2018

(April)

ECONOMICS

(Honours)

(Statistics)

Marks : 75

Time : 3 hours

The figures in the margin indicate full marks for the questions

Answer **five** questions, taking at least **one** from each Unit

UNIT—I

1. *(a)* What are the characteristics of a good measure of central tendency? 5

   (b) Find the mean and standard deviation of first n-natural numbers. 3+7=10

2. *(a)* Find the 'mean deviation from median' of the following data : 5

   17, 26, 14, 16, 12, 24, 21

(b) Calculate variance and coefficient of variation from the following data : 4+6=10

Class	Frequency
0–10	13
10–20	19
20–30	31
30–40	43
40–50	34
50–60	17
60–70	9
70–80	6

UNIT—II

3. Calculate Karl Pearson's coefficient of correlation between expenditure and sale from the data given below : 15

Expenditure ('000 ₹)	39	65	62	90	82	75	25	98	36	78
Sale (in lakh ₹)	47	53	52	86	62	68	60	91	51	84

4. The values of X and Y are given below :

X :	12	13	14	11	8	6	4	2	16	21
Y :	80	86	89	76	73	70	55	50	90	98

Find the two lines of simple regression. 15

UNIT—III

5. (a) Define time series and mention its components. 2

(b) Fit a trend equation $Y = a + bX$ and obtain the trend values from the following data : 10+3=13

X :	0	5	10	15	20	25
Y :	10	14	19	25	31	36

6. (a) Define index number and briefly discuss its uses. 5

(b) The prices per unit and the number of units consumed for four commodities A, B, C and D in two time periods are given below :

Commodity	Base Year		Current Year	
	Price (in ₹)	Quantity (in kg)	Price (in ₹)	Quantity (in kg)
A	20	8	40	6
B	50	10	60	5
C	40	15	50	10
D	20	20	20	15

Compute Laspeyres', Paasche's and Fisher's index numbers. 4+4+2=10

UNIT—IV

7. (a) State the addition and multiplication rules of probability. 4

(b) Let x be a random variable with sample space $S = \{1, 2, 3, 4, 5\}$ and $P(x=1) = \frac{1}{16}$, $P(x=2) = \frac{1}{4}$, $P(x=3) = \frac{3}{8}$, $P(x=4) = \frac{1}{4}$, $P(x=5) = \frac{1}{16}$. Find the probability of the following : 2

(i) $P(x=4 \text{ or } x=1)$

(ii) $P(x \text{ is at least } 1)$

(c) What is a binomial distribution? Show that Poisson distribution is a limiting case of binomial distribution. 2+7=9

8. Distinguish between the following (any *three*) : 5×3=15

(a) Simple and Composite hypotheses

(b) Type—I errors and Type—II errors

(c) One-tailed and Two-tailed tests of hypothesis

(d) Simple random sampling and Stratified random sampling

(e) χ^2-distribution and t-distribution

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