CBCS SCHEME

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20SCS/SAM12

First Semester M.Tech. Degree Examination, Feb./Mar. 2022
Artificial Intelligence and 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. What is state –space search method for problem solving? (10 Marks)

b. Give the problem statement for the Eight puzzle problem and give the partial search tree for the eight puzzle problem. (10 Marks)

OR

2 a. Explain control strategies with forward chaining and Backward chaining as examples. (10 Marks)

b. Explain : i) Depth – First iterative Deepening search tree
ii) Bio-directional search tree with neat diagrams. (10 Marks)

Module-2

3 a. Explain the Game-playing problem with an example game tree when MAX is playing first and MIN is playing first. (12 Marks)

b. Explain Nim Game problem with complete Game tree for "Nim" with MAX playing first. (08 Marks)

OR

4 a. Explain MINMAX procedure, MINIMAX strategy and MINMAX algorithm. (10 Marks)

b. Prove the following theorem : infer $((Q \rightarrow P) \wedge (Q \rightarrow R)) \rightarrow (Q \rightarrow (P \wedge R))$ (10 Marks)

Module-3

5 a. Explain any five conceptualizations dependency rules with examples. (10 Marks)

b. Explain Knowledge Representations with Frames with an example frame network. (10 Marks)

OR

6 a. Explain Semantic Net method of knowledge representation with an example. (10 Marks)

b. With an example explain Bottom – up Inferencing and Top – Down Inferencing. (10 Marks)

Module-4

7 a. Explain the concepts of Bayes theorem with an example. Derive Bayes rule expression. (08 Marks)

b. A drug test (random variable T) has 1% false positive (i.e, 1% of those not taking drug show positive in the test) and 5% false negative (i.e., 5% of those taking drugs test negative). Suppose that 2% of those tested are taking drugs. Determine the probability that somebody who tests positive is actually taking drugs (random variable D). (12 Marks)

OR

8 a. Explain Supervised and unsupervised Learning. Explain any two examples for each. (12 Marks)

b. Explain any two clustering mechanisms. (08 Marks)

Module-5

9 a. Explain the concept of support vector machines derive necessary expressions. (10 Marks)

b. Explain the working of multi layer Artificial Neural Network with a neat diagram. (10 Marks)

OR

10 a. Derive necessary expression for Back Propagation Rule in Artificial Neural Networks. (12 Marks)

b. Write shortly on : i) Recurrent Networks ii) Radial basis functions. (08 Marks)

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