CBCS SCHEME

USN | | | | | | | | | |

15CS73

Seventh Semester B.E. Degree Examination, Jan./Feb. 2021
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. Define machine learning. Explain with specific examples. **(06 Marks)**
b. How you will design a learning system? Explain with examples. **(06 Marks)**
c. List and explain perspectives and issues in Machine Learning. **(04 Marks)**

OR

2 a. Define concept learning. Explain the task of concept learning. **(06 Marks)**
b. How the concept learning can be viewed as the task of searching? Explain. **(04 Marks)**
c. Explain with examples:
i) Find-S algorithm
ii) Candidate Elimination algorithm **(06 Marks)**

Module-2

3 a. Define decision tree learning. List and explain appropriate problems for decision tree learning. **(06 Marks)**
b. Explain the basic decision tree learning algorithm. **(05 Marks)**
c. Describe Hypothesis space search in decision tree learning. **(05 Marks)**

OR

4 a. Define inductive bias. Explain inductive bias in decision tree learning. **(06 Marks)**
b. Give the differences between the hypothesis space search in ID3 and candidate elimination algorithm. **(04 Marks)**
c. List and explain issues in decision tree learning. **(06 Marks)**

Module-3

5 a. Define Artificial neural networks. Explain biological learning systems. **(05 Marks)**
b. Explain representations of Neural network. **(05 Marks)**
c. Describe the characteristics of Back propagation algorithm. **(06 Marks)**

OR

6 a. Define Perceptron. Explain representational power of Perceptrons. **(05 Marks)**
b. Explain gradient descent algorithm. **(06 Marks)**
c. Describe derivation of the back propagation rule. **(05 Marks)**

Module-4

7 a. List and explain features of Bayesian learning methods. **(06 Marks)**
b. Describe Brute-Force map learning algorithm. **(05 Marks)**
c. Explain maximum likelihood and least-squared error hypothesis. **(05 Marks)**

OR

8 a. Describe maximum likelihood hypotheses for predicting probabilities. **(05 Marks)**

b. Define Bayesian belief networks. Explain with an example. **(06 Marks)**

c. Explain EM algorithm. **(05 Marks)**

Module-5

9 a. Define the following with examples: **(08 Marks)**

i) Sample error ii) True error iii) Mean iv) Variance.

b. Explain central limit Theorem. **(04 Marks)**

c. Explain K-Nearest neighbor algorithm. **(04 Marks)**

OR

10 a. Explain case-based reasoning. **(06 Marks)**

b. List and explain important differences of reinforcement algorithm with other function approximation tasks. **(04 Marks)**

c. Explain Q Learning Algorithm. **(06 Marks)**

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