D 12660 **(Pages : 3)** **Name.....**

Reg. No.....

FIRST SEMESTER (CBCSS–UG) DEGREE EXAMINATION
NOVEMBER 2021

Statistics

STA 1C 01—INTRODUCTORY STATISTICS

(2021 Admissions)

Time : Two Hours Maximum : 60 Marks

Use of Calculator and Statistical tables are permitted.

Section A

Answer atleast **eight** *questions.*
Each question carries 3 *marks.*
All questions can be attended.
Overall ceiling 24.

1. Expand CSO and mention any two of its responsibilities.
2. Distinguish between questionnaire and schedule.
3. Name any four different types of bar diagrams.
4. If the variance of $x_1, x_2, ...x_n$ is k, identify the variances of the sets :

   (i) $x_1 - 5, x_2 - 5, ..., x_n - 5$; (ii) $5x_1, 5x_2, ..., 5x_n$.
5. Find the mean deviation about median of the observations, 4, 7, 15, 12, 10 and 18.
6. Define H-spread.
7. Second, third and fourth central moments of a data are 5.2, 2 and 30 respectively. Obtain the co-efficients of skewness and kurtosis.
8. What are the regression co-efficients and state their relation between Pearson's co-efficient of correlation for two variables X and Y ?
9. Comment on the co-efficient of correlation between two variables X and Y, if the angle between the regression lines : (i) 0^o ; and (ii) 90^o.
10. Define cyclical and irregular variation in a time series data.

Turn over

11. Define "base year" and "current year" while constructing index numbers.

12. Define Laaspayer's and Paasche's price index numbers.

(8 × 3 = 24 marks)

Section B

Answer atleast **five** *questions.*
Each question carries 5 *marks.*
All questions can be attended.
Overall ceiling 25.

13. Write a short note on the statistical system in India.

14. Differentiate between primary and secondary data. Explain various methods for collecting primary data.

15. Explain kurtosis and its measure based on moments.

16. State the principle of least squares for curve fitting. Explain the method of fitting a curve $y = ae^{hx}$ using the observations $(x_1, y_1), (x_2, y_2), ..., (x_n, y_n)$ and x and y.

17. Obtain the regression line x on y and regression line y on x using the following data on x and y :

x	:	8	12	15	17	20	23	25
y	:	10	15	16	20	25	30	35

18. Show that Pearson's co-efficient of correlation is invariant under linear transformation.

19. Explain the method of semi-average for finding the secular trend in a time series data.

(5 × 5 = 25 marks)

Section C

Answer any **one** *question.*
The question carries 11 *marks.*

20. (i) Define Dispersion. Calculate the mean deviation about median for the following data :

Class	:	5–15	15–25	25–35	35–45	45–55	55–65	65–75
Frequency	:	4	11	19	30	10	4	2

(ii) Define raw and central moments. Express r^{th} central moment in terms of raw moments and hence obtain the expression for fourth central moment.

21. (i) Define Index Numbers. Explain various types of index numbers.

(ii) Calculate Fisher's index number for the following data :

Items	*Quantity*		*Price*	
	2016	2021	2016	2021
A	12	18	18	24
B	14	17	18	22
C	11	12	15	14
D	19	24	26	26
E	8	10	12	17

(1 × 11 = 11 marks)