Total No. of Questions : 8]

SEAT No. :

P6754

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

Time : 2 ½ 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 kNN algorithm with an example. **[6]**

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

c) Cluster the following dataset using Agglomerative Hierarchical clustering technique - **[6]**

	Xl	X2
A	10	5
B	1	4
C	5	8
D	9	2
E	12	10
F	15	8
G	7	7

Also show intermediate steps.

OR

Q2) a) Explain K- Means algorithm with an example. **[6]**

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

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

P.T.O.

Q3) a) Write a short note on Multilayer Perceptron. **[4]**

b) What are the types of artificial neural network? **[6]**

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

OR

Q4) a) Explain a biological neuron along with its parts. **[4]**

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

c) How does the learning rate affect the training of the Neural Network? What do you mean by Hyperparameters? **[7]**

Q5) a) Explain CNN architecture along with diagram. **[6]**

b) Explain Recursive Neural Network. **[6]**

c) Enlist various types of Recurrent Neural Network. Explain any two of them. **[6]**

OR

Q6) a) Explain the terms "Valid Padding" and "Same Padding" in CNN. List down the hyperparameters of a Pooling Layer. **[6]**

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

c) Enlist various types of CNN models. Explain any two of them. **[6]**

Q7) a) Explain the process of text processing. **[6]**

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

c) What do you mean by topic modelling? Explain Latent Dirich. Let Allocation. **[5]**

OR

Q8) a) What are various text similarity measures? Explain any two. **[6]**

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

i) Stemming

ii) Lemmatization

c) Illustrate tokenization with an example. **[5]**

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