STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI – 86
(For candidates admitted from the academic year 2023 – 2024)

B.B.A DEGREE EXAMINATION NOVEMBER 2024
BUSINESS ADMINISTRATION
THIRD SEMESTER

COURSE : ALLIED CORE
PAPER : BUSINESS STATISTICS
SUBJECT CODE : 23BA/AC/BS35
TIME : 3 HOURS **MAX. MARKS: 100**

Q. No.	SECTION A (5 x 2=10) **Answer all questions:**	CO	KL
1.	What are stem and leaf plots?	1	1
2.	What is another name for Bowley's Skewness?	1	1
3.	Calculate the rank correlation for the following data: X: 1, 2, 3, 4 Y: 4, 3, 2, 1	1	1
4.	When the average of I, II, III and IV Quarters are 42.4, 36.2, 37.8 and 40.2. Compute the Seasonal Index Value.	1	1
5.	In an experiment on pea breeding Mendel obtained the following frequencies of seed: 315 round and yellow, 101 wrinkled and yellow, 108 round and green, 32 wrinkled and green. According to this theory of heredity the number should be in proportion 9:3:3:1. Compute the expected frequency.	1	1
Q. No.	**SECTION B (4 x 5=20) Answer any four questions:**	**CO**	**KL**
5.	Explain Various types of statistical data.	2	2
6.	Discuss on various components in time series. Interpret with relevant examples.	2	2
7.	Calculate mean, median and mode for the following data pertaining to marks in statistics out of 140 marks for 80 students in a class: **Marks more than**: 0, 20, 40, 60, 80, 100, 120 **No. of Students**: 80, 76, 50, 28, 18, 9, 3	2	2
8.	Determine the coefficient of Quartile Deviation from the following data. Marks: 10, 20, 30, 40, 50, 60 No. of Students: 4, 8, 16, 9, 8, 3	2	2
9.	Obtain the rank correlation coefficient between the variables X and Y from the following pairs of observed values: **X**: 50, 55, 65, 50, 55, 60, 50, 65, 70, 75 **Y**: 110, 110, 115, 125, 140, 115, 130, 120, 115, 160	2	2
10.	The number of scooter accidents per month in a certain town was as follows: 12, 8, 20, 2, 14, 10, 15, 6, 9, 4 use Chi-Square test to determine if these frequencies are in agreement with the belief that accident conditions were the same during 10-month period.	2	2

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<table>
<tr><th>Q. No.</th><th>SECTION C (4 x 10 =40)
Answer the following questions:</th><th>CO</th><th>KL</th></tr>
<tr><td>11.</td><td>(a) Based on the frequency distribution given below, compute the following statistical measures to characterize the distribution.
i) Co-efficient of variation ii) Inter-quartile range
iii) Modal value
<table>
<tr><td>Annual Tax Paid (Rs.)</td><td>5-10</td><td>10-15</td><td>15-20</td><td>20-25</td><td>25-30</td><td>30-35</td><td>35-40</td></tr>
<tr><td>No. of Managers</td><td>18</td><td>30</td><td>46</td><td>28</td><td>20</td><td>12</td><td>6</td></tr>
</table>
(OR)
(b) The following are some of the particulars of the distribution of weight of boys and girls in a class:
<table>
<tr><th></th><th>Boys</th><th>Girls</th></tr>
<tr><td>Number</td><td>100</td><td>50</td></tr>
<tr><td>Mean Weight</td><td>60 Kg</td><td>45 kg</td></tr>
<tr><td>Variance</td><td>9</td><td>4</td></tr>
</table>
a) Find the standard deviation of the combined data.
b) Which of the two distribution is more variable?</td><td>3</td><td>3</td></tr>
<tr><td>12.</td><td>(a) Compute Karl Pearson’s coefficient of correlation from the following data:
<table>
<tr><td>X</td><td>100</td><td>200</td><td>300</td><td>400</td><td>500</td><td>600</td><td>700</td></tr>
<tr><td>Y</td><td>30</td><td>50</td><td>60</td><td>80</td><td>100</td><td>110</td><td>130</td></tr>
</table>
(OR)
(b) The specimen of copper wires drawn from a large lot have the following breaking strength (in kg. weight):
578, 572, 570, 568, 572, 578, 570, 572, 596, 544
Test using t-statistic whether the mean breaking strength of the lot may be taken to be 578 kg. weight (Test @ 5% level of significance).</td><td>3</td><td>3</td></tr>
<tr><td>13.</td><td>(a) Fit a straight-line trend by the method of least squares to the following data. Assuming that the same rate of change continues, what would be the predicted earning (Rs. in lakh) for the year 2014?
<table>
<tr><td>Year</td><td>2005</td><td>2006</td><td>2007</td><td>2008</td><td>2009</td><td>2010</td><td>2011</td><td>2012</td></tr>
<tr><td>Earnings</td><td>38</td><td>40</td><td>65</td><td>72</td><td>69</td><td>60</td><td>87</td><td>95</td></tr>
</table>
(OR)
(b) Estimate the trend values using the data given by taking four-yearly moving average:
<table>
<tr><td>Year</td><td>2000</td><td>2001</td><td>2002</td><td>2003</td><td>2004</td><td>2005</td><td>2006</td><td>2007</td><td>2008</td></tr>
<tr><td>Value</td><td>12</td><td>25</td><td>39</td><td>54</td><td>70</td><td>87</td><td>105</td><td>100</td><td>82</td></tr>
</table></td><td>4</td><td>4</td></tr>
</table>

14. (a) A firm selling five products is interested in finding out whether the sales are distributed similarly among four general classes of customers. A random sample of 400 sales records provides the following information: — CO: 4 — KL: 4

Customer's group	Products					Total
	1	2	3	4	5	
Partners	20	10	30	10	10	**80**
Factory workers	28	20	10	20	12	**90**
Businessmen	30	38	20	35	25	**148**
Professionals	28	20	12	12	10	**82**
Total	**106**	**88**	**72**	**77**	**57**	**400**

Formulate a suitable hypothesis. Apply Chi-Square test. What conclusion you can draw from the test result?

(OR)

(b) Calculate Mode from the following data by grouping method.

Age	20-25	25-30	30-35	35-40	40-45	45-50
No. of Persons	5	7	18	25	7	5

Q. No. **SECTION D** **(2 x 15=30)** — **CO** — **KL**

Answer any two questions:

15. Quarterly sales data (Rs. in Million) in a super bazar are presented in the following table for four – year period. — CO: 5 — KL: 5

Year	Quarters			
	I	II	III	IV
2010	60	80	72	68
2011	68	104	100	88
2012	80	116	108	96
2013	108	152	136	124
2014	160	184	172	164

Calculate the seasonal index for each of the four quarters using ratio-to-trend method.

16. From the following data obtain the two-regression equation, find the value of Y which should correspond on an average to X = 6.2 — CO: 5 — KL: 5

X	6	2	10	4	8
Y	9	11	5	8	7

17. Four machines A, B, C, D are used to produce a certain kind of cotton fabrics. The number of flaws in each machine are counted, with the following result. — CO: 5 — KL: 5

A	B	C	D
8	12	18	13
10	11	12	9
12	9	16	12
8	14	6	16
7	4	8	15

Do you think that there is significant difference in the performance of the four machines? Compute One-Way ANOVA.

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