

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -3 EXAMINATIONS-2022

B.Tech-VI Semester (ECE)

COURSE CODE (CREDITS): 19B1WEC636 (3)

MAX. MARKS: 35

COURSE NAME: Machine Learning for Data Analysis

COURSE INSTRUCTORS: Dr. Alok Kumar

MAX. TIME: 2 Hours

Note: All questions are compulsory. Marks are indicated against each question in square brackets.

Q.1. Apply SVM on the given dataset.

[CO3] [4 Marks]

$$\left\{ \begin{array}{l} + \text{ Class} = \left(\begin{array}{c} 3 \\ 1 \end{array} \right), \left(\begin{array}{c} 3 \\ -1 \end{array} \right), \left(\begin{array}{c} 6 \\ 1 \end{array} \right), \left(\begin{array}{c} 6 \\ -1 \end{array} \right) \\ - \text{ Class} = \left(\begin{array}{c} 1 \\ 0 \end{array} \right), \left(\begin{array}{c} 0 \\ 1 \end{array} \right), \left(\begin{array}{c} 0 \\ -1 \end{array} \right), \left(\begin{array}{c} -1 \\ 0 \end{array} \right) \end{array} \right\}$$

Q.2 Differentiate among Unsupervised, Supervised, and Reinforcement Learning by considering at least four different parameters. Write two applications in the field of communication where we can apply Reinforcement Learning.

[CO1,CO5] [4 Marks]

Q.3 Explain accuracy and precision. Find out accuracy and precision for the given confusion matrix.

[CO1] [4 Marks]

0	30	20	10
1	50	60	10
2	20	20	80
	0	1	2
true label	predicted label		

Q.4 What are the requirements of good clustering? What are the different clustering methods commonly employed? Explain hierarchical clustering method with suitable example.

[CO3] [4 Marks]

Q.5 Draw the decision tree for the given data

[CO4] [5 Marks]

Instance	a ₁	a ₂	a ₃	Classification
1	True	Hot	High	No
2	True	Hot	High	No
3	False	Hot	High	Yes
4	False	Cool	Normal	Yes
5	False	Cool	Normal	Yes
6	True	Cool	High	No
7	True	Hot	High	No
8	True	Hot	Normal	Yes
9	False	Cool	Normal	Yes
10	False	Cool	High	Yes

Q.6 Explain the working of neural network with suitable diagram. Why activation functions is used in neural network? Explain any two activation function employed in neural network. What is the significance of the RELU activation function in Convolution Neural Network?

[CO2, CO5] [5 Marks]

Q.7 Design OR Gate with Perceptron learning rule. Assume equal initial weight=0.6 for two inputs, decision threshold=1 and learning rate=0.5.

[CO2] [3 Marks]

Q8. How you will design a learning system? Explain with examples.

[CO1] [3 Marks]

Q.9 Why do we need dimensionality reduction? What are its drawbacks?

[CO3, CO4] [3 Marks]