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(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) $AM \geq GM \geq HM$

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

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., $-1 \leq r \leq 1$. 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

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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

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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
