Reg. No. | | | | | | | | |

G. VENKATASWAMY NAIDU COLLEGE (AUTONOMOUS), KOVILPATTI – 628 502.

UG DEGREE END SEMESTER EXAMINATIONS - APRIL 2025.
(For those admitted in June 2023 and later)

PROGRAMME AND BRANCH: B.Sc., COMPUTER SCIENCE

SEM	CATEGORY	COMPONENT	COURSE CODE	COURSE TITLE
III	PART - III	ELECTIVE GENERIC-3	U23CS3A3	STATISTICAL METHOD AND ITS APPLICATION

Date & Session: 24.04.2024/AN **Time: 3 hours** **Maximum: 75 Marks**

Course Outcome	Bloom's K-level	Q. No.	SECTION – A (10 X 1 = 10 Marks) Answer ALL Questions.
CO1	K1	1.	The mean of a dataset is also referred to as? a) Midpoint b) Mode c) Average (Mean) d) Median
CO1	K2	2.	What type of data is collected directly from the original source? a) Systematic data b) Random data c) Secondary data d) Primary data
CO2	K1	3.	Which measure divides a dataset into four equal parts? a) Mean b) Median c) Quartiles d) Range
CO2	K2	4.	Which of the following is a measure of dispersion? a) Mean b) Mode c) Harmonic Mean d) Range
CO3	K1	5.	What is the meaning of correlation? a) The average of two variables b) The relationship between two variables c) Frequency distribution d) The sum of squares of deviations
CO3	K2	6.	Karl Pearson's coefficient of correlation lies between. a)-1 to +1 b) 0 to 1 c) 1 to 2 d) -2 to 2
CO4	K1	7.	Which index number is commonly used to measure inflation? a) Cost of Living Index b) Consumer Price Index (CPI) c) Fisher's Index d) Paasche's Index
CO4	K2	8.	Which method is used to test the consistency of index numbers? a) Laspeyres method b) Paasche's method c) Fisher's formula d) Chain base method
CO5	K1	9.	What are the components of time series analysis? a) Index, Median, Deviation b) Mean, Median, Mode c) Time, Data, Index d) Trend, Seasonal, Cyclic, Irregular variations
CO5	K2	10.	Which method is used to calculate seasonal variations in time series? a) Chain base index b) Fixed base index c) Ratio-to-moving average d) Mean Deviation

<table>
<tr><th>Course Outcome</th><th>Bloom's K-level</th><th>Q. No.</th><th><u>SECTION – B</u> (5 X 5 = 25 Marks)
Answer <u>ALL</u> Questions choosing either (a) or (b)</th></tr>
<tr><td>CO1</td><td>K3</td><td>11a.</td><td>Construct a frequency distribution table and draw a histogram for the given data on hours studied by 50 students in a week.
<table>
<tr><th>Hours Studied</th><th>Number of Students</th></tr>
<tr><td>0 - 5</td><td>4</td></tr>
<tr><td>6 - 10</td><td>8</td></tr>
<tr><td>11 - 15</td><td>12</td></tr>
<tr><td>16 - 20</td><td>15</td></tr>
<tr><td>21 - 25</td><td>7</td></tr>
<tr><td>26 - 30</td><td>4</td></tr>
</table>
(OR)</td></tr>
<tr><td>CO1</td><td>K3</td><td>11b.</td><td>Explain the different scales of measurement in statistics: nominal, ordinal, interval, and ratio.</td></tr>
<tr><td>CO2</td><td>K3</td><td>12a.</td><td>Calculate the mean, median, and mode for a given set of data and explain their significance.
(OR)</td></tr>
<tr><td>CO2</td><td>K3</td><td>12b.</td><td>Calculate the median for the following dataset:12, 15, 14, 10, 18, 20, 22.</td></tr>
<tr><td>CO3</td><td>K4</td><td>13a.</td><td>Define correlation and distinguish between positive and negative correlation with examples.
(OR)</td></tr>
<tr><td>CO3</td><td>K4</td><td>13b.</td><td>Given the following data on the scores of 5 students in two subjects:
<table>
<tr><th>Student</th><th>Subject A</th><th>Subject B</th></tr>
<tr><td>1</td><td>85</td><td>78</td></tr>
<tr><td>2</td><td>90</td><td>88</td></tr>
<tr><td>3</td><td>75</td><td>82</td></tr>
<tr><td>4</td><td>80</td><td>85</td></tr>
<tr><td>5</td><td>95</td><td>92</td></tr>
</table>
Calculate the Pearson correlation coefficient between the scores of Subject A and Subject B.</td></tr>
<tr><td>CO4</td><td>K4</td><td>14a.</td><td>Describe the steps involved in the construction of index numbers and the issues encountered. (OR)</td></tr>
<tr><td>CO4</td><td>K4</td><td>14b.</td><td>Given the following data on the prices of a commodity over three years:
<table>
<tr><th>Year</th><th>Price ($)</th></tr>
<tr><td>2018</td><td>50</td></tr>
<tr><td>2019</td><td>55</td></tr>
<tr><td>2020</td><td>60</td></tr>
</table>
Construct a simple price index with 2018 as the base year.</td></tr>
<tr><td>CO5</td><td>K5</td><td>15a.</td><td>Explain the components of time series and the method of least squares for determining trends. (OR)
The following data shows the sales of a company over four years:
<table>
<tr><th>Year</th><th>Sales ($ in thousands)</th></tr>
<tr><td>2019</td><td>50</td></tr>
<tr><td>2020</td><td>55</td></tr>
<tr><td>2021</td><td>60</td></tr>
<tr><td>2022</td><td>65</td></tr>
</table></td></tr>
<tr><td>CO5</td><td>K5</td><td>15b.</td><td>Calculate the trend using the Moving Average method (3-year moving average).</td></tr>
</table>

<table>
<tr><th>Course Outcome</th><th>Bloom's K-level</th><th>Q. No.</th><th><u>SECTION – C</u> (5 X 8 = 40 Marks)
Answer <u>ALL</u> Questions choosing either (a) or (b)</th></tr>
<tr><td>CO1</td><td>K3</td><td>16a.</td><td>Explain the importance of data collection and classification in presenting statistical data.
(OR)</td></tr>
<tr><td>CO1</td><td>K3</td><td>16b.</td><td>Using the given frequency distribution table of hours studied by students, calculate the Mean and Median. Also, interpret the results and explain their significance.
<table>
<tr><th>Hours Studied</th><th>Number of Students</th></tr>
<tr><td>0 – 5</td><td>4</td></tr>
<tr><td>6 – 10</td><td>8</td></tr>
<tr><td>11 – 15</td><td>12</td></tr>
<tr><td>16 – 20</td><td>15</td></tr>
<tr><td>21 – 25</td><td>7</td></tr>
<tr><td>26 – 30</td><td>4</td></tr>
</table></td></tr>
<tr><td>CO2</td><td>K4</td><td>17a.</td><td>Discuss the concept of standard deviation and its importance in measuring data dispersion. Provide an example to illustrate your explanation.
(OR)</td></tr>
<tr><td>CO2</td><td>K4</td><td>17b.</td><td>The following data represents the monthly salaries (in $) of employees in a company:
<table>
<tr><th>Salary Range ($)</th><th>Frequency</th></tr>
<tr><td>2000-3000</td><td>5</td></tr>
<tr><td>3001-4000</td><td>10</td></tr>
<tr><td>4001-5000</td><td>15</td></tr>
<tr><td>5001-6000</td><td>8</td></tr>
<tr><td>6001-7000</td><td>2</td></tr>
</table>
Calculate the mean salary and the mean deviation about the mean.</td></tr>
<tr><td>CO3</td><td>K4</td><td>18a.</td><td>Explain the concept of spurious correlation and provide examples to illustrate it.
(OR)</td></tr>
<tr><td>CO3</td><td>K4</td><td>18b.</td><td>The ranks of 8 students in two subjects are as follows:
<table>
<tr><th>Student</th><th>Rank in Subject X</th><th>Rank in Subject Y</th></tr>
<tr><td>A</td><td>1</td><td>2</td></tr>
<tr><td>B</td><td>3</td><td>1</td></tr>
<tr><td>C</td><td>2</td><td>4</td></tr>
<tr><td>D</td><td>5</td><td>3</td></tr>
<tr><td>E</td><td>4</td><td>5</td></tr>
<tr><td>F</td><td>6</td><td>6</td></tr>
<tr><td>G</td><td>7</td><td>8</td></tr>
<tr><td>H</td><td>8</td><td>7</td></tr>
</table>
Calculate the Spearman rank correlation coefficient and interpret the result.</td></tr>
<tr><td>CO4</td><td>K5</td><td>19a.</td><td>Explain the concept of the Consumer Price Index (CPI) and its role in measuring inflation.
(OR)</td></tr>
<tr><td>CO4</td><td>K5</td><td>19b.</td><td>The following data represents the prices and quantities of commodities in the base year and the current year:</td></tr>
</table>

			Commodity / **Price (Base Year)** / **Quantity (Base Year)** / **Price (Current Year)** / **Quantity (Current Year)** A / 10 / 100 / 12 / 110 B / 20 / 150 / 22 / 140 C / 15 / 200 / 18 / 210 Calculate the Laspeyres and Paasche price indices.
CO5	K5	20a.	Explain the Ratio-to-Moving Average Method with an example and discuss its importance in measuring seasonal variations. **(OR)**
CO5	K5	20b.	The following data represents the quarterly sales of a company (in million dollars) over the past two years: **Quarter** / **2021** / **2022** Q1 / 120 / 140 Q2 / 130 / 150 Q3 / 125 / 145 Q4 / 140 / 160 Calculate the seasonal indices using the Simple Average Method.