LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – **STATISTICS**

FIRST SEMESTER – NOVEMBER 2011

ST 1502/ST 1500 - STATISTICAL METHODS

Date : 08-11-2011   Dept. No.   Max. : 100 Marks

Time : 1:00 - 4:00

PART - A

Answer ALL the questions: (10 x 2 =20 Marks)

1. Distinguish between Primary and Secondary data.

2. Mention the situations where sampling is inevitable.

3. Why do we say Arithmetic mean is a good measure of central tendency ?

4. For a moderately Skewed data, the arithmetic mean is 200, the co-efficient of variation is 8 and Karl Pearson's coefficient of skewness is 0.3. Find the mode.

5. State the conditions to be satisfied for method of least squares.

6. Explain mean deviation.

7. Explain the concept of positive and negative correlation with examples.

8. For a given set of bivariate data, the following results were obtained:

   $\bar{X} = 53$; $\bar{Y} = 28$; $b_{yx} = -1.5$ and $b_{xy} = -0.2$

   Find the two regression equations.

9. When do you say the given two attributes have (i) positive association and (ii) negative association?

10. Find whether A and B are independent in the following case:

    $(AB) = 256$; $(\alpha B) = 768$; $(A\beta) = 48$; $(\alpha\beta) = 144$.

PART - B

Answer any FIVE questions.   (5 x 8 = 40 Marks)

11. Explain the various methods of collecting primary data.

12. Draw an ogive curve for the following data

Marks:	0 – 10	10 -20	20 – 30	30 – 40	40 – 50	50 - 60	60 - 70	70 - 80
Number of Students :	5	8	10	15	12	9	7	4

13. Calculate Median and Mode for the following distribution:

Production per day : 21 – 22 23- 24 25- 26 27-28 29-30

Number of day   7   13   22   10   8

14. An analysis of the monthly wages gives the following results

	Firm A	Firm B
Number of workers	500	600
Variances of distribution of wages	81	100
Average monthly wages	Rs. 186	Rs.175

(i)   In which (A or B) is there greater variability in individual wages.

(ii)   Calculate the variance of the distribution of the wages of all the workers in the firm A and B taken together.

15. Explain diagrammatic representations in detail.

16. Explain Principle of Least Squares.

17. What is Regression? Mention the properties of regression co-efficient.

18. Can inoculation be regarded as a preventive measure of Cholera from the data given below:

(i)   Of 2000 persons in locality exposed to Cholera, 216 in all were attacked.

(ii)   Out of 500 persons inoculated only 31 were attacked.

PART - C

Answer any TWO questions.   (2 x 20 = 40 Marks).

19. a) Explain the different methods of classification.

  b) Draw the histogram of the following frequency distribution and show the area on your graph which represents the total number of wage-earners in the age-group 19-32. Years.

Age group: 14-15 16-17 18- 20 21- 24 25- 29 30 – 34 35 – 39

No.of wage earners: 120   140   150   110   110   100   90

20. a) The number of matches played and goals scored by two teams A and B in foot-ball in world cup 2002 were as follows:

Matched played by Team A: 27   9   8   5   4

Matched played by Team B :   17   9   6   4   3

Number of goals scored in a Match: 0   1   2   3   4

Find which team may be considered more consistent.

20. (b) Compute Karl Pearson's coefficient of skewness for the following distribution:

Wages (in Rs)	10 -20	20- 40	40- 70	70 – 90	90-100
Number of Workers	5	15	30	8	2

21. a) Fit a straight line equation by the method of least squares

Year	: 1981	'82	'83	'84	'85	'86	'87	'88
Production (inTonns)	80	90	92	83	94	99	92	104

b) From the following data calculate the rank correlation coefficient.

X	48	33	40	9	16	16	65	24	16	57
Y	13	13	24	6	15	4	20	9	6	19

22. a) Calculate the correlation and find the two lines of regression from the following data.

X:	57	58	59	59	60	61	62	64
Y	67	68	65	68	72	72	69	71

Find the value of Y when X = 66.

b) Calculate the coefficient of association between the intelligence of fathers and sons from the following data

Intelligent fathers with intelligent sons = 300   Intelligent fathers with dull sons = 100

Dull fathers with intelligent sons   = 50   Dull fathers with dull sons   = 500

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