

Second Semester FYUGP Statistics Examination
APRIL 2025 (2024 Admission onwards)
KU2DSCSTA102 (DESCRIPTIVE STATISTICS)
(DATE OF EXAM: 28-4-2025)

Time : 120 min

Maximum Marks : 70

Part A (Answer any 6 questions. Each carries 3 marks)

1. Discuss the effect of change of origin and change of moments about any point. 3
2. Discuss the properties of central moments. 3
3. Write the normal equations for fitting a straight line. 3
4. Write the value of a when fitting a curve of the form $y = ab^x$, based on a data (X_i, Y_i) size n . 3
5. Write the normal equations for fitting a curve of the form $y = ab^x$ 3
6. How can we obtain the line of 'best fit'? 3
7. For 17 observations on price(x) and supply(y) the following data were obtained (in appropriate units). $\sum(x) = 544$, $\sum(y) = 244$, $\sum(x^2) = 19040$, $\sum(y^2) = 3773$, $\sum(xy) = 8413$. Obtain the line of regression and estimate supply when the price is 35. 3
8. The following calculations have been made for closing price of 12 stocks(x) on the Bombay stock exchange on a certain day along with volume of thousands of shares(y). From these calculations find the regression equations.
 $\sum(x) = 580$, $\sum(y) = 370$, $\sum(xy) = 11494$, $\sum(x^2) = 41658$, $\sum(y^2) = 17206$ 3

Part B (Answer any 4 questions. Each carries 6 marks)

9. Fit a straight line of the form $y = ax + b$ for the following data and hence obtain the value of y when $x = 15$.

x	1	3	5	7	8	10
y	8	12	15	17	18	20

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10. The given x and y are connected a law of the form $y = ax^2 + bx + c$. Find the best values of a and b by the method of least squares. Predict the value of y when $x = 7$.

x	1	2	3	4	5	6
y	5	14	30	41	77	98

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11. Explain the procedure for fitting a curve of the form $y = ae^{bx}$ 6

12. From the data given below obtain the regression equation of x on y

x:	65	66	67	67	68	69	70	72
y:	67	68	65	68	72	72	69	71

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13. Obtain the expression for finding out the angle between two regression lines. 6

14. Given the following data.

Arithmetic mean:	36	85
Standard deviation:	11	8

Correlation coefficient between x and y is 0.66.

- (a) Find the two regression equations (b) Estimate the value of x when the value of y is 75 6

Part C (Answer any 2 question(s). Each carries 14 marks)

15. (a) Compute the coefficient of rank correlation from the following data.

X	33	56	50	65	44	38	44	50	15	26
Y	50	35	70	25	35	58	75	60	55	26

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- (b) Compute the coefficient of rank correlation from the following data.

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

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16. In a beauty contest, ten competitors are ranked by three judges in the following order. Use the method of rank correlation and find which pair of judges have the nearest approach to common tastes in beauty.

Judge I	1	6	5	10	3	2	4	9	7	8
Judge II	3	5	8	4	7	10	2	1	6	9
Judge III	6	4	9	8	1	2	3	10	5	7

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17. a) company tracks the daily sales of a product for 7 days : 12, 15, 14, 10, 18, 16, 20. Compute the mean and variance using the first and second raw moments.
b) Using the data above compute the third central moment and interpret the skewness of sales distribution. 14