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 NOVEMBER -2023
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. Describe the least square principles.
2. A manufacturer claims that their light bulbs have a mean lifespan of 1,000 hours. You suspect that the actual mean lifespan is different. You take a random sample of 100 light bulbs and find that the sample mean lifespan is 980 hours with a sample standard deviation of 40 hours. Perform a hypothesis test at the 5% significance level to determine if there is enough evidence to reject the manufacturer's claim.
3. Compute trend value from the following data using the method of Least Square

Year	Production
2010	7
2011	9
2012	12
2013	15
2014	18
2015	23

4. From the following data, Compute the coefficient of rank correlation between mathematics and statistics:

Mathematics	Statistics
85	93
60	75
73	65
40	50
90	80

Contd...

5. Prepare a price index for the following by using simple aggregate index:

Commodity	Price in 2020	Price in 2021
A	20	25
H	30	30
C	10	15
D	25	35
E	40	45
F	50	55

6. Examine the different components of Time Series.

7. Compute the Coefficient of correlation between x and y from the following data:

x	1	3	5	8	9	10
y	3	4	8	10	12	11

8. Construct an index number for 2015 taking 2014 as base from the following data:

Commodity	Price in 2014	Price in 2015
A	90	95
B	40	60
C	90	110
D	30	35

Section C

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

9. Describe the steps to fit a straight line in business statistics.

10. A company claims that their new product has an average response time of 10 milliseconds for an online service. You collect a random sample of 200 response times and find a sample mean of 11 milliseconds with a sample standard deviation of 2 milliseconds. Test whether there is enough evidence to support the company's claim at a 1% significance level.

11. Ascertain the coefficient of correlation from the following data

Wages	Cost of Living
100	98
101	99
102	99
102	97
100	95
99	92
97	95
98	94
96	90
95	91

12. Using three year moving averages determine the trend and short term fluctuations:

Year	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
Production ('000 tons)	21	22	23	25	24	22	25	26	27	26

13. Determine Fisher's Price Index for the following data and prove that is satisfies both Time Reversal and Factor Reversal test

Commodities	**Quantity**		**Price**	
	2003	**2004**	**2003**	**2004**
Wheat	8	10	20	30
Sugar	6	9	14	18
Tea	2	5	15	20

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