**ASSIGNMENT 2**

**Machine Learning**

1. How many types of the artificial neural network used in machine learning? Explain in detail.

2. Explain Learning Algorithm with respect to ANN. What are the requirements of learning laws for effective implementation?

3. Explain how to learn Multilayer Networks using Backpropagation Algorithm.

4. Explain appropriate problems for Neural Network Learning with its characteristics

5. Explain in detail perceptron based ANN system its representation and training rule

6. What is linearly in separable problem? Design a two-layer network of perceptron to implement a) X OR Y b) X AND Y

7. Discuss Maximum Likelihood and Least Square Error Hypothesis.

8. Explain the concept of EM Algorithm. Discuss what are Gaussian Mixtures.

9. What are issues in decision tree learning? Explain briefly How are they overcome? a. Discuss the following issues in detail:<br/>a. Avoiding overfitting in Decision Trees<br/>b. Incorporating Continuous valued attributes<br/>c. Handling Training Examples with Missing attribute values.<br/>d. Handling Attributes with Different costs.

10. Discuss Inductive Bias in Decision Tree Learning. Differentiate between two types of biases. Why prefer Short Hypotheses?

11. What is the procedure of building Decision tree using ID3 with Gain and Entropy. Illustrate with example.

12. What type of problems are best suited for decision tree learning?

13. State the assumptions in a linear regression model.

14. Describe Inductive Systems and Equivalent Deductive Systems.

15. Define Concept and Concept Learning. With example explain how the Concept Learning task determines the Hypothesis for given target concept.

16. With a neat diagram, explain how you can model inductive systems by equivalent<br/>deductive systems

17. Discuss with examples some useful applications of machine learning.

18. Explain the inductive biased hypothesis space, unbiased learner and the futility of Bias Free Learning. Describe the three types of learner.

19. Trace Candidate-Elimination algorithm on the above data.

20. Define Consistent Hypothesis and Version Space. With example explain Version Space and Representation of version Space.

21. Describe Find S Algorithm. What are the properties and complaints of Find S.

22. Discuss Concept learning as search with respect to General to specific ordering of hypothesis.

23. Describe in detail all the steps involved in designing a learning system.

24. Define Machine Learning. Discuss with examples why machine learning is important.

25. Explain find –S algorithm with given above example. Give its application.

26. Trace the Candidate Elimination Algorithm for the hypothesis space H’ given the<br/>sequence of training examples from Table 1.<br/>H’= < ?, Cold, High, ?,?,?>v<Sunny, ?, High, ?,?,Same>

27. How is Candidate Elimination algorithm different from Find-S Algorithm. Explain in detail.

28. What are the basic design issues and approaches to machine learning?

29. What do you mean by a well –posed learning problem? Explain the important features<br/>that are required to well –define a learning problem.

30. Discuss Concept learning as search with respect to General to specific ordering of hypothesis.

32. What are the difficulties in applying Gradient Descent.

33. What are the conditions in which Gradient Descent is applied.

34. Discuss the Perceptron training rule.

35. Write a note on Representational Power of Perceptron