B.N. Bandodkar College of Science, Thane

F.Y. B.Sc. Second Semester End Examination 2012 (Additional)

USST201

Duration 2 hrs Max Marks-60

N.B. 1) All Questions are compulsory.
2) Figures to right indicate marks.
3) Use of calculators is allowed.

Q1) a)Attempt any **One**

1) Write down all measures of dispersion. 1

2) Write down the equations of both regression lines by explaining all the notations used. 1

b)Attempt any **Two** 7

1) Describe various absolute and relative measures of skewness.

2) Derive Spearman's rank correlation coefficient. Explain how you proceed if the ranks are repeated 7

3) Describe various steps involved in the construction of an index number. 7

Q 2) a) Attempt any **One**

1) Define range and coefficient of range as a measure of dispersion 1

2) State expressions for first four central moments in terms of raw moments about origin zero. 1

b) Attempt any **Two**

1) State and derive the formula for calculating combined variance of two groups, explaining clearly all the terms used 7

2) Write short note on 'Box and Whisker Plot'. 7

3) What is meant by 'skewness'? Draw figures to indicate different types of skewness and locate roughly the relative positions of mean, median and mode in each case. Give Karl Pearson' measure of skewness. 7

Q.3) a)Attempt any **One**

1) Explain the term "coefficient of determination". 1

2) Write the relation between regression coefficients and correlation coefficient. 1

b) Attempt any **Two**

1) Define Karl Pearson's correlation coefficient between two variables. Show that it lies between -1 to +1 7

2) Derive normal equations for fitting a trend of the type y = a + bx for n pairs of values of (x, y) How will you arrive at the line of best fit ? 7

3) Illustrate with the help of suitable example, how will you proceed to find the coefficient of correlation for given equations of regression lines, when it is not known which of the two lines is regression equation y on x? 7

Q.4) a)Attempt any **One**

1) What is an index number? 1

2) State the formula for (i) Dorbisch-Bowley's index number (ii) Marshall-Edgeworth's index number. 1

b)Attempt any **Two**

1) Explain how you will calculate i) fixed base index number from chain base index numbers and ii) chain base index number from fixed base index numbers. 7

2) Write short notes on: (i) Splicing on index number series. (ii) Deflating. 7
7

3) Show that Fisher's index number satisfies: (i) Time reversal test. (ii) Factor reversal test.

----------xxxxxxxxxxx----------