

LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034



B.Sc. DEGREE EXAMINATION – STATISTICS

FIRST SEMESTER – APRIL 2016

ST 1502/ST 1500 – STATISTICAL METHODS

Date: 02-05-2016

Dept. No.

Max. : 100 Marks

Time: 01:00-04:00

PART – A

Answer ALL the questions

(10 x 2 = 20)

1. What is the scope of census?
2. Differentiate nominal and ordinal scale of measurement.
3. Define mean deviation about mean for grouped data.
4. A group of 100 selected students average 163.8 cm in height with a coefficient of variation of 3.2%, what is the standard deviation of their height?.
5. What is the purpose of curve fitting?
6. Write down the normal equations for fitting an exponential curve to a given data.
7. Find the correlation coefficient (r_{XY}) if variance of X is 2.25, standard deviation of Y is 4 and regression equation of X on Y is $X=0.3Y+1.8$.
8. Define Spearman's rank correlation coefficient .
9. What is meant by ultimate class frequency?
10. Mention the conditions for consistency of data for 2 attributes.

PART – B

Answer any FIVE questions

(5 x 8 = 40 marks)

11. Explain the significance of diagrammatic representation of data and describe the construction of a pie diagram.
12. The following frequency distribution is the weight in pounds of 57 children at a day care centre.

Weight(in pounds)	10-19	20-29	30-39	40-49	50-59	60-69	70-79
No.of children	5	19	10	13	4	4	2

Draw the ogives and locate the median.

13. Derive the relationship between raw and central moments.
14. A study of the number of trips on a particular day for a sample of 40 taxi drivers revealed the following data

No.of trips	0-5	5-10	10-15	15-20	20-25	25-30
No.of taxi drivers	3	6	8	13	7	3

Calculate Bowley's measure of skewness.

15. State the principles of least squares and explain the method of fitting a straight line to a given data.
16. The following calculations have been made for the closing prices (in Rs.) of twelve stocks(X) on the Mumbai Stock Exchange on a certain day, along with the volume of sales in thousands of shares(Y).
 $\sum X=580, \sum Y=370, \sum XY=11494, \sum X^2=41658, \sum Y^2=17206$.
Show that the correlation coefficient is the geometric mean of regression coefficients.
17. Establish the relationship between Yule's coefficient of association and coefficient of colligation.
18. A study of 1000 units was classified according to three attributes A,B and C. The letters a,b,c denote the absence of A,B and C respectively. Test the consistency of data if the class frequencies are
(ABC)=280,(ABc)=220,(AbC)=30,(Abc)=70,(aBC)=140,(aBc)=60,(abC)=110 and (abc)=90

PART – C

Answer any TWO questions

(2 x 20 = 40 marks)

19. Describe the methods of collecting primary data along with the merits and demerits of these methods.
20. a) In a sample of 500 children, 200 came from higher income group and the rest from lower income group. The number of delinquent children in these groups respectively was 25 and 100. Calculate the coefficient of association between delinquency and income group.
- b) The number of words per minute typed by a group of 10 persons using a computer keyboard is 54, 62, 75, 59, 78, 64, 69, 72, 69 and 73. Find mean, median and mode.
21. a) Modern medical practice tells us not to encourage babies to become too fat. Is there a positive correlation between the weight x of 1-year old baby and the weight y of the mature adult (30 years old)? A random sample of medical files produced the following information on 14 females

x(lb)	21	25	23	24	20	15	25	21	17	24	26	22	18	19
y(lb)	125	125	120	125	130	120	145	130	130	130	130	140	110	115

- b) Explain the various modes of classification of data.
22. a) Explain various one – dimensional diagrams.
- b) Write in detail the properties of regression coefficients.

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