STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI – 600 086.
(For candidates admitted during the academic year 2025-26)

B.Com. DEGREE EXAMINATION APRIL 2026
COMMERCE
SECOND SEMESTER

COURSE : ELECTIVE
PAPER : BUSINESS STATISTICS
SUBJECT CODE : 25CM/ME/BS23
TIME : 3 HOURS **MAX. MARKS: 100**

<table>
<tr><th></th><th>SECTION A</th><th></th><th></th></tr>
<tr><th>Q.No.</th><th>Answer all the Questions (4x2.5=10)</th><th>CO</th><th>KL</th></tr>
<tr><td>1</td><td>What are the components of time series analysis?</td><td>1</td><td>K1</td></tr>
<tr><td>2</td><td>State the uses of chi square test.</td><td>1</td><td>K1</td></tr>
<tr><td>3</td><td>List the procedure in testing of hypothesis.</td><td>1</td><td>K1</td></tr>
<tr><td>4</td><td>What is Correlation?</td><td>1</td><td>K1</td></tr>
<tr><th></th><th>SECTION B</th><th></th><th></th></tr>
<tr><th>Q.No.</th><th>Answer all the Questions (4x5=20)</th><th>CO</th><th>KL</th></tr>
<tr><td>5</td><td>The trend of the annual sales of Steel Company is described by the following equation:
Y = 12+0.7X
Origin 1st July 2020; X unit =1 year and Y unit = Annual production.
a. Calculate monthly trend equation
b. Shift the origin to 1st January 2020.</td><td>2</td><td>K2</td></tr>
<tr><td>6</td><td>Following results were obtained from two samples, each drawn from two different brands A and B.
Brands A B
Size 25 17
Standard deviation (S) 3 2
Test the hypothesis that there is a significant difference in the variance of the two samples.</td><td>2</td><td>K2</td></tr>
<tr><td>7</td><td>The demand for a particular spare part in a factory was found to vary day to day. In a sample study, the following information was obtained:
Day 1 2 3 4 5 6
No of parts 1,124 1,125 1,110 1,120 1,126 1,115
Test the hypothesis that the number of parts demanded does not depend on the days. Apply Chi-Square test at 5% level of significance.</td><td>2</td><td>K2</td></tr>
<tr><td>8</td><td>From the following data:
X 80 91 99 71 61 81
Y 123 135 154 110 105 134
Find the rank correlation coefficient</td><td>2</td><td>K2</td></tr>
<tr><th></th><th>SECTION C</th><th></th><th></th></tr>
<tr><th>Q.No.</th><th>Answer any two questions (2x10=20)</th><th>CO</th><th>KL</th></tr>
<tr><td>9</td><td>Given below are the figures of production (in lakh kg.) of a sugar factory.
<table>
<tr><td>Year</td><td>2017</td><td>2018</td><td>2019</td><td>2020</td><td>2021</td><td>2022</td><td>2023</td></tr>
<tr><td>Production</td><td>40</td><td>45</td><td>46</td><td>42</td><td>47</td><td>50</td><td>46</td></tr>
</table>
Fit a straight line trend by the least squares method and tabulate the trend values. Forecast the Production for 2026. Also draw the graph.</td><td>3</td><td>K3</td></tr>
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10	Random samples are drawn from two populations and the following results were obtained: Sample X: 16 17 18 19 20 21 22 24 26 27 Sample Y: 19 22 23 25 26 28 29 30 31 32 35 36 Test whether the two samples have same variance at 5% level of significance	3	K3
11	Ten students were given intensive coaching for a month in statistic. The scores obtained in tests 1 and 5 are given below: Students | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 Marks in 1st Test | 50 | 52 | 53 | 60 | 65 | 67 | 48 | 69 | 72 | 80 Marks in 5th Test | 65 | 55 | 65 | 65 | 60 | 67 | 49 | 82 | 74 | 86 Does the score from test 1 to test 5 show an improvement? Test at 5% level of significance.	3	K3
	SECTION D		
Q.No.	**Answer any two questions (2x10=20)**	**CO**	**KL**
12	Below are given the gain in weights in kgs of cows fed on two diets X and Y: Diet X: 25 32 30 32 24 14 32 Diet Y: 24 34 22 30 42 31 40 30 32 35 Test at 5% level whether the two diets differ in weight gain. Test their effects on mean increase in weight at 5% level of significance.	4	K4
13	If $r_{12} = 0.86$, $r_{13} = 0.65$ and $r_{23} = 0.72$, find the partial correlation coefficient $r_{12.3}$ and multiple correlation $R_{1.23}$	4	K4
14	The data below give the average quarterly prices of a commodity for five years. Calculate seasonal indices by the method of link relatives: **Year** | **1st Quarter** | **2nd Quarter** | **3rd Quarter** | **4th Quarter** 2020 | 30 | 26 | 22 | 31 2021 | 35 | 28 | 22 | 36 2022 | 31 | 29 | 28 | 32 2023 | 31 | 31 | 25 | 35 2024 | 34 | 36 | 26 | 33	4	K4
	SECTION E		
Q.No.	**Answer any two questions (2x15=30)**	**CO**	**KL**
15	The following table gives monthly sales (in thousand rupees) of a certain firm in three states by its four salesmen: Decode the data from 30. **States** | **Salesmen** | **I** | **II** | **III** | **IV** **A** | 36 | 35 | 33 | 38 **B** | 38 | 39 | 36 | 35 **C** | 40 | 37 | 38 | 37 Set up a two-way ANOVA table and test whether there is a significant difference at 5% level.	5	K5

16	A firm selling four products is interested in finding out whether the sales are distributed similarly among four general classes of customers. A random sample of 400 sales provide the following information: **Customers Group** **Products** **1 2 3 4 Total** Farmers 25 10 30 15 80 Factory workers 32 20 10 28 90 Businessmen 35 48 25 40 148 Professionals 28 22 15 17 82 Apply Chi-Square test. Is there any association between the product sold and the group of customers?	5	K5
17	The following table gives age (in years) of husbands and wives for 50 newly married couples: **Age of Wives** **Age of Husbands (X)** **(Y) 20-25 25-30 30-35 Total** 16-20 9 14 - **23** 20-24 6 11 3 **20** 24-28 - - 7 **7** **Total 15 25 10 50** Find: (i) Regression line of age of husbands on age of wives (ii) The age of husband when the age of wife is 30 years.	5	K5
18	Find seasonal variations by Ratio to Trend method from the data given below: **Year 1st Quarter 2nd Quarter 3rd Quarter 4th Quarter** 2017 34 54 38 38 2018 36 60 52 48 2019 40 58 56 52 2020 52 76 64 58 2021 70 90 88 84	5	K5

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