

**FIRST SEMESTER (CBCSS—UG) DEGREE EXAMINATION
NOVEMBER 2020**

Statistics

STA 1C 01—INTRODUCTORY STATISTICS

(2019 Admissions)

Time : Two Hours

Maximum : 60 Marks

Use of Calculator and Statistical table are permitted.

Section A (Short Answer Type Questions)

Answer at least eight questions.

Each question carries 3 marks.

All questions can be attended.

Overall Ceiling 24.

1. Expand NSSO. Write any *two* of its responsibilities.
2. Define primary and secondary data.
3. Define population and sample.
4. For a set of observations, show that sum of deviation of the observations from their arithmetic mean is zero.
5. Define quartiles and quartile deviation.
6. Define outliers in a box plot.
7. What is the variance of a set of values with mean and co-efficient of variation are respectively 20 and 60 % ?
8. Define Scatter diagram.
9. Calculate the coefficient of correlation between x and y , where the regression coefficients are $-\frac{16}{3}$ and $-\frac{1}{12}$.
10. Define time series and write any *two* of its objectives.
11. Define secular trend in a time series.
12. Differentiate price and quantity index numbers.

(8 × 3 = 24 marks)

Turn over

Section B (Short Essay/Paragraph Type Questions)

Answer at least five questions.

Each question carries 5 marks.

All questions can be attended.

Overall Ceiling 25.

13. Write a brief note on the statistical system in states.
14. Point out any five main differences between questionnaire and schedule.
15. First four raw moments of a set of data are $-2, 8, 24$ and 260 . Calculate the first four central moments.
16. State principle of least square and fit a straight line of the form $y = ax + b$ to the following data on x and y :
- | | | | | | | |
|-----|---|----|----|----|----|----|
| x | : | 4 | 6 | 8 | 10 | 12 |
| y | : | 12 | 15 | 22 | 34 | 40 |
17. Derive an expression for the angle between two regression lines.
18. For two variables x and y , show that $-1 \leq r_{xy} \leq 1$, where r_{xy} is Pearson's co-efficient of correlation.
19. What are seasonal indices? Calculate the seasonal indices for the quarters from the following data on the values of an item by the method of simple averages :

Year	1 st quarter	2 nd quarter	3 rd quarter	4 th quarter
2011	24	26	38	30
2012	22	28	42	28
2013	26	30	40	32
2014	24	26	38	34
2015	28	30	42	30

(5 × 5 = 25 marks)

Section C (Essay Type Questions)

Answer any **one** question.

The question carries 11 marks.

20. Find the median marks of 100 students from the following data. Also locate median graphically by drawing ogives :

Marks	:	0-10	10-20	20-30	30-40	40-50	50-60	60-70
Students	:	3	14	22	34	16	7	4

21. (i) Explain the problems while constructing index numbers.
 (ii) Explain any *two* weighted price index numbers.
 (iii) Show that Fisher's index number satisfies time reversal test.

(1 × 11 = 11 marks)