Candidate Seat no……

CHAROTAR UNIVERSITY OF SCIENCE & TECHNOLOGY

Sixth Semester of B.Tech. (CSE) Examination
April 2020
CS344 MACHINE LEARNING

Date: 30.04.2020, Thursday **Time: 10:00 a.m. To 01:00 p.m.** **Maximum Marks: 70**

Instructions:

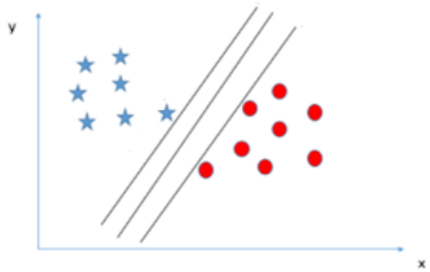
1. The question paper comprises of two sections.
2. Section I and II must be attempted in separate answer sheets.
3. Make suitable assumptions and draw neat figures wherever required.

SECTION – I

Q - 1	**Answer the following questions.**	**[10]**
(a)	What is the difference between supervised learning and unsupervised learning?	[02]
(b)	Explain following terms: 1. Learning Rate 2. Loss	[02]
(c)	What is overfitting and underfitting?	[03]
(d)	Write three name of machine learning libraries.	[03]
Q - 2	**Answer the following questions. [Any Two]**	**[10]**
(a)	What is Machine Learning? What is the need of it? Briefly explain the Machine Learning characteristic.	[05]
(b)	Explain Reinforcement Learning in brief.	[05]
(c)	Draw dendogram for following data using Complete linkage and Single linkage: 8, 11, 21, 29, 36	[05]
Q - 3	**Answer the following questions. [Any Three]**	**[15]**
(a)	Explain the difference between linear regression and logistic regression	[05]
(b)	k-NN is lazy learner algorithm. Justify and Find class value of sample number 5 using k-NN algorithm. Consider K=3	[05]

Sr. No.	X1	X2	Y (Class)
1	7	7	Bad
2	7	4	Bad
3	3	4	Good
4	1	4	Good
5	3	7	?

[P. T. O.

<table>
<tr><td>(c)</td><td>What is perceptron? How feed forward neural network works? Explain in brief.</td><td>[05]</td></tr>
<tr><td>(d)</td><td>
<table>
<tr><th>Transactions</th><th>Items</th></tr>
<tr><td>1</td><td>{A, C, D}</td></tr>
<tr><td>2</td><td>{B, C, D}</td></tr>
<tr><td>3</td><td>{A, B, C, D}</td></tr>
<tr><td>4</td><td>{B, D}</td></tr>
<tr><td>5</td><td>{A, B, C, D}</td></tr>
</table>
Find all frequent item-sets using apriori algorithm. Consider min_sup = 3.
</td><td>[05]</td></tr>
<tr><td colspan="3"><u>SECTION – II</u></td></tr>
<tr><td>Q - 4</td><td>Answer the following questions.</td><td>[10]</td></tr>
<tr><td>(a)</td><td>List three methods of cross-validation.</td><td>[02]</td></tr>
<tr><td>(b)</td><td>Identify support vectors from following data.
  </td><td>[02]</td></tr>
<tr><td>(c)</td><td>What are the differences between machine learning and deep learning?</td><td>[03]</td></tr>
<tr><td>(d)</td><td>List three activation function.</td><td>[03]</td></tr>
<tr><td>Q - 5</td><td>Answer the following questions. [Any Two]</td><td>[10]</td></tr>
<tr><td>(a)</td><td>How to measure the performance of classifier? What is a confusion matrix? Which are the other similar terms associated with it?</td><td>[05]</td></tr>
<tr><td>(b)</td><td>Age of Death cases of COVID-19 is given below. Find mean, median, mode, standard deviation, and range.
<table>
<tr><td>Patients</td><td>P1</td><td>P2</td><td>P3</td><td>P4</td><td>P5</td><td>P6</td><td>P7</td><td>P8</td><td>P9</td><td>P10</td></tr>
</table>
</td><td>[05]</td></tr>
<tr><td>(c)</td><td>You are a marketing analyst for Shopping Mall. You have collected following data</td><td>[05]</td></tr>
</table>

of number of advertisement vs sales. Determine the equation of the best fit straight line using Least Squares Method (LSM) method. Also Predict the sales when number of advertising is 13.

[P.T.O.

Number of Ad	Sales (Units)
10	25
15	28
12	26
16	30
18	36

Q - 6 **Answer the following questions. [Any Three]** **[15]**

(a) What is kernel function in SVM? Why it is required? Explain in brief. [05]

(b) Apply k-means clustering on the following data: 2, 3, 4, 10, 11, 12, 20, 25, 30 for K(number of cluster)=2. [05]

(c) Write a short note on Convolutional Neural Network. [05]

(d) Car Evaluation Database is given in below table. Answer the following questions. [05]

Sr. No.	buying	maintenance	doors	persons	luggage boot	safety	condition
1	vhigh	vhigh	2	2	small	low	unacc
2	high	high	4	3	big	high	good
3	vhigh	vhigh	3	more	small	low	acc
4	mid	mid	2	4	small	med	unacc
5	low	low	5more	more	big	high	acc
6	high	vhigh	2	4	med	low	acc
7	vhigh	vhigh	4	3	big	med	vgood
. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
2000	high	low	4	3	med	low	acc

a) What should be the size of training set?

b) What should be the size of testing set?

c) How many class label(s) is/are present? Write name of it/them.

d) Which is target column?

e) How many column is/are independent variable(s) in given dataset? Write name of it/them.

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