PAPER ID-311038

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

BTECH
(SEM V) THEORY EXAMINATION 2023-24
MACHINE LEARNING TECHNIQUES

TIME: 3 HRS **M.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**

a.	Discuss the important objectives of Machine Learning.	2	1
b.	Discuss overfitting and underfitting situation in decision tree learning.	2	1
c.	Discuss support vectors in SVM.	2	2
d.	What is gradient descent delta rule?	2	2
e.	Explain Case-based learning.	2	3
f.	For which problem decision tree is best suitable.	2	3
g.	Define the term ANN, and CNN.	2	4
h.	Differentiate between Lazy and Eager Learning.	2	4
i.	Comparison of purely analytical and purely inductive learning.	2	5
j.	Define the term Offspring, Chromosome and Genes are used in GA.	2	5

SECTION B

2. Attempt any *three* of the following: **10 x 3 = 30**

a.	Compare Supervised and Unsupervised Learning Techniques with examples.	10	1
b.	Explain Maximum Likelihood and Least Squared Error Hypothesis with example.	10	2
c.	Compare and contrast Information Gain, Gain Ratio, and Gini Index in detail.	10	3
d.	Explain the different layers used in convolutional neural network with suitable examples.	10	4
e.	Discuss the applications of reinforcement learning. In which problems reinforcement learning is used?	10	5

SECTION C

3. Attempt any *one* part of the following: **10 x 1 = 10**

a.	Compare regression, classification and clustering in machine learning along with suitable real life applications.	10	1
b.	Explain the "Concept Learning" Task Giving an example.	10	1

4. Attempt any *one* part of the following: **10 x 1 = 10**

a.	Explain hyperplane (decision boundary) in SVM. Categorize various popular kernels associated with SVM.	10	2
b.	Differentiate between Naïve Bayes classifier and Bayesian belief networks. Give an application of Bayesian belief networks.	10	2

5. Attempt any *one* part of the following: **10 x 1 = 10**

a.	Discuss Decision Tree and explain its working in detail.	10	3
b.	Demonstrate K-Nearest Neighbors algorithm for classification with the help of an example.	10	3

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6. Attempt any *one* part of the following: 10 x 1 = 10

a.	Illustrate backpropagation algorithm by assuming the training rules for output unit weights and Hidden Unit weights.	10	4
b.	Write short notes on Probably Approximately Correct (PAC) learning model.	10	4

7. Attempt any *one* part of the following: 10 x 1 = 10

a.	Explain Q-learning with its key terms, key feature and elements. Discuss its applications used in real life.	10	5
b.	Define the term Genetic Algorithm. Discuss the working of Genetic algorithm with the help of flowchart.	10	5