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Reg. No. : .....

Name : .....

First Semester B.Sc. Degree Examination, November 2018
First Degree Programme Under CBCSS
Complementary Course for Physics
ST 1131.2 : DESCRIPTIVE STATISTICS
(2017 Admission Onwards)

Time : 3 Hours Max. Marks : 80

SECTION – A

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

1. Define the term statistics.
2. What is sampling ?
3. Define combined arithmetic mean.
4. Define coefficient of variation.
5. Define r^{th} central moment of a r.v.
6. What is the principle of least squares ?
7. Write down the normal equations to fit a straight line $y = ax + b$.
8. What are the different types of correlation ?
9. What is regression ?
10. Give the formula for product moment correlation coefficient.

P.T.O.

SECTION – B

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

11. Define secondary data.

12. Distinguish between frequency polygon and frequency curve.

13. What do you mean by a statistical survey ?

14. Define geometric mean.

15. Define mean deviation. How does it differ from standard deviation ?

16. Define kurtosis. Also give its measure.

17. What do you mean by curve fitting ?

18. Define the regression coefficients.

19. What are the use of scatter diagram.

20. What is meant by perfect correlation ?

21. Express the first four central moments in terms of raw moments.

22. Distinguish between simple correlation and rank correlation.

SECTION – C

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

23. Discuss the various methods of collecting primary data.

24. From the following table draw a histogram :

Wages in Rs. :	0-10	10-20	20-30	30-40	40-50	50-60	60-70
No. of workers :	5	8	10	14	11	6	3

25. Calculate Geometric mean and harmonic mean for the following data :

Values :	0-10	10-20	20-30	30-40	40-50
Frequency :	8	12	20	6	4

26. Calculate the mean deviation from mean and median and the corresponding relative measures of :

20, 23, 30, 32, 46, 51, 56, 57, 57, 78.

27. What is a relative measure of dispersion ? Distinguish between absolute and relative measure of dispersion.

28. Fit a straight line to the following data :

x :	1	2	3	4	5
y :	14	13	4	5	2

Estimate the value of y when x = 3.5.

29. For a moderately skewed data, the arithmetic mean is 200, the coefficient of variation is 8 and Karl Pearson's coefficient of skewness is 0.3. Find the mode and the median.

30. Show that the correlation coefficient is invariant under change of origin and change of scale.

31. The variables x and y are connected by the equation ax + by + c =0. Show that the correlation between them is –1 if the signs of a and b are alike and +1 if they are different.

SECTION – D

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

32. Calcuate the first four moments about the mean from the following data. Also calcuate the value of β_1 and β_2.

Marks :	0-10	10-20	20-30	30-40	40-50	50-60	60-70
No. of Students :	5	12	18	40	15	7	3

33. Prices of a particular commodity in five years in two cities are given below :

Price in City A	Price in City B
20	10
22	20
19	18
23	12
16	15

From the above data find the city which has more stable prices.

34. Fit a parabola $y = a + bx + cx^2$ to the following data :

x :	1	2	3	4	5	6	7
y :	2.3	5.2	9.7	16.5	29.4	35.5	54.4

35. Find out from the following :

a) Coefficient of correlation

b) The two regression equations

c) Most likely value of X when Y = 12

d) Most likely value of Y when X = 22.

x :	2	8	10	– 2	5	– 4
y :	3	2	5	10	– 2	– 3