

MCA
(SEM IV) THEORY EXAMINATION 2022-23
MACHINE LEARNING

Time: 3 Hours**Total Marks: 100****Note:** Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

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

- a. Define the term learning in machine learning.
- b. Define clustering.
- c. Define the term deep learning.
- d. Explain supervised learning with an example.
- e. Describe reinforcement learning.
- f. Illustrate the issues in decision tree learning.
- g. List the application of machine learning.
- h. Explain properties of support vector machine (SVM).
- i. Differentiate between association and clustering.
- j. What is random forest algorithm?

SECTION B

2. Attempt any three of the following: 10x3=30

- a. Explain the need of machine learning technique with their application.
- b. Summarize the difference between Supervised, Unsupervised and Reinforcement learning.
- c. Describe limitations of Decision tree classifier.
- d. What is neural network? Give detail on the different layers used in neural network.
- e. Differentiate between classification and regression.

SECTION C

3. Attempt any one part of the following: 10x1=10

- a. Demonstrate the steps involved in designing a machine learning model. Give proper diagram.
- b. Compare machine learning with data science.

4. Attempt any one part of the following: 10x1=10

- a. Discuss linear and logistic regression with suitable example.
- b. What is hyperplane and support vectors in SVM? How we can choose optimal hyperplane?

5. Attempt any *one* part of the following: 10x1=10

- a. What is Decision tree classifier? Discuss ID3 algorithm of decision tree.
- b. What is K-nearest neighbor algorithm? Give suitable example.

6. Attempt any *one* part of the following: 10x1=10

- a. Explain Convolutional Neural Network with their different layers.
- b. Discuss feed forward and feed backward neural network.

7. Attempt any *one* part of the following: 10x1=10

- a. Explain detail about Reinforcement Learning and Markov Decision process.
- b. Explain detail about Genetic Algorithm, their components and their applications.

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