

Total No. of Questions : 8]

SEAT No. :

**P6754**

**[6181] - 342**

[Total No. of Pages : 2

**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]**

	X1	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]

