



ADITYA DEGREE COLLEGES: ANDHRA PRADESH
II SEM, MID-I EXAMINATIONS,
STATISTICAL METHODS AND PROBABILITY DISTRIBUTIONS

Dt: 3-3-2025

Max. Marks: 60 M

Time: 3 Hrs

SECTION - A

Answer any five questions

5 x 4= 20 M

1. Scatter diagram
2. Partial correlation and its coefficient
3. Fitting of exponential curve ($y = a e^{bx}$)
4. Properties of Multiple correlation
5. Properties of Regression coefficients
6. Angle between regression lines
7. *Unexplained variation & Explained variation*
8. Calculate $R_{1.23}$, $R_{3.12}$ given $r_{12} = 0.6$, $r_{13} = 0.72$, $r_{23} = 0.65$

SECTION - B

Answer the following questions

4 x 10= 40 M

9. (a) The following are the ages of 14 pairs. Calculate Karl-Pearson coefficient of correlation?

Age of husband (X)	21	25	26	24	22	30	17	24	28	32	31	29	21	28
Age of Wife (Y)	19	20	24	21	21	24	18	22	19	30	27	26	19	18

(or)

- (b) In a music competition there are 12 participants, 3 judges has given the following ranks. By using *rank correlation coefficient* find out which pair of judges has nearest approach to their decision ?

Judge 1	1	5	6	10	3	2	9	4	11	7	12	8
Judge 2	3	8	5	7	4	6	11	1	9	2	10	12
Judge 3	4	6	9	8	11	3	12	2	10	5	1	7

10. (a) Fit a second degree parabola for the following data?

X	1.0	1.5	2.0	2.5	3.0	3.5	4.0
Y	1.1	1.3	1.6	2.0	2.7	3.4	4.1

(or)

b) Fit a power curve of the form $Y = ax^b$ to the following data?

X	1	2	3	4	5
Y	2	16	54	128	250

11. a) Calculate the
- i) Regression equation of X on Y?
 - ii) Regression equation of Y on X?
 - iii) Estimate X when Y=20?

X	10	12	13	17	18
Y	5	6	7	9	13

(or)

- b) You are supplied with following information variance of $x=36$
 $12x - 15y + 99 = 0$; $60x - 27y = 321$

- Calculate
- i) Averages of x and y
 - ii) Standard deviation of Y
 - iii) Correlation coefficient between x and y

12. a) Fit an exponential curve of the type $y = a b^x$ and estimate the population in the year 1981 to the following data?

Year	1901	1911	1921	1931	1941	1951	1961	1971
Population in Lakhs	3.9	5.3	7.3	9.6	12.9	17.1	23.2	30.5

(or)

- b) Distinguish between Correlation & Regression?