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B – 3049

Reg. No. : .....

Name : .....

School of Distance Education

First Semester B.Sc. Degree Examination, December 2016

First Degree Programme under ~~B~~BCSS  
Complementary Course for Mathematics  
ST 1131.1 : STATISTICAL METHODS

(2013/ Admission)

Time : 3 Hours

Max. Marks : 80

SECTION – A

Answer **all** the questions, **each** carrying 1 mark.

1. Name the two kinds of statistical data.
2. What do you mean by population ?
3. What is classification ?
4. Name two one dimensional diagrams.
5. Express geometric mean in terms of arithmetic mean and harmonic mean.
6. At which point, a less than ogive and a greater than ogive intersect ?
7. What percentage of observations will lie below the first quartile ?
8. State the moment measure of skewness.
9. State the expressions for the two regression equations.
10. Give the formula for Karl Pearson's coefficient of correlation. **(10×1=10 Marks)**

P.T.O.



## SECTION - B

Answer **any 8** questions, **each** carrying **2** marks.

11. Explain different bar diagrams.
12. Get the standard deviation of a population of first  $n$  natural numbers.
13. Define Geometric mean. Give situations where geometric mean is considered appropriate.
14. Express the first four central moments in terms of raw moments.
15. Explain skewness.
16. What are the measures of Kurtosis ?
17. Explain scatter diagram.
18. Explain curve fitting.
19. Interpret the values  $-1$ ,  $0$  and  $1$  of the correlation coefficient.
20. What are the advantages of sampling over census ?
21. Explain probability sampling.
22. Given the regression lines  $3x + 2y = 26$  and  $6x + y = 31$ . Find the means of  $X$  and  $Y$ . **(8×2=16 Marks)**

## SECTION - C

Answer **any 6** questions, **each** carrying **4** marks.

23. Explain simple random sampling and stratified random sampling.
24. Explain the meaning and objectives of classification and explain with examples various types of classification.
25. An automobile driver travels from plain to hillstation 100 Km distance, at an average speed of 30 Km per hour. He then makes the return trip at an average speed of 20 Km per hour. What is his average speed over the entire distance ?
26. Show that mean deviation is minimum when deviations are taken from the median.



27. Represent the following data by a histogram.

Marks	No. of Students
0 – 10	8
10 – 20	12
20 – 30	22
30 – 40	35
40 – 50	40
50 – 60	60
60 – 70	52
70 – 80	40
80 – 90	30
90 – 100	5

28. Derive an expression for the  $r^{\text{th}}$  central moment in terms of raw moments.

29. The first three moments of a distribution about the value 2 are 1, 16 and – 40 respectively. Find  $\beta_1$  and comment on skewness.

30. Derive an expression for the rank correlation coefficient.

31. Show that correlation coefficient lies between – 1 and +1. **(6x4=24 Marks)**

**SECTION – D**

Answer **any 2** questions, **each** carrying **15** marks.

32. From the data below, find the median and the two quartiles. Also draw the less than ogive and get the median and the two quartiles from it :

Marks	No. of Students
0 – 5	4
5 – 10	6
10 – 15	10
15 – 20	10
20 – 25	25
25 – 30	22
30 – 35	18
35 – 40	5

*Approved*



33. Goals scored by two teams A and B in a football season were as follows :

No. of goals scored in a match	No. of matches played	
	A	B
0	27	17
1	9	9
2	8	6
3	5	5
4	4	3

Find out which team is more consistent ?

34. i) Explain fitting a straight line.

ii) Fit a straight line to the following data :

<b>% of glycerine (x) :</b>	2	4	6	8	10
<b>Viscosity (y) :</b>	1	1.8	3	4	4.9

35. Calculate Karl Pearson’s coefficient of correlation from the following data and interpret its value :

<b>Roll No. of students :</b>	1	2	3	4	5
<b>Marks in subject I :</b>	48	35	17	23	47
<b>Marks in subject II :</b>	45	20	40	25	45

(2×15=30 Marks)

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*Approved Linnus*