**DSL-7**

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**A. Extended Theory: (Soft Copy)**

1. **Types of clustering.**

**ANS:**

1. Partitioning Clustering – Divides data into k clusters.
2. Hierarchical Clustering – Creates a hierarchy of clusters.3.
3. Density-Based Clustering – Groups based on point density.4.
4. Grid-Based Clustering – Uses a grid structure for clustering.5.
5. Model-Based Clustering – Assumes a statistical distribution.6.
6. Fuzzy Clustering – Assigns probabilities to cluster memberships.

**B. Questions:**

1. **Application of Clustering**

**ANS:**

1. Customer Segmentation – Grouping customers based on purchasing behavior for targeted marketing.
2. Anomaly Detection – Identifying fraudulent transactions in banking systems.
3. Image Segmentation – Dividing images into different regions for object detection.
4. Genomic Data Analysis – Grouping genes or proteins with similar functions.
5. Social Network Analysis – Detecting communities or groups in social media platforms.
6. Recommendation Systems – Clustering users based on preferences to suggest relevant products.
7. Document Classification – Grouping articles or research papers into topics.
8. Healthcare – Identifying patient groups with similar medical conditions for personalized treatment.