

M.C.A Sem-II

Date: 5/12/2024

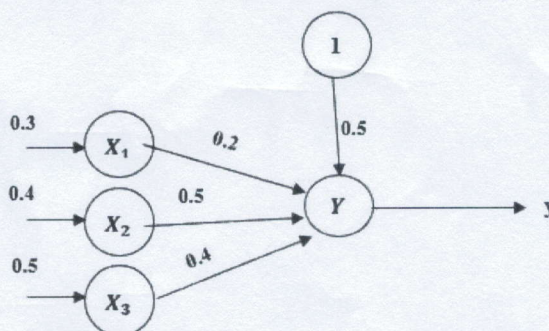
Total Marks: 80

(3 Hours)

N.B. : 1) Question No.1 is **compulsory**.2) Attempt any **THREE** from the remaining questions.

3) Figures to the right indicate full marks.

- Q1. (a) Write a note on Bayesian Belief networks [5]
 (b) Discuss PEAS representation for an Agent [5]
 (c) Write a note on supervised and unsupervised learning [5]
 (d) Write a note on Activation function [5]
- Q2. (a) Explain A* algorithm with example [10]
 (b) What is Multidimensional Scaling (MDS), and what is its primary purpose? [10]
 How does MDS differ from Principal Component Analysis?
- Q3. (a) What is a Support Vector Machine (SVM)? How does SVM handle linearly separable data [10]
 (b) What are forward chaining and backward chaining in the context of inference in First-Order Logic? [10]
- Q4. (a) [10]



Find the output of the neuron Y for the network shown in figure using following activation functions. ($\theta = 0, \lambda = 1$)

- i) binary step function
 ii) bipolar sigmoidal
- (b) Write a note on Expectation-Maximization Algorithm [10]
- Q5. (a) Discuss Naive Bayes classifier in detail. Give an example [10]
 (b) What are ensemble methods in machine learning? What is the AdaBoost algorithm, and how does it work? [10]
- Q6. (a) What is uninformed search, and how does it differ from informed search? Explain in detail the DFS. [10]
 (b) What is logistic regression, and how does it differ from linear regression? Discuss the mathematical form of the logistic function? [10]
