LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – STATISTICS

FIRST SEMESTER – NOVEMBER 2007

ST 1500 - STATISTICAL METHODS

BB 28

Date : 01/11/2007 Dept. No. Max. : 100 Marks

Time : 1:00 - 4:00

PART-A

ANSWER ALL THE QUESTIONS. 10X2=20

1.Define ratio type data, Categorical data.
2.What are the advantages of mode?
3.What is dispersion? Write any two measures of dispersion.
4.Write any two properties of a regression coefficient.
5.A person travels from plain to hill station 100km distance at an average speed of 30km per hour. He then makes the return trip at average speed of 20km per hour. What is his average speed over the entire distance?
6.Find out if A and B are independent, positively associated or negatively associated from the data given below
(A) = 470 (B) = 620 (AB) = 320 and N = 1000
7.Write the normal equations for fitting a model of the form
$Y = a + bx + cx^2$
8.Explain scatter diagram.
9.Write the formula for Bowley's coefficient of skewness.
10.Express the fourth central moment in terms of raw moments.

PART-B

ANSWER 5 QUESTIONS 5X8=40

11.Calculate Quartile deviation for the following data

profit (lakhs)	frequency
0 – 10	8
10 – 20	12
20 - 30	20
30 – 40	10
40 – 50	6
50 - 60	3
60 – 70	1

12.Draw a Box – whisker plot for the following data and compare

Marks scored by X	35	25	29	31	27	24	33	36
Marks scored by Y	23	27	26	21	24	20	29	30

13.Find the rank correlation coefficient for the following marks awarded by the two judges.

Judge A	60	55	50	56	30	70	40	35	80	80	75
Judge B	65	40	35	75	63	80	35	20	80	60	60

14. Do you find any association between the temperaments of brothers and sisters from the following data

Good natured brothers and Good natured sisters	1230
Good natured brothers and sullen sisters	850
Sullen brothers and Good natured sisters	530
Sullen brothers and sullen sisters	980

15. Fit a curve of the form $Y = ab^X$ to the following data.

Year	1996	1997	1998	1999	2000	2001	2002	2003
Sales	52	45	98	92	110	185	175	220

16. The scores of two batsman A and B in 10 innings during a certain session are

A	32	28	47	63	71	39	10	60	96	14
B	19	31	48	53	67	90	10	62	40	80

Find which of the batsman A or B is more consistent using coefficient of variation.

17. A computer while calculating correlation coefficient between two variables X and Y from 25 pairs of observations obtained the following

$n = 25, \quad \sum X = 125 \quad \sum X^2 = 650$

$\sum Y = 100 \quad \sum Y^2 = 460 \quad \sum XY = 508$

It was found that he copied

X	**Y**
6	14
8	6

instead of

X	**Y**
7	12
6	8

Obtain the correct value of the correlation coefficient.

18. From the following figures determine the percentage of cases that lie outside $\overline{X} \pm 2S$.
115 , 117, 121, 125, 116, 120, 118, 117, 119, 116, 122, 124, 123, 118, 120, 118, 126, 127, 122, 123.

PART-C

ANSWER 2 QUESTIONS 2X20 = 40

19.a) Calculate Karl Pearsons coefficient of skewness for the following data.

0-10	5
10-20	6
20-30	11
30-40	21
40-50	35
50-60	30
60-70	22
70-80	11

b) Compare the above result by calculating the Bowley's coefficient of skewness.

20. Following is the distribution of students according to their height and weight

Height	Weight			
	90-100	100-110	110-120	120-130
50-55	4	7	5	2
55-60	6	10	7	4
60-65	6	12	10	7
65-70	3	8	6	3

Obtain the two lines of regression and the correlation coefficient.

21.a)In a very hotly battle

70% of them lost an eye

75% at least one ear

80% at least one leg

85% at least one arm

What percentage at least lost all the four Organs?

b) Explain the procedure of calculating the coefficient of contingency.

c) Of 1000 people consulted , 811 liked chocolates , 752 liked toffees , and 418 liked sweets. 570 liked chocolates and toffees,356 liked chocolates and sweets, 348 liked toffees and sweets, 257 liked all the three.

Is this information correct?

22.a) Draw less than and more than ogives from the data given below. Hence obtain the median.

Profits	no.of companies
10-20	6
20-30	8
30-40	12
40-50	18
50-60	25
60-70	16
70-80	8
80-90	5
90-100	2

b) An incomplete distribution is given below.

Variable	frequency
0-10	4
10-20	16
20-30	--
30-40	--
40-50	--
50-60	6
60-70	4

	230

Given median = 33.5 and mode = 34 obtain the missing frequencies.

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