

Time : 120 min

**Part A (Answer any 4 questions. Each carries 2 marks)**

1. Name two kinds of statistical data and describe them in brief. 2
2. Find the arithmetic mean of numbers 1, 2, ..., n. 2

3. Find quartiles from the following values:

33, 37, 30, 47, 60, 87, 15, 30, 45, 43, 44.

$$L_1 + \frac{\left(\frac{N}{4} - m_1\right)}{f_1} \times C$$

4. Describe merits and demerits of standard deviation. 2

5. Interpret raw moments. 2

6. Define factorial moments. 2

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**Part B (Answer any 3 questions. Each carries 6 marks)**

7. Show that the algebraic sum of deviations of n observation from their mean is zero. 6

8. Discuss quartiles and their importance. 6

9. Calculate the 10th percentile for 15, 20, 22, 27, 30, 33, 36, 40, 42, and 45 and interpret the result. 6

10. For the distribution, the mean is 10, variance is 16, coefficient of skewness ( $\gamma_1$ ) = 1 and kurtosis ( $\beta_2$ ) = 4. Develop the first four moments about the origin. 6

11. The sum of 20 observations is 300, the sum of their squares is 5000, and the mode is 15. Find the coefficient of skewness and coefficient of variations. 6

**Part C (Answer any 3 question(s). Each carries 8 marks)**

12. The following data are the oxygen uptakes (in millimeters) during incubation of a random sample of 10 cell suspensions:

14 14.1 14.5 13.2 11.2 14 14.1 12.2 11.1 13.7

Calculate the standard deviation and quartile deviation

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13. (a) Explain the mathematical properties of standard deviation. Why is standard deviation used more than mean deviation?

(b) The weekly sales of two products, A and B, were recorded as given below. Evaluate which of the two shows greater fluctuation in sales.

Product A and Product B Data:

Product A	Product B
59	150
75	200
27	125
63	310
27	330
28	250
56	225

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14. Distinguish between sampling and census method. 8

15. Write a short essay on the origin and development of the science of Statistics. 8