
Average price	₹ 60	₹ 72
Standard deviation	₹ 2·5	₹ 3·0
Coefficient of correlation	r 0·65	

UNIT—V

9. Define time series. Describe the various components of time series. 2+8=10

OR

10. Calculate Fisher's ideal index from the following data and prove that it satisfies time reversal test : 5+5=10

<i>Commodity</i>	<i>2021</i>		<i>2022</i>	
	<i>Price</i>	<i>Quantity</i>	<i>Price</i>	<i>Quantity</i>
<i>A</i>	5	30	6	50
<i>B</i>	4	15	8	25
<i>C</i>	3	20	4	30
<i>D</i>	2	10	4	20
