

SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN
(AUTONOMOUS)

(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)
Chromepet, Chennai - 600 044.

B.Com. CS- END SEMESTER EXAMINATIONS - APRIL 2025

SEMESTER - IV

21UBCCT4012 - Statistics - II

Total Duration : 2 Hrs.30 Mins.

Total Marks : 60

Section B

Answer any **SIX** questions ($6 \times 5 = 30$ Marks)

1. Obtain the straight-line trend equation and tabulate against each year after estimation of the trend and short-term fluctuations:

Year	1960	1961	1962	1963	1964	1965	1966	1967	1968
Value	380	400	650	720	690	620	670	950	1040

2. Calculate the Pearson's coefficient of correlation from the following data using 44 and 26 respectively as the origin of x and y.

x	43	44	46	40	44	42	45	42	38	40	42	57
y	29	31	19	18	19	27	27	29	41	30	26	10

3. Fit a straight line to the following data by the least squares method after summing the given quarterly data due to yearly data.

	Export of Cotton Textiles (Million Rs.)			
Year	I Quarter	II Quarter	III Quarter	IV Quarter
1979	10	13	14	12
1980	12	14	15	13
1981	13	15	18	14
1982	15	19	21	18
1983	15	22	23	20
1984	20	21	25	20

Also, find out short-period fluctuations for the given years using the additive model.

4. Calculate by the Arithmetic Mean Method the index number for the year 1982 from the following data:

	Prices (in Rs.)	
Commodity	1981	1982
Rice	35	40
Wheat	30	40
Pulses	25	35
Oil	15	25
Milk	40	50

Contd...

5. Find the coefficient of correlation between x and y from the following data:

X	10	14	15	28	35	48
Y	74	61	50	54	43	26

6. Find the two regression coefficients b_{xy} and b_{yx} and hence find the correlation coefficient for the following data:

$$\sum x = 24; \sum y = 214; \sum xy = 306; \sum x^2 = 164; \sum y^2 = 576; N = 4;$$

7. Fit a trend by the method of least squares for the following data. Also, calculate the trend value for the year 2016.

Year	2011	2012	2013	2014	2015
Sales (in lakhs)	100	120	110	140	80

8. Construct the index number of prices from the following data using (a) Laspeyres's and (b) Fisher's methods.

Commodity	1970 (Base Year)		1980 (Current Year)	
	Price (in Rs.)	Quantity	Price (in Rs.)	Quantity
A	6	50	10	56
B	2	100	2	120
C	4	60	6	60
D	10	30	12	24
E	8	40	12	36

Section C

Answer any **THREE** questions ($3 \times 10 = 30$ Marks)

9. Fit a parabolic curve of regression of y on x to the nine pairs of values:

x	1	2	3	4	5	6	7	8	9
y	2	6	7	8	10	11	11	10	9

10. Find the rank correlation coefficient for the following data;

X	Y
92	86
89	83
87	91
86	77
86	68
77	85
71	52
63	82
53	37
50	57

Contd...

11. For two variables XXX and YYY, the equations of the regression lines are:

$$9Y - X - 288 = 0;$$

$$X - 4Y + 38 = 0;$$

Find:

- (i) The mean values of X and Y.
- (ii) The coefficient of correlation between X and Y.
- (iii) The ratio of the standard deviation (SD) of Y to that of X.
- (iv) The most probable value of Y when X=145
- (v) The most probable value of X when Y=35

12. Explain the methods of measuring trends.

13. Construct index numbers from the following data by using:

- (a) Laspeyres Method; (b) Paasche Method; (c) Bowley's Method;
- (d) Fisher's Ideal Method; (e) Marshall Edgeworth Method

Commodity	2014		2015	
	Price	Qty.	Price	Qty.
A	5	2	6	2
B	6	4	8	5
C	3	8	4	8
D	10	5	9	12
