K26FY1405 Pages: 2 Reg No:.....
Name:.....

Second Semester FYUGP Degree (Reg/Sup/Imp) Examination April 2026

KU2DSCSTA134 - QUANTITATIVE TECHNIQUES IN DATA ANALYSIS-I

2024 Admission onwards

Time : 2 hours Maximum Marks : 70

Section A

Answer any 6 questions. Each carry 3 marks.

1. The simple quantity index for a product is 80. If the base year quantity was 500 units, what is the current year quantity?
2. Define index numbers with example.
3. Explain the terms " cyclic fluctuations" and "cycle".
4. Explain how you would determine seasonal variation by 5-yearly moving average.
5. What do you meant by normal equations?
6. Differentiate between linear correlation and non-linear correlation
7. What is a scatter diagram, and how is it used in statistical analysis?
8. Give the formula for Karl Pearson's correlation coefficient.

Section B

Answer any 4 questions. Each carry 6 marks.

9. Explain briefly the additive and multiplicative models of time series. Which of these models is more popular in practice and why?
10. Explain the term "business cycle" and point out the necessity of its study in time series analysis.
11. Explain how to fit a linear trend using the least squares method.
12. What are the merits and demerits of Scatter diagram method.
13. Calculate the Pearson's coefficient of correlation for the following Series:

Price (Rs.)	22	24	26	28	30	32	34	36	38	40
Demand (Tonnes):	60	58	58	50	48	48	48	42	36	32

14. The personnel department of a large company is investigating the possibility of assessing the suitability of applicants by using psychological tests instead of normal interview procedures. A comparative test of seven applicants was carried out using both methods. The results were as follows:

Applicant	Ranking by interview procedure	Ranking play psychological test
A	4	5
B	1	2
C	7	7
D	6	4
E	2	1
F	3	3
G	5	6

(a) Calculate the rank coefficient of correlation.
(b) Interpret the result established.

Section C

Answer any 2 questions. Each carry 14 marks.

15. Given the bivariate data:

X	1	5	3	2	1	1	7	3
Y	6	1	0	0	1	2	1	5

(a) Find regression line of Y on X and predict Y when X=10
(b) Find regression line of X on Y when Y=2.5
(c) Calculate Karl pearson correlation coefficient

16. Given 2 regression lines: $3x+2y-26=0$ and $6x+y-31=0$ (a) Identify the regression lines and hence find correlation coefficient (b) Obtain the means of x and y.

17. Examine whether Fisher's index number and Laspeyres index number satisfy the time reversal test and the factor reversal test.

Commodity	Base year		Current year	
	Price	Quantity	Price	Quantity
A	12	10	15	12
B	15	7	20	5
C	24	5	20	9
D	5	16	5	14