



M 7785

Reg. No. : .....

Name : .....

I Semester B.Sc. Degree (CCSS – Supple./Improv.)  
Examination, November 2014  
(2013 and Earlier Admn.)  
**COMPLEMENTARY COURSE IN STATISTICS**  
**1C01 STA : (For Maths./Com.Sci./Ele. Core) Basic Statistics**

Time: 3 Hours

Max. Marks : 30

*Instructions : Use of calculators and statistical tables permitted.*

PART – A

Answer **any 10** questions.

1. Distinguish between sampling and non sampling errors.
2. State the advantages of sample survey over complete enumeration.
3. Define mean deviation and standard deviation which measure is considered better and why ?
4. Define coefficient of quartile deviation.
5. State the formula for Bousley's measure of skewness.
6. What is Kertosis of a distribution ?
7. Distinguish between positive and negative correlations giving suitable examples.
8. If the two regression coefficients are  $-0.9$  and  $-0.4$ , what will be the correlation coefficient ?
9. What are the uses of Index numbers ?
10. What is time reversal test of an index number ?
11. Define secular trend of a time series. (10×1=10)

P.T.O.



## PART - B

Answer **any 6** questions.

12. Define primary and secondary data. Explain their role in surveys with suitable examples.
13. Discuss the merits and demerits of stratified random sampling.
14. What are the properties of a good measure of dispersion ? How far standard deviation satisfies these properties ?
15. In a moderately skewed distribution the arithmetic mean is 100, coefficient of variation is 35 and Karl Pearson's coefficient of skewness is 0.2. Obtain the mode of the distribution.
16. The first four moments of a distribution are 1, 4, 10 and 46 respectively. Find the corresponding control moments and compute  $\beta_1$  and  $\beta_2$ .
17. Explain the principle of least squares. Using this principle how will you fit a curve of the form  $y = a \cdot x^b$ .
18. Ten pairs of values of variables x and y gave the following results :
- $\sum X = 130$ ,  $\sum Y = 220$ ,  $\sum X^2 = 2288$ ,  $\sum Y^2 = 5506$  and  $\sum XY = 3467$  Fit a straight line of the form  $y = a + bx$ .
19. Show that Karl Pearson's correlation coefficient always lies between -1 and +1.
20. Compute Fishers ideal index number from the following data and show that it satisfies time reversal test.

Commodity	Base Year		Current Year	
	Price	Quantity	Price	Quantity
A	6	50	10	56
B	2	100	2	120
C	4	60	6	60
D	10	30	12	25

(6×2=12)



## PART - C

Answer **any two** questions.

21. Find the coefficient of variation for the following frequency distribution.
- |                    |      |       |       |       |       |
|--------------------|------|-------|-------|-------|-------|
| <b>Class :</b>     | 0-10 | 10-20 | 20-30 | 30-40 | 40-50 |
| <b>Frequency :</b> | 8    | 15    | 25    | 16    | 6     |
22. What are moments ? Derive an expression for  $r^{\text{th}}$  central moment in terms of raw moments. Explain how moments serve as descriptive measures.
23. Find Karl Pearson's coefficient of correlation between sales and expenses of the following 10 firms.
- |                     |    |    |    |    |    |    |    |    |    |    |
|---------------------|----|----|----|----|----|----|----|----|----|----|
| Firms               | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 |
| Sales ('000 Rs.)    | 50 | 50 | 55 | 60 | 65 | 65 | 65 | 60 | 60 | 50 |
| Expenses ('000 Rs.) | 11 | 13 | 14 | 16 | 16 | 15 | 15 | 14 | 13 | 13 |
- Also determine the least square regression equation of expenses on sales.
24. For the data given below examine whether
- 1) Fisher's index number
  - 2) Laspeyer's index number
  - 3) Paasche's index number satisfy Factor reversal test.

Commodity	1990		2000	
	Price	Quantity	Price	Quantity
A	2	3	3	2
B	8	2	9	3
C	5	5	6	5
D	4	2	5	3
E	3	4	4	2

(2×4=8)