

**1(ADS)3**  
**Theory and Practice of Statistics**  
**[ IV-C ]**

Time Allowed : 3 Hours]

[Maximum Marks : 100

**INSTRUCTIONS**

- (i) Answers must be written in English.
- (ii) All questions carry equal marks.
- (iii) The answer to each question or part thereof should begin on a fresh page.
- (iv) Your answer should be precise and coherent.
- (v) The part/parts of the same question must be answered together and should not be interposed between answers to other questions.
- (vi) Candidates should attempt five questions in all, selecting at least two questions from each part.
- (vii) If you encounter any typographical error, please read it as it appears in the text-book.
- (viii) Candidates are in their own interest advised to go through the General Instructions on the back side of the title page of the Answer Script for strict adherence.
- (ix) No continuation sheets shall be provided to any candidate under any circumstances.
- (x) Candidates shall put a cross (×) on blank pages of Answer script.

- (xi) No blank page be left in between answers to various questions.
- (xii) No programmable calculator is allowed.
- (xiii) No stencil (with different markings) is allowed.

**PART—A**

1. What are the causes of distrust in statistics ? Who indeed, if at all, are responsible for the prevailing distrust in statistics ? Differentiate between nominal and rank data by citing suitable examples.
2. How are mean, median and mode empirically related ? Under what condition does the relationship hold ? The mean of two observations is 127.5 and their geometric mean is 60. Find the two observations and their harmonic mean.
3. Define mean and variance of Binomial distribution. How is the skewness of a binomial distribution related to probability of success and number of trials ?
4. From given data, find the two regression equations and also calculate standard errors of the estimate y and x.

x	2	4	6	8	10
y	5	7	9	8	11

**PART—B**

5. State various methods of interpolation giving examples. Distinguish between Interpolation and Extrapolation.
6. Explain the essential difference between Laspeyre's and Paasche's indices. Explain relationship between them indicating basic assumptions also. Also find the condition that both will give same results, when applied to the same set of price-quantity data.

7.

Monthly water consumption in a big city was as given below. Obtain 12-monthly centered moving average and seasonal index by percentage moving average method.

Year	Jan	Feb	March	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec
1999	20	23	28	35	40	47	46	45	46	35	29	19
2000	25	27	32	38	43	40	48	48	47	40	32	22

8.

Explain sampling and non-sampling errors. Justify the statements that sampling error can only be minimized but not totally eliminated.