Total No. of Questions : 8]

SEAT No. :

P708

[Total No. of Pages : 2

[6004]-701

B.E. (Computer Engineering) (Honours in Data Science)
MACHINE LEARNING AND DATA SCIENCE
(2019 Pattern) (Semester-VII) (410501)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Answer Q. 1 or Q. 2, Q. 3 or Q. 4 , Q. 5 or Q. 6, Q.7 or Q.8***
2) ***Neat diagrams must be drawn wherever necessary***
3) ***Figures to the right indicate full marks***
4) ***Assume suitable data, if necessary***

Q1) a) Explain unsupervised learning. **[6]**

b) What do you mean by divisive clustering techniques? Explain with an example. **[6]**

c) What is the role of dendrograms in choosing number clusters in hierarchical clustering? **[6]**

OR

Q2) a) What are the types of hierarchical clustering methods? Explain. **[6]**

b) For what type of data Density-Based Spatial Clustering is suitable? Which parameters are required by DBSCAN algorithm? **[6]**

c) Explain K-Medians clustering algorithm. **[6]**

Q3) a) Explain a biological neuron along with its parts. **[4]**

b) What is the difference between Forward propagation and Backward Propagation in Neural Networks? **[6]**

c) What is the role of the Activation functions in Neural Networks? List down the names of some popular Activation Functions used in Neural Networks. **[7]**

OR

P.T.O.

Q4) a) Enlist limitations of MLP. **[4]**

b) Explain the process of training a perceptron. **[6]**

c) Explain back propagation algorithm. **[7]**

Q5) a) Does the size of the feature map always reduce upon applying the filters? Explain why or why not. **[6]**

b) Illustrate Gradient descent optimization using an example. **[6]**

c) Explain Recurrent Neural Network **[6]**

OR

Q6) a) Explain Recursive Neural Network **[6]**

b) Explain the different layers in CNN. Explain the significance of the RELU Activation function in Convolution Neural Network. **[6]**

c) Illustrate Long-short Term Memory along with its structure. **[6]**

Q7) a) What are various text similarity measures? Explain any two of them. **[6]**

b) Write short note on **[6]**

i) Stemming

ii) Lemmatization

c) What are the practical uses of feature extraction? **[5]**

OR

Q8) a) What do you mean by topic modeling? Explain Latent Dirichlet Allocation. **[6]**

b) Explain feature selection and extraction. **[6]**

c) Write short note on document representation. **[5]**

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