ADVANCED MACHINE LEARNING-18AI72

**MODULE-4**

1. Explain various neural network architecture with suitable diagrams.

2.Define activation function and explain the various activation functions used in neural networks.

3.Implement AND,OR NOT function using MP neuron

4.Implement AND NOT function using MP neuron.

5.Implement XOR function using MP neuron.

6. Define ANN.Detail the various applications of ANN.

7.Explain in detail the development of autonomous vehicle using neural networks.

8. Define perceptron.Explain the representation of perceptrons.

9.Define Multilayer network and Backpropagation Algorithm. [5M]

10.What type of unit can be used as the basis for constructing Multilayer Networks.

11.Explain in detail the Backpropagation Algorithm with suitable example.

12. Derive the Backpropagation weight tuning rule.

13. Explain how Backpropagation Algorithm proves to be an effective function approximation method towards convergence and local minima. [6M]

14.Explain the various types of functions that can be represented using Feed Forward Network's. [6M]

15.Compare the hypothesis space search carried out by Backpropagation Algorithm to other learning algorithm.

16.Explain the Inductive bias by which Backpropagation Algorithm generalizes beyond observed data.

17.Explain in detail hidden layer representation in Backpropagation Algorithm.

18. Explain the following terms with respect to Backpropagation Algorithm

I) Generalization

II) Overfitting

III) stopping criteria

**MODULE -5**

1.Explain the various approaches used to estimate hypothesis accuracy.

2.Explain how the deviation between sample error and true error depend on size of data sample.

3.Explain the role of Binomial distribution, Mean, Variance and confidence interval in evaluating hypothesis. [6M]

4.Explain the general approach used for deriving confidence intervals.

5.Explain the various approaches used for comparing the performance of learning algorithm

6.Explain in detail the estimation of difference between true error of hypothesis.

**Chapter-8**

1.Explain in detail K-Nearest Neighbour algorithm for instance based learning.

2.Explain in detail the need for locally weighted regression to predict the local approximation to target function.

3.Explain radial basis function in detail with suitable example.

4.Explain in detail the key properties shared between instance based method and locally weighted regression by taking case based reasoning system as an example. [10M]

**Chapter-13**

1.Explain in detail the problem of learning sequential control strategy. [5M]

2. Define reinforcement learning and detail how reinforcement learning problem differs from other function approximation task.

3.Explain in detail the Q- learning algorithm by detailing the basic concepts.

4.Explain Q-learning with suitable example in detail.