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 - NOV'2024
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. Fit a parabola of the second degree to the data given below.

Year	2013	2014	2015	2016	2017
Sales("000)	16	18	19	20	24

2. You are given the following information about advertising and sales:

	Advertisement Exp	**Sales**
Mean	10	90
S.D	03	12

Correlation coefficient=0.8
Find the likely sales when advertisement expenditure is 15 lakhs.

3. 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.

4. 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

5. From the following data calculate the rank correlation coefficient after making adjustment for tied ranks.

X	48	33	40	9	16	16	65	24	16	57
Y	13	13	24	6	15	4	20	9	6	19

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6. Explain the meaning of regression coefficient and the regression lines.

7. Calculate five yearly moving averages of the number of students studying in college shown below:

Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Students	332	317	357	392	402	405	410	417	405	431

8. Construct an Price index number by (a) Laspeyre's method, (b)paasches's method and (c) Fisher's method .

Commodity	**Quantity**	**Price (2020)**	**Quantity**	**Price (2022)**
A	40	2	50	6
B	50	4	40	8
C	20	6	30	9
D	10	8	20	6
E	10	10	20	5

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 Coefficient of correlation by Pearson's method between the density of population and death rate.

Cities	A	B	C	D	E	F
Density	200	500	400	700	600	300
Death rate	10	16	14	20	17	13

11. Caculate 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.

12. Explain the component of time series? Show how a time series is built up from these components using an example?

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13. Construct with the help of the table below, Fisher's Ideal Index.

Commodity	**2016**		**2017**	
	Price	**Quantity**	**Price**	**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

Also prove from the above data that the Factor Reversal and Time Reversal tests are satisfied by Fisher's ideal formula.

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