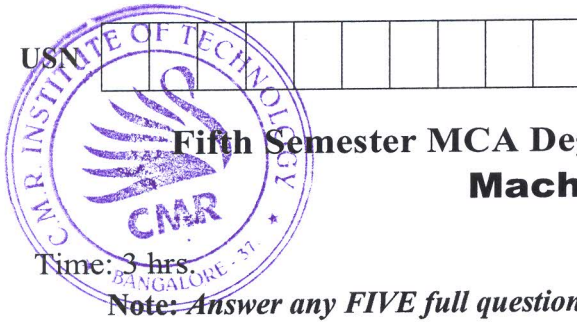


# CBCS SCHEME

18MCA53



Fifth Semester MCA Degree Examination, June/July 2023

## Machine Learning

Time: 3 hrs

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

### Module-1

- 1 a. Define a well posed learning problem, Quote some successful applications of machine learning. (10 Marks)
- b. Define concept and concept learning with eg, explain how the concept learning task determines the hypothesis for given target concept. (10 Marks)

OR

- 2 a. Elaborate the design choices of choosing the training experience and choosing the target function while designing a learning system. (10 Marks)
- b. Explain find - S algorithm in detail. (10 Marks)

### Module-2

- 3 a. List the advantages of decision tree representation, which problems are appropriate for decision tree learning. (10 Marks)
- b. What are issues in decision tree learning, explain briefly how we can overcome. (10 Marks)

OR

- 4 a. Discuss the ID<sub>3</sub> algorithm for decision tree learning. (10 Marks)
- b. Discuss inductive bias in decision tree learning. Differentiate between two types of biases why we prefer short hypothesis. (10 Marks)

### Module-3

- 5 a. Define perception, explain the concept of single perceptron with a neat diagram. (10 Marks)
- b. Explain in detail about the problem appropriate for natural network learning and why? (10 Marks)

OR

- 6 a. Explain the back propagation algorithm why is it not likely to be trapped in local minima? (10 Marks)
- b. Discuss about the perceptron training Rule and the gradient descent and Delta Rule. (10 Marks)

### Module-4

- 7 a. Summarize the features of Bayesian learning methods. (10 Marks)
- b. Explain Naïve - Bayes classifiers with an example. (10 Marks)

OR

- 8 a. Explain Bayesian belief N/W and condition independence with example. (10 Marks)  
b. Explain Brute – force Bayes concept learning with the help of brute – force Map learning algorithm. (10 Marks)

**Module-5**

- 9 a. Write in detail about the k-nearest neighbor algorithm and its approach for performing classification. (10 Marks)  
b. What are instance based learning? Explain key features and disadvantages of these methods. (10 Marks)

OR

- 10 a. Explain sample error, true error, confidence intervals and Q-learning functions. (10 Marks)  
b. Explain locally weighted linear regression. (10 Marks)

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