2021

(July)

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)* Explain arithmetic mean, geometric mean and harmonic mean. 2+2+2=6

(b) Prove that

(i) AM GM HM

(ii) AM HM $(GM)^2$

where AM = Arithmetic Mean
GM = Geometric Mean
HM = Harmonic Mean 7+2=9

2. *(a)* Find median and quartile deviation (QD) of the following data : 3+7=10

Value	*Frequency*
5–10	6
10–15	12
15–20	18
20–25	10
25–30	4

(b) Write a note on Lorenz curve as a measure of dispersion. 5

UNIT—II

3. *(a)* Show that the correlation coefficient r lies between –1 and +1, i.e., $1 \quad r \quad 1$. 7

(b) Following are the marks obtained by boys and girls in an examination :

Marks obtained by boys	*Marks obtained by girls*
55	40
36	65
45	56
55	40
60	60
50	40

Calculate rank correlation coefficient. 8

4. Seven pairs of values of X and Y are given below :

X	0	5	10	15	20	25	30
Y	10	14	19	25	31	36	39

Obtain the two regression equations by using method of least squares. 15

UNIT—III

5. *(a)* What do you understand by time series? What is the need of analysing a time series? 2+3=5

(b) Distinguish between secular trend and seasonal variation. 4

(c) What are the different methods of finding trends of time series? Discuss any one of them in detail. 2+4=6

6. *(a)* Define Laspeyres', Paasche's, Fisher's and value index numbers. 4+4=8

(b) What are time-reversal and factor-reversal tests of an index number? Why is Fisher's index number called an 'ideal index number'? 3+3+1=7

UNIT—IV

7. *(a)* Explain the following : 3×3=9

(i) Classical definition of probability

(ii) Trials and events

(iii) Sample space and sample points

(b) Show that normal distribution is a limiting case of binomial distribution. 6

8. *(a)* Explain the law of statistical regularity and the law of inertia of large numbers. 4+4=8

(b) Write notes on the following : 3+2+2=7

(i) Random sampling

(ii) Cluster sampling

(iii) *t*-test

★ ★ ★