2018

(6th Semester)

ECONOMICS

TENTH PAPER

(Quantitative Techniques)

Full Marks : 75

Time : 3 hours

(PART : A—OBJECTIVE)

(*Marks* : 25)

The figures in the margin indicate full marks for the questions

SECTION—A

(*Marks* : 10)

Tick (✓) the correct answer in the brackets provided : 1×10=10

1. Flatness/Peakedness at the top of the frequency curve is related to

(a) skewness ( )

(b) moment ( )

(c) kurtosis ( )

2. 2 Mean is equal to

(a) 3 Median – Mode ( )

(b) 3 Median – 2 Mode ( )

(c) 3 Median + Mode ( )

3. In probability theories, those events in which the occurrence or non-occurrence of one event in any one trial affects the probability of other events in other trials are said to be

(a) mutually exclusive events ( )

(b) independent events ( )

(c) dependent events ( )

4. What is the probability of picking a card that is red or black from a standard pack of 52 cards?

(a) $\frac{13}{52}$ ( )

(b) $\frac{26}{52}$ ( )

(c) $\frac{52}{52}$ ( )

5. The value of Karl Pearson's coefficient of correlation (denoted by r) always lies between

(a) 1 and 0 ( )

(b) 1 and 1 ( )

(c) 0 and 1 ( )

6. The product of the two regression coefficients

(a) can exceed unity ( )

(b) cannot exceed unity ( )

(c) None of the above ( )

7. _____ is the study of changes in the volume of goods produced, consumed or distributed.

(a) Quantity index number ( )

(b) Value index number ( )

(c) Price index number ( )

8. Which of the following is not a component of time series?

(a) Regular variations ( )

(b) Seasonal variations ( )

(c) Cyclical variations ( )

9. Vital rates are customarily expressed as

(a) percentages ( )

(b) per thousand ( )

(c) per million ( )

10. If the value of NRR < 1, the population will in general tend to

(a) decrease ( )

(b) increase ( )

(c) remain constant ( )

SECTION—B

(*Marks* : 15)

Answer the following questions : 3×5=15

1. Explain the meaning of skewness.

2. What are meant by mutually exclusive events?

3. What is the coefficient of determinant?

4. What is an index number?

5. What is crude death rate?

(PART : B—DESCRIPTIVE)

(*Marks* : 50)

The figures in the margin indicate full marks for the questions

Answer **one** question from each Unit

UNIT—I

1. *(a)* Calculate the median marks for the following distribution of marks in Economics obtained by 50 students : 6

Marks (more than)	0	10	20	30	40	50
Number of students	50	46	40	20	10	3

(b) Define sample and population. 4

2. Monthly wages paid to workers in two firms *A* and *B* belonging to the same industry gives the following results :

	Firm A	*Firm B*
Numbers of workers	200	250
Average monthly wages (₹)	110	105
Standard deviation	8	9

(a) Calculate the average monthly wages of the two firms taken together. 3

(b) Find the combined standard deviation. 5

(c) In which firm, *A* or *B*, is there greater variability in wages? 2

UNIT—II

3. *(a)* State and prove the addition theorem of probability. 6

(b) A bag contains 7 red, 12 white and 4 green balls. 3 balls are drawn at random. What is the probability that 3 balls drawn are one of each colour? 4

4. Discuss the properties of normal distribution. 10

UNIT—III

5. Define partial correlation. Calculate the correlation coefficient between *X* and *Y* series from the given data and comment the result : 2+6+2=10

X	54	55	57	53	56	58
Y	63	66	68	62	65	64

6. You are given the following data :

	X	*Y*
Arithmetic mean	40	55
Standard deviation	4	6

Correlation coefficient between *X* and *Y* 0 5.

Construct the two regression equations and estimate the value of *X* when *Y* 12. 4+4+2=10

UNIT—IV

7. Construct index number of prices from the following by applying Laspeyres' formula and Paasche's formula : 5+5=10

Commodity	*2015*		*2017*	
	Price (₹)	*Quantity* (in kg)	*Price* (₹)	*Quantity* (in kg)
A	6	50	10	56
B	2	100	2	120
C	4	60	6	60
D	10	30	12	24
E	8	40	12	36

8. Define time series. Discuss various components of time series. 2+8=10

UNIT—V

9. Explain the following : 5+5=10

(a) Crude Birth Rate (CBR) and Net Reproduction Rate (NRR)

(b) Infant Mortality Rate (IMR) and Maternal Mortality Rate (MMR)

10. From the following data, compute the gross and net reproduction rates (Sex ratio of males and females is 45 : 55) : 5+5=10

Age Group	*No. of children born to 1000 women passing through the age group*	*Mortality rate*
15–20	100	80
20–25	300	200
25–30	500	100
30–35	200	180
35–40	100	80
40–45	80	20
45–50	40	20

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