



M 11613

Reg. No. : .....

Name : .....



I Semester B.A./B.Sc./B.Com./B.B.A./B.B.A.T.T.M./B.B.M./B.C.A./B.S.W. Degree  
(CCSS – Reg./Supple./Improv.) Examination, November 2011

COMPLEMENTARY COURSE IN STATISTICS

1C01 STA : Basic Statistics (Maths and Comp. Sci.)

Time: 3 Hours

Max. Weightage : 30

**Instruction :** Use of calculators and statistical tables are **permitted**.

PART – A  
(Answer **any 10** questions)

1. What is meant by simple random sampling ? (Weightage = 1)
2. Distinguish between primary and secondary data.
3. State the empirical relationship between mean, median and mode.
4. Define coefficient of variation.
5. State the positions of mean, median and mode in a positively skewed frequency curve.
6. Define Spearman's rank correlation coefficient.
7. State the relationship between correlation coefficient and regression coefficients.
8. Write down the normal equations for fitting a straight line  $y = a + bx$ .
9. Distinguish between simple and weighted index numbers.
10. What is meant by factor reversal test ?
11. Define time series. (10×1=10)

PART – B  
(Answer **any six** questions)

12. Explain stratified random sampling. What are its advantages ? (Weightage = 2)
13. What are the advantages of sampling over census ?
14. What do you understand by dispersion ? Explain the main characteristics of a good measure of dispersion.
15. Define skewness of a distribution. For a group of 10 items  $\Sigma x = 452$ ,  $\Sigma x^2 = 24270$ , and mode = 43.7. Find the Pearsonian coefficient of skewness.

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16. What is Kurtosis of a distribution ? How it is measured ?
17. Explain the principle of least squares. Using the principle of least squares how will you fit a curve of the form  $y = a \cdot b^x$ .
18. In a regression analysis the two regression lines are obtained as  $2x - 3y + 6 = 0$  and  $4y - 5x - 8 = 0$ . Calculate the mean values of  $x$  and  $y$ . Also obtain the correlation coefficient.
19. Distinguish between partial and multiple correlation coefficients.
20. Calculate Fisher's index number for the data given below :

Commodity	Base	Year	Current	Year	
	Price	Quantity	Price	Quantity	
A	12	100	15	120	
B	8	75	10	85	
C	15	60	16	80	
D	18	120	25	150	(6×2=12)

## PART - C

(Answer **any two** questions)

21. Evaluate an appropriate relative measure of dispersion for the following data : (Weightage = 4)
- |                             |           |               |          |           |
|-----------------------------|-----------|---------------|----------|-----------|
| Income in Rs : Less than 50 | 50 - 70   | 70 - 90       | 90 - 110 | 110 - 130 |
| No. of persons : 54         | 100       | 140           | 300      | 230       |
|                             | 130 - 150 | More than 150 |          |           |
|                             | 125       | 51            |          |           |
22. The first raw moments of a distribution are 1, 4, 10 and 46 respectively. Compute the first four central moments and beta constants. Comment on the nature of the distribution.
23. a) Explain how a Scatter diagram helps to obtain preliminary conclusions about the nature and strength of relationship between two variables.
- b) Compute Karl Pearsons correlation coefficient for the following data :
- |     |    |    |    |    |    |    |    |    |    |    |
|-----|----|----|----|----|----|----|----|----|----|----|
| x : | 12 | 20 | 15 | 22 | 18 | 24 | 20 | 12 | 15 | 22 |
| Y : | 30 | 35 | 28 | 36 | 29 | 39 | 30 | 25 | 30 | 38 |
24. Fit a straight line trend for the following data by the method of least squares and calculate the trend values.
- |                            |      |      |      |      |      |      |      |
|----------------------------|------|------|------|------|------|------|------|
| Year :                     | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
| Production (000' tonnes) : | 12   | 10   | 14   | 11   | 13   | 15   | 16   |
- (2×4=8)