

**IV/IV B.Tech. DEGREE EXAMINATIONS, NOVEMBER- 2019****First Semester****COMPUTER SCIENCE ENGINEERING****MACHINE LEARNING****Time: Three Hours****Maximum marks:60****Answer Question No.1 Compulsory****6X2=12 M****Answer ONE Question from each Unit****4X12=48 M**

1.
  - a) Define learning?
  - b) What is an active query?
  - c) What is linear separability issue?
  - d) Disadvantages of instance based methods
  - e) List the factors that motivated the popularity of genetic algorithms
  - f) Elements of reinforcement learning

**UNIT-I**

2.
  - a) What is the role of a function approximation algorithm? How does learner system estimate training values and adjusts weights while learning?
  - b) What are the important objectives of machine learning? What are the basic design issues and approaches to machine learning? Explain.

**(OR)**

3.
  - a) Explain find-S algorithm with given example. Give its application.

Explain	SKY	Air temp.	Humidity	Wind	Water	Fore cast	Enjoy sport
1	Sunny	Warm	Normal	Strong	Warm	Same	Yes
2	Sunny	Warm	High	Strong	Warm	Same	Yes
3	Rain	Cold	High	Strong	Warm	Change	No
4	Sunny	Warm	High	Strong	Cool	Change	Yes

- b) Describe perspectives and issues in machine learning.

**P.T.O**

## UNIT-II

4. a) What are the steps in Back propagation algorithm? Why a Multilayer neural network is required? Explain.
- b) How to estimate difference in error between two hypotheses using error  $D^{(h)}$  and error  $S^{(h)}$ ?

**(OR)**

5. a) What is Brute Force MAP hypothesis learner? How is it related to Concept Learning? What is the Minimum Description Length (MDL) Principle?
- b) Explain how naive bays algorithm is useful for learning and classifying text.

## UNIT-III

6. a) Describe these terms in brief (i) PAC Hypothesis (ii) Mistake bound model of learning
- b) Explain Bayes optimal classifier.

**(OR)**

7. Explain Bayes theorem and concept learning and elaborate on maximum likelihood and least squared error hypothesis.

## UNIT-IV

8. a) Describe the Genetic Algorithm (GA) steps using the Population, Fitness function, other necessary data and hypothesis it returns.
- b) Define regression. Briefly explain about linear, non-linear and multiple regressions.

**(OR)**

9. Describe in brief
  - a) Lazy and eager learning
  - b) Genetic programming and parallelizing GA
  - c) EM Algorithm.



**IV/IV B.Tech. (Supple) DEGREE EXAMINATIONS, JUNE- 2019****First Semester****COMPUTER SCIENCE ENGINEERING****MACHINE LEARNING****Time: Three Hours****Maximum marks:60****Answer Question No.1 Compulsory****6X2=12 M****Answer ONE Question from each Unit****4X12=48 M**

1. a) Key tasks of machine learning
- b) Influence of information theory on machine learning
- c) Differentiate between sample error and true error
- d) What is analytical learning?
- e) What is a spline
- f) Mention major ideas of naive Bayesian classification.

**UNIT-I**

2. a) What are the important objectives of machine learning? Discuss different important examples of machine Learning.
- b) Explain decision tree representation. What are issues in decision tree learning? How are they overcome?

**(OR)**

3. a) What do you mean by a well-posed learning problem? Explain the important features that are required to well-define a learning problem. Explain the inductive biased hypothesis space and unbiased learner.
- b) Explain the candidate elimination algorithm with following example.

**P.T.O**

Origin	Manufacturer	Color	Decode	Type	ExampleType
Japan	Honda	Blue	1980	Economy	positive
Japan	Toyota	Green	1970	Sports	Negative
Japan	Toyota	Blue	1990	Economy	Positive
USA	Chrysler	Red	1980	Economy	Negative
Japan	Honda	White	1980	Economy	Positive

### UNIT-II

4. a) What is linearly in separable problem? Design a two layer network of perceptron to implement A XOR B
- b) Consider a multilayer feed forward neural network. Enumerate and explain steps in back propagation algorithm use to train network.

(OR)

5. a) What are Bayesian Belief nets? Where are they used? Can it solve all types of problems? Explain.
- b) Why it is necessary to estimate the accuracy of hypothesis. Explain procedure to estimate difference in error between two learning methods.

### UNIT-III

6. Give a brief on concept of sampling theory and general approach for deriving confidence intervals.

(OR)

7. Explain sample complexity for finite and infinite spaces in computational learning theory.

### UNIT-IV

8. What are the steps in Reproduction cycle? Which type of applications are suitable for using GA? Explain.

(OR)

9. a) Define regression. Explain about multiple regression.
- b) Explain salient features of a Genetic Algorithm. Describe basic genetic algorithm using all the necessary steps of fitness function evaluation.

