CBCS SCHEME

15CS73

USN ☐☐☐☐☐☐☐☐☐☐

Seventh Semester B.E. Degree Examination, Feb./Mar.2022
Machine Learning

Time: 3 hrs.

Max. Marks: 80

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

Module-1

1 a. What is machine learning? Explain different perspective and issues in machine learning. **(05 Marks)**
   b. Define well posed learning problems with examples. **(05 Marks)**
   c. Explain the final design of the checkers learning program. **(06 Marks)**

OR

2 a. Describe the Find S algorithm, explain its working by taking the enjoy sport concept and training instances given below:

Example	Sky	Air Temp	Humidity	Wind	Water	Forecast	Enjoy Sport
1	Sunny	Warm	Normal	Strong	Warm	Same	Yes
2	Sunny	Warm	High	Strong	Warm	Same	Yes
3	Rainy	Cold	High	Strong	Warm	Change	No
4	Sunny	War	High	Strong	Cool	Change	Yes

(10 Marks)
   b. Explain applications of machine learning. **(06 Marks)**

Module-2

3 a. Write ID_3 algorithm for decision tree learning. **(06 Marks)**
   b. What is decision tree? What are the characteristics of the decision tree learning? **(06 Marks)**
   c. Explain the concept of entropy and information gain. **(04 Marks)**

OR

4 a. What is a decision tree? Explain its representation and algorithm. **(10 Marks)**
   b. Explain Inductive Bias and Issues in Decision tree. **(06 Marks)**

Module-3

5 a. Explain appropriate problems for neural network learning with its characteristics. **(08 Marks)**
   b. Explain in detail perceptron based Artificial Neural Network (ANN) system its representation and training rule. **(08 Marks)**

OR

6 a. Explain the single perceptron with its learning algorithm and its separability and convergence property. **(08 Marks)**
   b. Explain back propagation algorithm in detail. **(08 Marks)**

Module-4

7 a. Explain likelihood hypothesis for predicting probabilities. **(08 Marks)**
   b. Explain the EM algorithm in detail. **(08 Marks)**

OR

8	a.	Explain Naïve Bayes classifier in detail.	**(08 Marks)**
	b.	Explain brute force Bayes concept learning.	**(08 Marks)**

Module-5

9	a.	What is reinforcement learning?	**(06 Marks)**
	b.	Explain the Q function and Q learning algorithm.	**(10 Marks)**

OR

10	a.	Explain case based reasoning.	**(08 Marks)**
	b.	Write K-nearest neighbor algorithm for approximating a discrete valued function.	**(04 Marks)**
	c.	Define Simple error and True error.	**(04 Marks)**

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