2022

(May/June)

ECONOMICS

(Honours)

(Statistics)

Marks : 75

Time : 3 hours

The figures in the margin indicate full marks for the questions

Answer **one** question from each Unit

UNIT—I

1. *(a)* Distinguish between primary data and secondary data. 2

(b) The following data relate to the marks of 40 students in a class :

76	77	65	95	53	50	84	76
78	56	67	59	54	79	68	52
80	69	73	81	77	69	42	80
66	84	90	49	64	70	79	78
51	71	72	96	79	50	86	94

Prepare a suitable frequency table and calculate the mean deviation from the arithmetic mean. 2+4=6

(c) Calculate the median from the following data : 7

Age	No. of Persons
20–25	14
25–30	28
30–35	33
35–40	30
40–45	20
45–50	15
50–55	13
55–60	7

2. (a) The following data are the goals scored by a team of players. Calculate the mean and the standard deviation of goals scored : 4+4=8

No. of goals	No. of Players
2	2
3	4
4	5
5	7
6	3
7	4
8	3
9	2

(b) If Mean = 40 and variance = 64, find the coefficient of variation. 3

(c) The following results are obtained from a distribution :

Mean = 50, Standard deviation = 15 and coefficient of skewness = –1

Find the median. 4

UNIT—II

3. (a) Define correlation. Explain different types of correlation. 2+5=7

(b) Prove that $b_{xy} \cdot b_{yx} = R^2$, where R is correlation. 4

(c) Show that correlation coefficient (R) lies between –1 and 1. 4

4. (a) Why are there two regression lines? 3

(b) Given the following data :

X :	1	2	3	4	5	6	7	8	9
Y :	9	8	10	12	11	13	14	16	9

Find—

(i) the regression equation of Y on X ;

(ii) the regression equation of X on Y ;

(iii) the correlation coefficient between X and Y. 4+4+4=12

UNIT—III

5. *(a)* Explain the components of time series. 5

(b) The number of employees employed in a factory is given below :

Year	*No. of Employees*
2005	63
2006	68
2007	74
2008	80
2009	88
2010	86
2011	90
2012	98
2013	96
2014	100
2015	102
2016	108
2017	108

Estimate the trend using 3-yearly and 4-yearly moving average. 10

6. Explain various methods of curve fitting with suitable examples. 15

UNIT—IV

7. *(a)* What are index numbers? What are their uses? 2+3=5

(b) Distinguish between time reversal test and factor reversal test. 4

(c) From the following data, compute Fisher's price and quantity index numbers for the current year : 3+3=6

	Base Year		*Current Year*	
Commodity	Price (₹)	*Quantity*	Price (₹)	*Quantity*
A	10	12	12	15
B	7	15	5	20
C	5	24	9	20
D	16	5	14	5

8. *(a)* Describe various problems involved in the construction of index number. 6

(b) Prices and expenditures for commodities *A*, *B*, *C*, *D* and *E* for the years 1990 and 2000 are given below :

	1990		2000	
Commodity	Price	Expenditure	Price	Expenditure
A	10	50	15	75
B	15	45	18	72
C	12	72	10	80
D	5	40	8	56
E	20	60	30	120

Compute Laspeyres' and Paasche's index numbers. 9

UNIT—V

9. (a) Three coins are tossed simultaneously. What is the probability that the three coins show (i) 3 heads (ii) 2 heads and 1 tail? 2+3=5

(b) Define mathematical expectation of a random variable. Prove that the expectation of the sum of two random variables is equal to the sum of their expectations. 3+7=10

(Continued)

10. (a) Prove that the mean and variance of Poisson distribution are equal. 9

(b) Write notes on any *two* of the following : 3×2=6

(i) Cluster sampling

(ii) Stratified random sampling

(iii) Systematic sampling

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