

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. Explain the method of least squares for fitting a straight line.
2. Using three year moving averages determine the trend and short -term fluctuations

Year	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
<b>Production in tonnes</b>	21	22	23	25	24	22	25	26	27	26

3. From the following data construct an index for 2025 taking 2024 as base:

Commodities	Price in 2024	Price in 2025
A	100	140
B	80	120
C	160	180
D	220	240
E	40	40

4. A sample of 100 iron bars is said to be drawn from a large number of bars whose lengths are normally distributed with mean 4 feet and standard deviation 0.6 feet. If the sample mean is 4.2 feet, can the sample be regarded as a truly random sample?
5. The I.Q 's of a group of 6 persons were measured, and they then sat for a certain examination .Their I.Q s and examination marks were as follows:

Persons	A	B	C	D	E	F
<b>I.Q</b>	110	100	140	120	80	90
<b>Exam marks</b>	70	60	80	60	10	20

Compute the rank correlation coefficient.

6. The sales of a commodity in tonnes varied from Jan 2022 to Dec 2023 as under

280	300	280	280	270	240
230	230	220	200	210	200

Fit a trend line by the method of semi averages.

**Contd...**

7. From the following data prepare quantity index numbers for the year 2017 taking 2014 as the base year.

Year	Commodity I		Commodity II		Commodity III	
	Price	Quantity	Price	Quantity	Price	Quantity
2014	5	10	8	6	6	3
2017	4	12	7	7	5	4

8. In a sample of 500 from a town, 280 are tea drinkers and the rest are coffee drinkers. Can we assume that coffee and tea are equally popular in the town at 1% level of significance?

### Section C

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

9. Fit a straight line by the method of least squares to the following data.

Year	2012	2013	2014	2015	2016	2017
Production (Tonnes)	24	25	29	26	22	24

Estimate the likely production for the year 2020

10. Calculate the two regression equations of X on Y and Y on X from the data given below, taking deviations from actual means of X and Y.

Price	10	12	13	12	16	15
Amount demanded	40	38	43	45	37	43

Estimate the likely demand when the price is ₹20.

11. Find the 4 yearly moving averages from the following data.

Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Sales	464	515	518	467	502	540	557	571	586	612

12. Compute Index Number using Fisher's Ideal Formula show that it satisfies time Reversal Test and Factor Reversal Test.

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

13. Describe the procedure for testing the significance of the difference between two sample means when sample sizes are large.

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