PAPER ID-310687

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

B. TECH
(SEM-V) THEORY EXAMINATION 2020-21
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.	Explain the concept of machine learning.	2	1
b.	Compare ANN and Bayesian networks.	2	4
c.	What is the difference between linear and logistic regression?	2	2
d.	Discuss support vectors in SVM?	2	2
e.	Discuss overfitting and underfitting situation in decision tree learning.	2	3
f.	What is the task of the E-step of the EM-algorithm?	2	2
g.	Define the learning classifiers.	2	2
h.	What is the difference between machine learning and deep learning?	2	1
i.	What objective function do regression trees minimize?	2	2
j.	What is the difference between Q learning and deep Q learning?	2	5

SECTION B

2. Attempt any *three* of the following:

Qno.	Question	Marks	CO
a.	Apply KNN for following dataset and predict class of test example (A1=3, A2=7).Assume K=3	10	4
b.	Describe the Kohonen Self-Organizing Maps and its algorithm.	10	4
c.	Explain the various learning models for reinforcement learning.	10	5
d.	Explain the role of genetic algorithm? Discuss the various phases considered in genetic algorithm.	10	5
e.	Describe BPN algorithm in ANN along with a suitable example.	10	4

A1	A2	Class
7	7	True
7	4	True
3	4	False
1	4	True
5	3	False
6	3	True

SECTION C

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

Qno.	Question	Marks	CO
a.	Why SVM is an example of a large margin classifier? Discuss the different kernels functions used in SVM.	10	2
b.	Explain the relevance of CBR. How CADET tool employs CBR?	10	3

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

Qno.	Question	Marks	CO
a.	Discuss the applications, properties, issues, and disadvantages of SVM.	10	2
b.	Explain the Confusion Matrix with respect to Machine Learning Algorithms.	10	1

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

a.	Illustrate the operation of the ID3 training example. Consider information gain as attribute measure.	10	3

PlayTennis: training examples

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.	Describe Markov Decision Process in reinforcement learning.	10	5

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

Qno.	Question	Marks	CO
a.	What is instance based learning? How Locally Weighted Regression is different from Radial basis function networks?	10	3
b.	How is Bayes theorem used in machine learning? How naive Bayes algorithm is different from Bayes theorem?	10	2

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

Qno.	Question	Marks	CO
a.	Compare regression, classification and clustering in machine learning along with suitable real life applications?	10	1
b.	Given below is an input matrix named I, kernel matrix, calculate the Convoluted matrix C using stride =1 also apply max pooling on C.	10	4

Input Matrix I

1	0	0	1	0	1	
0	0	1	1	0	1	
1	1	1	1	0	1	
1	1	0	1	0	0	0
1	0	1	0	1	1	0
0	1	1	0	0	1	1
0	1	1	1	0	1	1

Kernel Matrix

1	0	0
0	1	1
1	1	0