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. What is meant by trend?How would you fit a straight line by the method of least squares?

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

Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Sales	464	515	518	467	502	540	557	571	586	612

3. Calculate quantity index from the following data through,
i) Laspeyre's method ii) Paasche's method iii) Fisher's method

Year	**Commodity I**		**Commodity II**		**Commodity III**	
	Price (Rs.)	**Quantity**	**Price (Rs.)**	**Quantity**	**Price**	**Quantity**
2020	5	10	8	6	6	3
2021	4	12	7	7	5	4

4. A sample of 1000 students from madras university was taken and their average weight was found to be 112 lbs with a standard deviation of 20 lbs. could the mean weight of students in the population be 120 pounds? Test at 1% level.

5. From the following data, Calculate the value of Y for X=40

	X	**Y**
Average	35	50
Standard Deviation	5	8
Correlation co-efficient r	0.8	

6. Draw a trend line by the method of Semi-averages

Year	2011	2012	2013	2014	2015	2016	2017
Sales('000)	110	105	115	112	110	106	120

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7. An enquiry into the budgets of middle class families in a certain city gave the following information:

Expenses	Food	Fuel	Clothing	Rent	Miscellaneous
	35%	10%	20%	15%	20%
Price (2019)	Rs.150	Rs.25	Rs.75	Rs.30	Rs.40
Price (2021)	Rs.145	Rs.23	Rs.65	Rs.30	Rs.45

What is the cost of living index number of 2021 as compared with that of 2019?

8. The mean life time of sample of 400 fluoroscent tube light produced by a company is found to be 1,570 with a standard deviation of 150 hours. Test the hypothesis that the mean life time of the tube lights produced by the company is 1600 hours against the alternative hypothesis that it is greater than 1600 hours at 1% level of significance.

Section C

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

9. Find the trend values by the method of Least Squares.

Year	2012	2013	2014	2015	2016	2017	2018
Values	12	10	14	11	13	15	16

10. A random sample of 5 college students is selected and their grade in Mathematics and statistics are found to be:

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

Calculate pearman's rank correlation.

11. Compute the average seasonal movement for the following series.

Year	**Quarterly Production**			
	I	**II**	**III**	**IV**
2013	3.5	3.9	3.4	3.6
2014	3.5	4.1	3.7	4.0
2015	3.5	3.9	3.7	4.2
2016	4.0	4.6	3.8	4.5
2017	4.1	4.4	4.2	4.5

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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. Two Samples are drawn from two normal population from the following data test whether the two samples have the same variance at 5% level:

Sample 1:	60	65	71	74	76	82	85	87		
Sample 2:	61	66	67	85	78	63	85	86	88	91

(F0.05(9,7)=3.68)

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