PAPER ID-410932

Roll No: | | | | | | | | | | | | | |

B.TECH.
(SEM V) THEORY EXAMINATION 2021-22
MACHINE LEARNING TECHNIQUES

Time: 3 Hours ***Total Marks: 100***

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. **2 x 10 = 20**

Qno.	Question	Marks	CO
a.	What is a "Well -posed Learning "problem? Explain with an example.	2	CO1
b.	What is Occam's razor in ML?	2	CO1
c.	What is the role of Inductive Bias in ANN?	2	CO2
d.	What is gradient descent delta rule?	2	CO2
e.	What is Paired t Tests in Hypothesis evaluation?	2	CO3
f.	How do you find the confidence interval for a hypothesis test?	2	CO3
g.	What is sample complexity of a Learning Problem?	2	CO4
h.	Differentiate between Lazy and Eager Learning	2	CO4
i.	What is the problem of crowding in GA	2	CO5
j.	Comparison of purely analytical and purely inductive learning.	2	CO5

SECTION B

2. Attempt any *three* of the following:

Qno.	Question	Marks	CO
a.	Design the Final design of checkers learning program.	10	CO1
b.	What is Maximum Likelihood and Least Squared Error Hypothesis?	10	CO2
c.	What problem does the EM algorithm solve	10	CO3
d.	Highlight the importance of Case Based Learning	10	CO4
e.	Write short notes on Learning First Order Rules	10	CO5

SECTION C

3. Attempt any *one* part of the following:

Qno.	Question	Marks	CO
a.	Explain the "Concept Learning" Task Giving an example	10	CO1
b.	Find the maximally general hypothesis and maximally specific hypothesis for the training examples given in the table using the candidate elimination algorithm. Given Training Example**:** **Sky** **Temp** **Humidity** **wind** **water** **Forecast** **sport** **Sunny** **warm** **Normal** **Strong** **warm** **same** **Yes**	10	CO1

	Sunny	**warm**	**High**	**Strong**	**warm**	**same**	**Yes**		
	Rainy	**cold**	**High**	**Strong**	**warm**	**change**	**No**		
	Sunny	**warm**	**High**	**Strong**	**cool**	**change**	**Yes**		

4. Attempt any *one* part of the following:

Qno.	Question	Marks	CO
a.	Comment on the Algorithmic convergence & Generalization property of ANN.	10	CO2
b.	Discuss the following issues in Decision Tree Learning: 1. Overfitting the data 2. Guarding against bad attribute choices 3. Handling continuous valued attributes 4. Handling missing attribute values 5. Handling attributes with differing costs	10	CO2

5. Attempt any *one* part of the following:

Qno.	Question	Marks	CO
a.	How is Naïve Bayesian Classifier different from Bayesian Classifier?	10	CO3
b.	Explain the role of Central Limit Theorem Approach for deriving Confidence Interval.	10	CO3

6. Attempt any *one* part of the following:

Qno.	Question	Marks	CO
a.	Write short notes on Probably Approximately Correct (PAC) learning model.	10	CO4
b.	Discuss various Mistake Bound Model of Learning	10	CO4

7. Attempt any *one* part of the following:

Qno.	Question	Marks	CO
a.	What is the significance of Learn -one Rule Algorithm?	10	CO5
b.	Describe a prototypical genetic algorithm along with various operations possible in it.	10	CO5