Roll No.												

PRESIDENCY UNIVERSITY

BENGALURU

Make Up Examinations – December 2025

Date: 26 – 12- 2025 **Time:** 9:30am – 12:30pm

School: SOE	**Program:** ECE	
Course Code: ECE3106	**Course Name:** Introduction to Data Analytics	
Semester: MK	**Max Marks**: 100	**Weightage**: 50%

CO - Levels	**CO1**	**CO2**	**CO3**	**CO4**
Marks	**14**	**14**	**36**	**36**

Instructions:

(i) Read all questions carefully and answer accordingly.

(ii) Do not write anything on the question paper other than roll number.

Part A

Answer ALL the Questions. Each question carries 2marks. **10Q x 2M=20M**

1	What do yo understand by the word Cross validation.	**2 Marks**	**L1**	**CO1**
2	Write the output for the following function print(“Name\t: Priya\n Age\t: 23 ”)	**2 Marks**	**L1**	**CO1**
3	List out the various Python library functions.	**2 Marks**	**L1**	**CO2**
4	Recall the syntax for the following string to be reversed s = "Indian Institute of Science"	**2 Marks**	**L1**	**CO2**
5	Mention the Sample space when the die is thrown once.	**2 Marks**	**L1**	**CO3**
6	The Median of the sequence of numbers given below is _____ 3, 4,7, 9, 10, 12	**2 Marks**	**L2**	**CO3**
7	The interquartile range of the following sequence is _____ 2, 4, 4, 5, 6, 7, 8	**2 Marks**	**L2**	**CO3**
8	List out the different types of Machine learning.	**2 Marks**	**L1**	**CO4**
9	Illustrate a Confusion matrix with its general form.	**2 Marks**	**L1**	**CO4**
10	Write the 2D hyperplane equation in the SVM classifier.	**2 Marks**	**L1**	**CO4**

Part B

Answer the Questions **Total 80 Marks.**

<table>
<tr><td>11.</td><td>a.</td><td>Data is a collection of facts, information, and statistics and this can be in various forms such as numbers, text, sound, images, or any other format. Explain the different types of data with an example.</td><td>10 Marks</td><td>L2</td><td>CO1</td></tr>
<tr><td></td><td>b.</td><td>Data Analysis and Data Science are almost the same because they share the same goal: to derive insights from data and use them for better decision-making. Explain the different steps involved in the data analysis process with an example.</td><td>10 Marks</td><td>L2</td><td>CO2</td></tr>
<tr><td colspan="6">or</td></tr>
<tr><td>12.</td><td>a.</td><td>Data scientists spend close to 75% of their time analyzing data and engineering features, which is indeed a difficult and time-consuming process. From the given Table, identify the types of data.
<table>
<tr><th>Mobile Type</th><th>Ward No.</th><th>No. of users</th><th>Rank</th><th>Performance Percentage</th><th>Customer feedback</th></tr>
<tr><td>Samsung</td><td>1</td><td>84</td><td>4</td><td>74</td><td>Good</td></tr>
<tr><td>Apple</td><td>2</td><td>148</td><td>1</td><td>96</td><td>Outstanding</td></tr>
<tr><td>LG</td><td>3</td><td>147</td><td>2</td><td>94</td><td>Excellent</td></tr>
<tr><td>One Plus</td><td>4</td><td>138</td><td>3</td><td>76</td><td>Very good</td></tr>
</table></td><td>10 Marks</td><td>L3</td><td>CO1</td></tr>
<tr><td></td><td>b.</td><td>Handling missing data is a crucial step in data preprocessing. In Python, Pandas provides several methods to deal with missing values effectively. Explain some common techniques to handle missing data with an example.</td><td>10 Marks</td><td>L2</td><td>CO2</td></tr>
<tr><td>13.</td><td>a.</td><td>The mean August midday temperature in Mysore is 24°C, and the standard deviation is 3°C. Assuming this data is normally distributed, how many days in August would you expect the midday temperature to be between 26°C and 32°C?</td><td>20 Marks</td><td>L3</td><td>CO3</td></tr>
<tr><td colspan="6">or</td></tr>
<tr><td>14.</td><td>a.</td><td>In probability, a real-valued function defined over the sample space of a random experiment is called a random variable. Two dice are tossed. The Random Variable is the sum of the scores on the two dice.
i) What is the sample space?
ii)What is the probability that the sum of the scores is 4, 5, 6, or 7 or in other words, what is
$P(4 \le X \le 7)$?
iii) If $P(X=x) = 1/12$, what is the value of x?</td><td>20 Marks</td><td>L3</td><td>CO3</td></tr>
</table>

15.	**a**	A random variable is a mathematical formalization of a quantity or object that depends on random events. It is a mapping or a function from possible outcomes in a sample space to a measurable space. Four coins are tossed. If Y represents the number of tails, what is P(Y ≤ 1)? List all the outcomes. Write the Sample Space. What is the probability of Y=1, Y=2 and Y=3	**10 Marks**	**L3**	**CO3**
	b	Illustrate with examples different Machine learning methods.	**10 Marks**	**L2**	**CO4**

Or

16.	**a.**	If you get an average of three classes per week from your professor, what is the probability that you will receive exactly one class from your professor on Monday? Assume that the number of classes per week follows a Poisson distribution. Mention the three important constraints in Poisson distribution.	**10 Marks**	**L3**	**CO3**
	b.	The dataset of the Pass or Fail of 5 students in an exam is given in the table below. **Classes attended** / **Pass (1)/Fail(0)** 22 / 0 33 / 1 15 / 0 35 / 1 40 / 1 Use Logistic Regression as the classifier to calculate the probability of passing of a student passing who has attended 28 classes. Assume the model suggested by the optimizer for odds of passing the course is *log (odds) = -64+(2 x classes attended)*.	**10 Marks**	**L4**	**CO4**

17.	**a.**	Supervised Machine learning algorithm always produces Categorical output for the labeled input data. Using the K-Nearest Neighbours Classification algorithm, find the class of the new data in the last row of the table given below.	**20 Marks**	**L4**	**CO4**

Height (CM)	Weight (KG)	Class
167	51	Underweight
182	62	Normal
176	69	Normal
173	64	Normal
172	65	Normal
174	56	Underweight
169	58	Normal
173	57	Normal
170	55	Normal
170	57	?

Or

18.	**a.**	Consider the weather conditions to play the sport. Using the Naïve Bayes algorithm, predict the playing condition if it is rainy, mild temperature, high humidity, and not windy.	**20 Marks**	**L4**	**CO4**

Day	Outlook	Temp	Humidity	Windy	Play
1	Rainy	Mild	High	False	Yes
2	Overcast	Hot	High	True	Yes
3	Sunny	Hot	High	False	No