Code No: 155BZ **R18**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, August/September - 2024
MACHINE LEARNING
(Common to IT, CSE(IOT))

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 is an Inductive Bias? [2]
b) What is a Well-Posed problem learning problem? Explain with an example. [3]
c) What are Recurrent Networks? [2]
d) What is the role sigmoid units in ANN? [3]
e) What is Radial Basis Function? [2]
f) Discuss about Locally Weighted Linear Regression. [3]
g) Describe the Baldwin Effect. [2]
h) What is Inverse resolution? Explain. [3]
i) Write the essential difference between analytical and inductive learning methods. [2]
j) Explain the concept of using prior knowledge to initialize the hypothesis in machine learning. [3]

PART – B

(50 Marks)

2.a) Write about Candidate Elimination algorithm.
b) Consider the following data set, which contains information about the best day for a person to enjoy their preferred sport. Find out the version Space using Candidate Elimination algorithm. [4+6]

Sky	Air temp	Humidity	Wind	Water	Forecast	EnjoySport
Sunny	Warm	Normal	Strong	Warm	Same	Yes
Sunny	Warm	High	Strong	Warm	Same	Yes
Rainy	Cold	High	Strong	Warm	Change	No
Sunny	Warm	High	Strong	Cool	Change	Yes

OR

3.a) What are Attribute Selection Measures? Explain their role in constructing Decision tree.
b) Write the advantages and disadvantages of the Decision Trees. [6+4]

4.a) List out the characteristics of the problems for which ANN learning technique is suitable.

b) What are Estimators, Bias, and Variance? [5+5]

OR

5.a) Write about Back Propagation algorithm.

b) What are Sample Error and True Error? [6+4]

6.a) Explain Bayesian Belief Network.

b) Write about Brute-Force Map Learning algorithm. [5+5]

OR

7.a) What is Optimal Mistake Bound?

b) Write *k*-nearest neighbour algorithm and explain. [2+8]

8.a) What are the fundamental genetic operations in Genetic Algorithms that are involved in the evolution process?

b) How are Fitness function and Selection defined in the context of Genetic Algorithms? [6+4]

OR

9.a) Explain the key steps involved in the FOIL algorithm.

b) Define First-Order rules. [8+2]

10. Discuss about the FOCL Algorithm in detail. [10]

OR

11. Explain TANGENT PROP algorithm in detail. [10]

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