2024

(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)* Which mean is commonly used in the following cases?— 1+1=2

(i) In computing rate of population growth

(ii) In computing the average speed

(b) If AM and GM of two numbers are 30 and 18 respectively, find the numbers. 3

(c) From the frequency distribution given below, find—

(i) mean ;

(ii) median ;

(iii) first quartile ;

(iv) third quartile ;

(v) mode : 2×5=10

Class Interval	:	50–52	53–55	56–58	59–61	62–64
Frequencies	:	5	10	21	8	6

2. (a) What do you mean by the term 'dispersion' of a frequency distribution? Why is standard deviation called the best measure of dispersion? 2+3=5

(b) Prove that standard deviation is independent of change in origin but not of scale. 4

(c) The following are the marks of 150 students in an examination. Calculate Karl Pearson's coefficient of skewness : 6

Marks	No. of Students
More than 0	150
More than 10	140
More than 20	100
More than 30	80
More than 40	80
More than 50	70
More than 60	30
More than 70	14
More than 80	0

(Continued)

UNIT—II

3. (a) Calculate Karl Pearson's coefficient of correlation between the marks obtained by 8 students in Economics and Statistics. Also interpret the result. 9+1=10

Students	Economics	Statistics
A	25	8
B	30	10
C	32	15
D	35	17
E	37	20
F	40	22
G	42	24
H	45	25

(b) Express Regression coefficient in terms of correlation coefficient. 5

4. From the following data, find—

(a) the two regression equations;

(b) the coefficient of correlation between X and Y;

(c) the most likely value of Y when $X = 30$: 10+3+2=15

X	:	25	28	35	32	31	36	29	38	34	32
Y	:	43	46	49	41	36	32	31	30	33	39

(Turn Over)

UNIT—III

5. *(a)* Explain the uses of time series and mention its components. 4+4=8

(b) Discuss the preliminary adjustments required before analysing time series data. 4

(c) Draw a trend line by the method of semi-average from the following data : 3

Year	2017	2018	2019	2020	2021	2022	2023	2024
Sales ('000 units)	100	105	109	96	102	108	112	114

6. *(a)* Explain the method of moving average in time series analysis. Also mention its merits and demerits. 2+3=5

(b) From the following data, calculate 4-yearly moving average and plot the data on the graph : 7+3=10

Year	*No. of Students passed*
2010	12
2011	25
2012	39
2013	54
2014	70
2015	87
2016	105
2017	100

Year	*No. of Students passed*
2018	82
2019	65
2020	49
2021	34
2022	20
2023	7

UNIT—IV

7. *(a)* What are volume or quantity index numbers? From the following data, compute a quantity index number : 3+4=7

Commodity	*Quantity in* 2023	*Quantity in* 2024	*Price in* 2023
A	30	25	30
B	20	30	40
C	10	15	20

(b) What are the various problems that arise in the construction of an index number? 8

8. *(a)* Explain the uses of index numbers. 3

(b) Calculate the Fisher's ideal index number from the following data and prove that it satisfies both the Time Reversal and Factor Reversal Tests. 6+6=12

Commodities	Base Year		Current Year	
	Price	Expenditure (₹)	Price	Expenditure (₹)
A	2	40	5	75
B	4	16	8	40
C	1	10	2	24
D	5	25	10	60

UNIT—V

9. (a) State the addition and multiplication rules of probability. 3

(b) Find the mean and standard deviation of binomial distribution. 6+6=12

10. (a) A bag contains 5 white and 8 red balls. Two drawings of 3 balls are made such that (i) the balls are replaced before the second trial, (ii) the balls are not replaced before the second trial. Find the probability that the first drawing will give 3 white and the second 3 red balls in each case. 2+3=5

(Continued)

(b) Write short notes on any *two* of the following : 5+5=10

(i) Stratified random sampling

(ii) Advantages of sampling over census method

(iii) Cluster sampling

(iv) Non-sampling errors

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