1904M115

Candidate's Seat No :_____

Integ. M.Sc DS Semester-6 Examination

CC-313

Machine Learning - II

April-2024

Time : 2-30 Hours] **[Max. Marks : 70**

Instructions: All questions are compulsory. Use of non-programmable scientific calculator is allowed.

Q.1 **(a)** Explain in detail what is unsupervised learning?

(b) Discuss the advantages and disadvantages of Unsupervised Learning in the context of machine learning applications.

OR

(a) Describe the working principle of Unsupervised Learning, illustrating with a step-by-step example.

(b) Explain in detail types of unsupervised learning.

Q.2 **(a)** Provide a detailed explanation of at least three distinct distance measures commonly used in Unsupervised Learning algorithms

(b) Explain in detail mean shift clustering algorithms and also discuss its pros and cons

OR

(a) Explain importance of dimension reduction. And also discuss its technique in detail.

(b) Explain in detail K-means clustering algorithms and also discuss its pros and cons.

Q.3 **(a)** Discuss the implementation of Hierarchical Clustering algorithm and also discuss the term Agglomerative and Divisive.

(b) Explain in detail DBSCSAN Clustering Algorithm.

OR

(a) Create a Dendrogram from given Distance matrix.

	A	B	C	D
A	0	3	4	2
B	3	0	5	1
C	4	5	0	6
D	2	1	6	0

(b) Discuss the pros and cons of Hierarchical Clustering algorithm and DBSCAN Clustering Algorithm.

Q.4 **(a)** Explain how Unsupervised Learning techniques can be applied to improve decision-making processes in marketing.

(b) Explain how Unsupervised Learning techniques were applied to analyze the data and derive meaningful insights.

OR

(P.T.O)

M113-2

(a) Evaluate the advantages and challenges of employing Unsupervised Learning methods in marketing and customer service domains. **(07)**

(b) Describe how marketing team could utilize Unsupervised Machine Learning techniques for audience segmentation. Outline the key steps involved in the audience segmentation process. **(07)**

Q.4 Attempt any **SEVEN** out of **TWELVE:** **(14)**

(1) Define: Clustering
(2) Define: Association
(3) Full Form of PCA and LDA.
(4) Full Form of DBSCAN.
(5) Define: Complete Linkage with diagram
(6) What are the types of unsupervised learning?
(7) How we can define the value of K in K-means?
(8) What is the default number of cluster in K-means?
(9) Different between PCA and LDA.
(10) Define: Centroid Linkage with diagram
(11) Define: Linear Discriminant Analysis
(12) Point A : $(x_1, y_1) = (3,4)$
Point B : $(x_2, y_2) = (6,8)$
Calculate the Manhattan Distance.

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