Total No. of Questions : 8]

SEAT No. : ____

PD-4324

[Total No. of Pages : 2

[6403]-122
T.E. (I.T)
MACHINE LEARNING
(2019 Pattern) (Semester - V) (314443)

Time : 2½ Hours] ***[Max. Marks : 70***

Instructions to the candidates:

1) ***Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right side indicate full marks.***
4) ***Assume Suitable data if necessary.***

Q1) a) Define Regression and explain types of regression with proper examples. **[6]**

b) Explain Generalization Issues with Overfitting, Underfitting and Bias, Variance. **[5]**

c) Explain Least-Square Method for finding values of the regression coefficients **[6]**

OR

Q2) a) Explain Simple Linear Regression with Gradient Descent Algorithm. **[6]**

b) Explain Multivariate Regression with model representation. **[5]**

c) Write short note on Vapnik-Chervonenkis dimension. **[6]**

Q3) a) What is Decision Tree? Explain Concepts and Terminologies. **[8]**

b) Explain Bayes Rule & Naive Bayes Classifier. **[4]**

c) Define Gini Index, Information gain and Entropy. **[6]**

OR

Q4) a) Explain feature tree & comment on best split algorithm. **[12]**

b) Explain Conditional Probability, Joint Probability and Probability Density Function. **[6]**

P.T.O.

Q5) a) Apply Apriori algorithm for following set of transactions and find all the association rules with min support = 1 and min confidence = 60%. **[12]**

Transaction ID	Transactions
1	1,3,4
2	2,3,5
3	1,2,3,5
4	2,5

b) Define and explain various Distance Metrics. **[6]**

OR

Q6) a) Suppose the task is to cluster points into three clusters using K-means clustering algorithm, where the points are A 1(2, 10), A2(2, 5), A3(8, 4), B 1(5, 8), B2(7, 5), B3(6, 4), C 1(1, 2), C2(4, 9). Find the members of these 3 clusters after 2 iterations. **[10]**

b) What is distance metric? Explain any three distance measures. **[8]**

Q7) a) Explain different Activation Functions and it's types. **[6]**

b) Explain Multi-layer Perceptron with example. **[6]**

c) Write a note on Loss function- Mean Square Error. **[5]**

OR

Q8) a) Explain Perceptron with it's Learning Aigorithm. **[6]**

b) Write a note on ANN. **[6]**

c) Elaborate Deep Learning in detail. **[5]**