Total No. of Questions : 8]

SEAT No. : [ ]

PA-1677

[Total No. of Pages : 2

[5927]-465

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 K-Means algorithm with an example. **[6]**

b) How to measure the quality of clustering? Explain any three measures. **[6]**

c) What are different types of partitional clustering? Explain any two of them. **[6]**

OR

Q2) a) Explain KNN algorithm with example. **[6]**

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

	X_1	X_2
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

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

P.T.O.

Q3) a) Enlist limitations of MLP. **[4]**

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

Q4) a) Explain Multilayer Perception. **[4]**

b) Explain Generalized Delta Learning Rule. **[6]**

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

Q5) a) Explain the different layers in CNN. Explain the significance of the RELU Activation function in Convolution Neural Network. **[6]**

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

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

OR

Q6) a) Explain CNN Architecture along with diagram. **[6]**

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

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

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

b) Write short note on document representation. **[6]**

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

OR

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

b) Explain various feature selection methods. **[6]**

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

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