CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS
III–B.TECH–II–Semester End Examinations (Regular) - June- 2024
INTRODUCTION TO MACHINE LEARNING
(IT)

[Time: 3 Hours]   [Max. Marks: 70]

Note: This question paper contains two parts A and B.
   Part A is compulsory which carries 20 marks. Answer all questions in Part A.
   Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART-A   (20 Marks)

1. a)	What do you mean by a well posed learning problem?	[2M]
b)	Differentiate between Supervised, Unsupervised and Reinforcement Learning.	[2M]
c)	What is Artificial Neural Network?	[2M]
d)	Define sigmoid activation function.	[2M]
e)	What is Maximum likelihood hypothesis?	[2M]
f)	Define Bayesian Belief Network.	[2M]
g)	What is mean by First Order rules?	[2M]
h)	What is temporal difference learning?	[2M]
i)	Define analytical learning.	[2M]
j)	Compare analytical and inductive learning.	[2M]

PART-B   (50 Marks)

2.a) How to designing a learning system?   [5M]
 b) Explain decision tree construction with an example.   [5M]

OR

3. Find Version Space using Candidate Elimination algorithm for the given training   [10M]
   examples in the following table.

Ex	Sky	Air Temp	Humidity	Wind	Water	Forecast	Enjoy sport
1	sunny	warm	normal	strong	warm	same	yes
2	sunny	warm	high	strong	warm	same	yes
3	rainy	cold	high	strong	warm	change	no
4	sunny	warm	high	strong	cool	change	yes

4.a) Explain Gradient Decent Training rule.   [5M]
 b) Write the algorithm for Back propagation.   [5M]

OR

5.a) Inspect the mechanism used for neural network representation.   [5M]
 b) State the perceptron rule and delta rule. Analyse the representational power of   [5M]
   perceptron.

6.a) Assess the role of maximum likelihood hypotheses for predicting probabilities. [5M]

b) Diagnose the functionality of Bayesian belief network. [5M]

OR

7.a) Apply the Naive Bayes classifier for any two instances from the below dataset. [5M]

Day	Outlook	Temperature	Humidity	Wind	PlayTennis
D1	Sunny	Hot	High	Weak	No
D2	Sunny	Hot	High	Strong	No
D3	Overcast	Hot	High	Weak	Yes
D4	Rain	Mild	High	Weak	Yes
D5	Rain	Cool	Normal	Weak	Yes
D6	Rain	Cool	Normal	Strong	No
D7	Overcast	Cool	Normal	Strong	Yes
D8	Sunny	Mild	High	Weak	No
D9	Sunny	Cool	Normal	Weak	Yes
D10	Rain	Mild	Normal	Weak	Yes
D11	Sunny	Mild	Normal	Strong	Yes
D12	Overcast	Mild	High	Strong	Yes
D13	Overcast	Hot	Normal	Weak	Yes
D14	Rain	Mild	High	Strong	No

b) Elucidate the methodology related to case-based reasoning system. [5M]

8.a) Discuss about genetic programming. [5M]

b) Explain Q-learning algorithm with an example. [5M]

OR

9. Illustrate genetic algorithm with an example. [10M]

10. Discuss about explanation-based learning. [10M]

OR

11. How prior knowledge is used to initialize the hypothesis with KBANN Algorithm. [10M]

****