Roll No												

PRESIDENCY UNIVERSITY
BENGALURU

School Of Computer Science and Engineering & Information Science

Summer term End-Term Examinations, Aug 2024

Odd Semester: 2023 - 24
Course Code: CSE3001
Course Name: **Artificial Intelligence & Machine Learning**
Department: Dept of Computer Science & Engineering

Date: 09/08/2024
Time: 1:00PM-4:00PM
Max Marks: 100
Weightage: 50%

Instructions:

(i) Read the all questions carefully and answer accordingly.
(ii) Do not write any matter on the question paper other than roll number.

Q. No	Questions	Marks	CO	RBT
1	a. Describe turning test with a neat diagram?	4	CO1	L1
	b. List and explain the various categories of artificial intelligence in detail?	6	CO1	L2
	c. Demonstrate the following with a neat diagram 1. Simple reflex agent 2. Model based agent	10	CO1	L3
	OR			
2	a. Define conceptual graph with a proper example? List types of conceptual graphs in knowledge representation?	4	CO1	L1
	b. Explain in detail working of knowledge base agent architecture with a neat diagram?	6	CO1	L2
	c. Demonstrate the following with a proper example 1. Object attribute value 2. Rules 3. Semantic networks 4. Logical representation 5. Frame structure	10	CO1	L3

3	a. List and describe any 2 real-time applications of machine learning in detail?	4	CO2	L1
	b. Explain the machine learning pipeline in detail?	6	CO2	L2
	c. For the given dataset below construct decision tree classifier using gini index?	10	CO2	L3

Weekend	Weather	Parents	Money	Decision
W1	Sunny	Yes	Rich	Cinema
W2	Sunny	No	Rich	Tennis
W3	Windy	Yes	Rich	Cinema
W4	Rainy	Yes	Poor	Cinema
W5	Rainy	No	Rich	Stay In

W6	Rainy	Yes	Poor	Cinema
W7	Windy	No	Poor	Cinema
W8	Windy	No	Rich	Shopping
W9	Windy	Yes	Rich	Cinema
W10	Sunny	No	Rich	Tennis

OR

4	a. List the attribute selection measures? Describe anyone with an appropriate diagram?	4	CO2	L1
	b. Explain naïve bayes algorithm steps?	6	CO2	L2
	c. Demonstrate working of decision tree classifier with a real-time example? Why we use decision tree classifier and also list the advantages and disadvantages of same?	10	CO2	L3

5	a. Define Euclidean distance with an appropriate formula?	4	CO3	L1
	b. Explain clustering with an example? List and explain 4 types of clustering used in machine learning?	6	CO3	L2
	c. Use the K-means clustering algorithm to divide the following data into two clusters. Initially, choose the cluster centers as V1=(2,1)and V2=(3,3). Calculate the Euclidean distance from each data point to the cluster centers and assign each data point to the nearest cluster: Data points: (1,1),(2,1),(2,3),(3,2),(4,3),(5,5)(1,1), (2,1), (2,3), (3,2), (4,3), (5,5)(1,1),(2,1),(2,3),(3,2),(4,3),(5,5)	10	CO3	L3

OR

6	a. Outline unsupervised learning with an example? Why we use unsupervised learning over supervised learning?	4	CO3	L1
	b. Explain data pipeline for unsupervised machine learning with an example?	6	CO3	L2
	c. Demonstrate the working steps for K-means clustering algorithm?	10	CO3	L3

7	a. Define ensemble learning with an example?	4	CO4	L1
	b. Explain bagging and boosting with an appropriate diagram?	6	CO4	L2
	c. Demonstrate the working principle of K-nearest neighbor algorithm?	10	CO4	L3

OR

8	a. Identify the difference between linear regression and non-linear regression models?	4	CO4	L1
	b. Explain regression and classification in detail with respect to real-time applications?	6	CO4	L2
	c. Demonstrate the steps involved in hierarchical clustering algorithm	10	CO4	L3

9	a. What is overfitting? How can we can handle the overfiring in machine learning?	4	CO 1	L 1
	b. Describe the following terminologies 1. Support vector machine model 2. Multi-linear regression model	6	CO 1	L 2
	c. Demonstrate the various tasks performed during data pre-processing phase in machine learning?	10	CO 1	L 3

OR

10	a. Recall the following terms 1. Overfitting 2. Underfitting	4	CO 2	L 1
	b. Explain the encoding techniques in machine learning?	6	CO 2	L 2
	c. Demonstrate any 2 feature selection methods in machine learning with a appropriate diagram?	10	CO 2	L 3