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

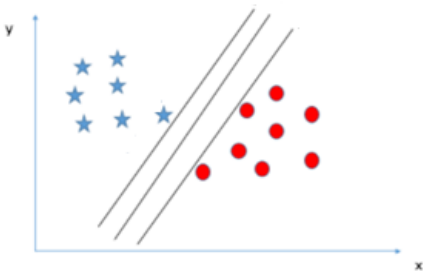
Q - 1	**Answer the following questions.**	**[10]**
(a)	What is the difference between supervised learning and unsupervised learning?	[02]
(b)	Explain following terms: 1. Learning Rate 2. Loss	[02]
(c)	What is overfitting and underfitting?	[03]
(d)	Write three name of machine learning libraries.	[03]
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.

(c)	What is perceptron? How feed forward neural network works? Explain in brief.	[05]
(d)	<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.	[05]

SECTION – II

Q - 4	**Answer the following questions.**	**[10]**
(a)	List three methods of cross-validation.	[02]
(b)	Identify support vectors from following data. 	[02]
(c)	What are the differences between machine learning and deep learning?	[03]
(d)	List three activation function.	[03]
Q - 5	**Answer the following questions. [Any Two]**	**[10]**
(a)	How to measure the performance of classifier? What is a confusion matrix? Which are the other similar terms associated with it?	[05]
(b)	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><tr><td>Age</td><td>52</td><td>62</td><td>48</td><td>96</td><td>78</td><td>38</td><td>56</td><td>45</td><td>79</td><td>82</td></tr></table>	[05]

(c) You are a marketing analyst for Shopping Mall. You have collected following data 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. [05]

[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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