Code No: 156BN **R18**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year II Semester Examinations, March - 2024
MACHINE LEARNING
(Information Technology and Engineering)

Time: 3 Hours **Max. Marks: 75**

Note: i) Question paper consists of Part A, Part B.
ii) Part A is compulsory, which carries 25 marks. In Part A, Answer all questions.
iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART – A

(25 Marks)

1.a)	What do you mean by Decision tree?	[2]
b)	Differentiate Training dataset vs testing dataset.	[3]
c)	What is Artificial Neural Network?	[2]
d)	What is data sampling?	[3]
e)	What is conditional Independence?	[2]
f)	Describe the concept of MDL.	[3]
g)	Interpret the importance of temporal learning.	[2]
h)	Describe Inverting resolution.	[3]
i)	Discuss the learning task.	[2]
j)	What do you mean by search control knowledge?	[3]

PART – B

(50 Marks)

2.a) Explain the inductive biased hypothesis space and unbiased learner.
b) What are the basic design issues and approaches to machine learning? [5+5]

OR

3.a) How to construct Regression tree and write procedure to construct regression tree with example?
b) Describe hypothesis Space search in ID3 and contrast it with Candidate-Elimination algorithm. [5+5]

4.a) Discuss the Perceptron training rule.
b) Explain in detail perceptron based ANN system its representation. [5+5]

OR

5. Derive the Backpropagation rule considering the training rule for Output Unit weights and Training Rule for Hidden Unit weights. [10]

6.a) Explain Naïve Bayes Classifier with an example.
b) Discuss Maximum Likelihood and Least Square Error Hypothesis. [5+5]

OR

7.a) Explain the Knearest Neighbour Algorithm for approximatin a discrete – valued function.

b) Discuss the major drawbacks of K-nearest Neighbour learning Algorithm and how it can be corrected? [5+5]

8.a) Explain the Q Learning Algorithm.

b) Examine how genetic algorithm searches large space of candidate objects with an example according to fitness function. [5+5]

OR

9.a) Discuss in detail Learning First –order rules.

b) List out and explain the Genetic algorithm steps with example. [5+5]

10. Describe in detail about PROLOG-EBG. [10]

OR

11. How to use prior knowledge to alter the search objective? Discuss. [10]

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