CBCS SCHEME

USN | | | | | | | | | |

16/17SCS41

Fourth Semester M.Tech. Degree Examination, June/July 2019
Machine Learning Techniques

Time: 3 hrs. Max. Marks: 80

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

Module-1

1 a. Explain the steps in designing a learning system. **(06 Marks)**

b. Explain Find-S algorithm using enjoyspent concept and training instances given below. **(10 Marks)**

Example	Sky	Air temp	Humidity	Wind	Water	Forecast	Enjoyspent
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	Warm	High	Strong	Warm	Change	Yes

OR

2 a. Explain ID3 algorithm for decision tree learning. **(08 Marks)**

b. Give the decision tree to represent the following Boolean function:
i) $A \wedge \neg B$ ii) A XOR B iii) $A \vee [B \wedge C]$ iv) $[A \wedge B] \vee [C \wedge D]$. **(08 Marks)**

Module-2

3 a. What is artificial neural network? Explain the derivation of gradient descent rule **(08 Marks)**

b. Explain the schochastic gradient descent back propagation algorithm for feed forward networks. **(08 Marks)**

OR

4 a. What is genetic algorithm [GA]? Explain the prototypical genetic algorithm. **(08 Marks)**

b. Use crossover and mutation operators on the following strings:
S1 = 11101001000 S2 = 00001010101 **(08 Marks)**

Module-3

5 a. Explain Brute force's Baye's concept learning. **(10 Marks)**

b. Explain Naïve Baye's classifier. **(06 Marks)**

OR

6 a. Explain probably approximately correct [PAC] learning model. **(10 Marks)**

b. Prove that, if the hypothesis space H is finite, D is a sequence of $m \geq 1$. Independent randomly drawn examples of some target concept C for $0 \leq \in \leq 1$. The probability that version space $VS_{H,D}$ is not $\in$ exhausted is less than or equal to $|H|e^{-tm}$. **(06 Marks)**

Module-4

7 a. Explain K-nearest neighbor algorithm for a discrete valued function. **(08 Marks)**

b. Explain locally weighted linear regression. **(08 Marks)**

OR

8 a. Explain learn one rule algorithm. **(10 Marks)**
b. Explain basic FOIL algorithm. **(06 Marks)**

Module-5

9 a. What is analytical learning? Explain the analytical learning problem for safe to stack (x, y). **(08 Marks)**
b. Explain regression using a single Horn's clause. **(08 Marks)**

OR

10 a. Explain Q function and Q learning algorithm. **(10 Marks)**
b. Explain temporal difference learning. **(06 Marks)**

* * * * *