Reg. No. □□□□□□□□□□

Time : 2 Hours

Max. Marks : 60

Instructions : 1) **Only** simple calculators are **allowed**.
2) **No** additional sheets will be **provided**.

SECTION – A

(5×2=10)

Answer **any 5** of the following. **2 marks each**.

1. What is meant by secondary data ?

2. What is tabulation ?

3. The mean and median of a slightly skewed distribution are 12 cm and 12.7 cms respectively. Find the mode.

4. If mean and coefficient of variation are 25% and 16%, find standard deviation.

5. Write the formula to calculate probable error.

6. In a bivariate data the regression coefficients are – 4.5 and – 0.02, find the coefficient of correlation.

7. Calculate a suitable index number, given $\varepsilon_{p_1 q_0} = 182$ and $\varepsilon_{p_0 q_0} = 120$.

SECTION – B

(4×5=20)

Answer **any 4** of the following. **5 marks each**.

8. Explain the functions of statistics.

9. What are the methods of classification of data ?

10. Prepare a blank table to show workers of a factory according to experienced/ inexperienced, urban/rural, male/female in two different years 2021/2022.

P.T.O.

11. Calculate median for the following :

Marks	No. of students
40 – 50	4
50 – 60	12
60 – 70	28
70 – 80	16
80 – 90	10

12. Calculate Karl Pearson's coefficient of skewness for the following data :

C.I.	Frequency
0 – 10	5
10 – 20	6
20 – 30	11
30 – 40	21
40 – 50	35
50 – 60	30
60 – 70	22
70 – 80	11

13. You are given the following information about advertising and sales.

	Advertisement (₹ in lakhs)	Sales (₹ in lakhs)
Arithmetic Mean	10	90
Standard Deviation	3	12

Coefficient of correlation r = 0.8. Find the likely sales when advertisement budget is ₹ 15 lakhs.

14. Calculate cost of living index for the following data :

Commodity	Price index	Weights
A	200	50
B	175	10
C	160	12
D	225	15
E	150	13

SECTION – C

Answer **any 3** of the following. **10** marks **each**.   (3×10=30)

15. The following table gives the weekly wage of workers of two factories A and B. Find the correlation between two companies and which company shows the higher performance.

Weekly Wage (₹)	Number of Workers	
	Branch A	Branch B
20 – 30	7	15
30 – 40	15	30
40 – 50	22	44
50 – 60	30	60
60 – 70	20	30
70 – 80	4	14
80 – 90	2	7

16. Calculate Karl Pearson's coefficient of correlation.

x \ y	20 – 30	30 – 40	40 – 50	50 – 60
10 – 15	10	10	–	–
15 – 20	–	20	8	–
20 – 25	–	10	25	6
25 – 30	–	–	7	4

17. For the following time series, fit a linear trend by the method of least squares. Find the trend values and estimate the sales for the year 2023.

Year	Sales ('000 units)
2013	103
2014	106
2015	95
2016	93
2017	98
2018	93
2019	90
2020	86

18. From the following data, find :

a) The 2 regression equations.

b) Estimate the value of y when x = 45.

x	y
56	147
42	125
36	118
47	128
49	145
42	140
60	155
72	160
63	149
55	150

19. Construct Fisher's Ideal Index number for the following data and show how it satisfies the time reversal tests :

Commodity	2021		2022	
	Price	Quantity	Price	Quantity
M	12	20	14	30
N	14	13	20	15
O	10	12	15	20
P	6	8	4	10
Q	8	5	6	5

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