Paper ID : 250368

Roll No: | | | | | | | | | | | | | |

MCA
(SEM IV) THEORY EXAMINATION 2024-25
MACHINE LEARNING

TIME: 3 HRS **M.MARKS: 100**

Note: Attempt all Sections. In case of any missing data; choose suitably.

SECTION A

1. Attempt *all* questions in brief. **2 x 10 = 20**

Q No.	Question	CO	Level
a.	Define clustering.	1	K1
b.	List out the four issues in Machine Learning.	1	K1
c.	Can Logistic Regression be used for classification? Explain it.	2	K2
d.	Explain the termhyperplane in SVM.	2	K2
e.	Illustrate the issues in decision tree learning.	3	K4
f.	Explain information gain.	3	K2
g.	Explain unsupervised learning with an example	4	K2
h.	Explain Self Organizing Map (SOM).	4	K2
i.	Describe reinforcement learning.	5	K1
j.	Explain Markov Decision process.	5	K2

SECTION B

2. Attempt any *three* of the following: **10 x 3 = 30**

Q No.	Question	CO	Level
a.	How is the clustering approach different from decision tree learning?Point out the reasons.	1	K1
b.	Explain the Naïve Bayes classifier and its principle.	2	K2
c.	Explain Instance-Based Learning. Compare Locally Weighted Regression and Radial Basis Function Networks.	3	K2
d.	Explain the concept of perceptron along with its working with a suitable example.	4	K4
e.	Explain in detail about Genetic Algorithm, its components and its applications	5	K4

SECTION C

3. Attempt any *one* part of the following: **10 x 1 = 10**

Q No.	Question	CO	Level
a.	Compare between Machine Learning and Data Science. Mention one challenge faced in Machine Learning and explain why it's an issue.	1	K2
b.	Describe the architecture of an artificial neural network. State the learning parameters used in ANN.	1	K2

4. Attempt any *one* part of the following: **10 x 1 = 10**

Q No.	Question	CO	Level
a.	What is the importance of support vector kernel? Explain its types.	2	K3
b.	Express your understanding of Concept Learning. Also describe in briefly the algorithms used for Concept Learning.	2	K3

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5. Attempt any *one* part of the following: 10 x 1 = 10

Q No.	Question	CO	Level
a.	Describe ID-3 algorithm with an example.	3	K2
b.	Explain k-Nearest Neighbor Learning algorithm with an example.	3	K2

6. Attempt any *one* part of the following: 10 x 1 = 10

Q No.	Question	CO	Level
a.	Explain Types of Gradient Descent. Also explain Delta Rule and related algorithm.	4	K2
b.	Describe CNN architecture. Specify the function of each layer.	4	K2

7. Attempt any *one* part of the following: 10 x 1 = 10

Q No.	Question	CO	Level
a.	Explain Q-learning and Deep Q-learning in detail.	5	K4
b.	Analyze the components of Reinforcement Learning along with its three different models.	5	K4