

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**MCA Integrated - SEMESTER- VII- EXAMINATION – WINTER 2018**

**Subject Code: 4470601****Date: 16-11-2018****Subject Name: Machine Learning****Time: 10.30 am to 1.00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Write a short note on- **07**  
 (i) Advantages of machine learning algorithms  
 (ii) Bayesian Belief Network
- (b) Write a short note on- **07**  
 (i) Concept learning  
 (ii) Artificial Neural Network(ANN)

- Q.2** (a) Design a learning system step by step for checker problem. **07**  
 (b) For the given data set find out the hypothesis using Candidate Elimination algorithm. **07**

Sky	Temp	Humidity	Wind	Water	Forecast	Enjoy Sport
Sunny	Warm	Normal	Strong	Warm	Same	Yes
Sunny	Warm	High	Strong	Warm	Same	Yes
Rainy	Cold	High	Strong	Warm	Change	No
Sunny	Warm	High	Strong	Cool	Change	Yes

**OR**

- (b) Explain ID3 decision tree algorithm with suitable example. **07**
- Q.3** (a) What is feed forward network? Discuss Backpropogation algorithm in detail. **07**  
 (b) Write formula for Bayes theorem. Explain Bayes theorem with suitable example. **07**

**OR**

- Q.3** (a) Define perceptron. Write the formula for calculating errors at each output unit and updating the weights. **07**  
 (b) Explain Naïve Bayes classification algorithm. **07**
- Q.4** (a) How Case based reasoning helps in learning? Explain with suitable example. **07**  
 (b) What is sample complexity for Probably Approximately Correct framework (PAC)? How it is different from mistake bound frame work? **07**

**OR**

- Q.4** (a) Compare lazy and eager algorithm. Explain any one of lazy algorithm with example. **07**  
 (b) Explain Q learning with example. **07**
- Q.5** (a) What do you understand by explanation based learning explain with PROLOG EGP algorithm. **07**  
 (b) Describe sequential covering algorithm. **07**

**OR**

- Q.5** (a) Compare supervised, unsupervised and reinforcement algorithm with suitable example. **07**  
 (b) Discuss how First Order Horn clauses help in learning. **07**

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