MACHINE LEARNING

1. Which of the following is an application of clustering?
   a. Biological network analysis
   b. Market trend prediction
   c. Topic modeling

   Ans: All of the above

2. On which data type, we cannot perform cluster analysis?
   a. Time series data
   b. Text data
   c. Multimedia data

   Ans: None

3. Netflix's movie recommendation system uses-

   Ans: Reinforcement learning and Unsupervised learning

4. The final output of Hierarchical clustering is-

   Ans: The tree representing how close the data points are to each other

5. Which of the step is not required for K-means clustering?
   a. A distance metric
   b. Initial number of clusters
   c. Initial guess as to cluster centroids

   Ans: None

6. Which is the following is wrong?

   Ans: k-nearest neighbor is same as k-means

7. Which of the following metrics, do we have for finding dissimilarity between two clusters in hierarchical clustering?
   i. Single-link
   ii. Complete-link
   iii. Average-link

   Ans: 1, 2 and 3

8. Which of the following are true?
   i. Clustering analysis is negatively affected by multicollinearity of features
   ii. Clustering analysis is negatively affected by heteroscedasticity

   Ans: 1 only

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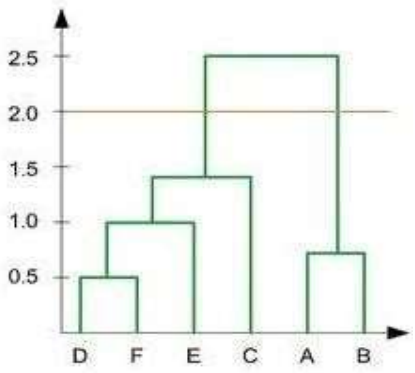
9. In the figure above, if you draw a horizontal line on y-axis for y=2. What will be the number of clusters formed?



Ans: 2

10. For which of the following tasks might clustering be a suitable approach?

Ans: Given a database of information about your users, automatically group them into different marketsegments.

11. Given, six points with the following attributes:

point	x coordinate	y coordinate
p1	0.4005	0.5306
p2	0.2148	0.3854
p3	0.3457	0.3156
p4	0.2652	0.1875
p5	0.0789	0.4139
p6	0.4548	0.3022

Table : X-Y coordinates of six points.

	p1	p2	p3	p4	p5	p6
p1	0.0000	0.2357	0.2218	0.3688	0.3421	0.2347
p2	0.2357	0.0000	0.1483	0.2042	0.1388	0.2540
p3	0.2218	0.1483	0.0000	0.1513	0.2843	0.1100
p4	0.3688	0.2042	0.1513	0.0000	0.2932	0.2216
p5	0.3421	0.1388	0.2843	0.2932	0.0000	0.3921
p6	0.2347	0.2540	0.1100	0.2216	0.3921	0.0000

Table : Distance Matrix for Six Points

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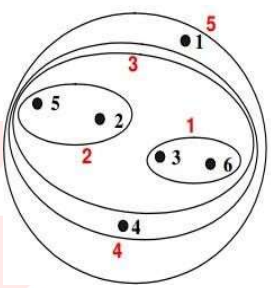
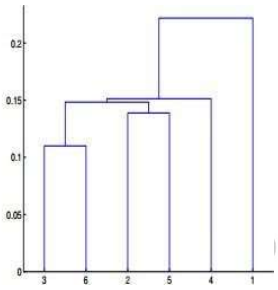
Which of the following clustering representations and dendrogram depicts the use of MIN or Single link proximity function in hierarchical clustering:





Ans: a

12. Given, six points with the following attributes:

point	x coordinate	y coordinate
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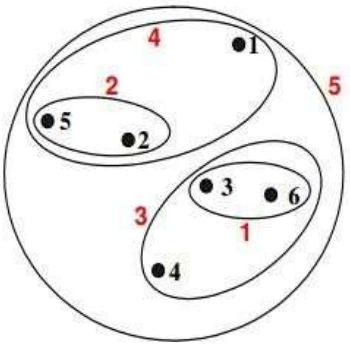
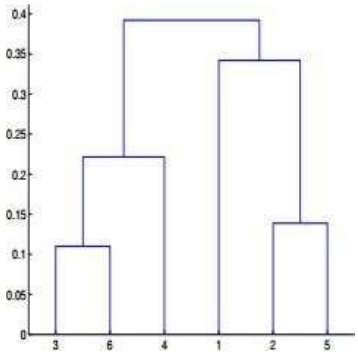
p4	0.3688	0.2042	0.1513	0.0000	0.2932	0.2216
p5	0.3421	0.1388	0.2843	0.2932	0.0000	0.3921
p6	0.2347	0.2540	0.1100	0.2216	0.3921	0.0000

Table : Distance Matrix for Six Points

Which of the following clustering representations and dendrogram depicts the use of MAX or Complete link proximity function in hierarchical clustering.





Ans : b

MACHINE LEARNING

13. What is the importance of clustering?

    Ans: Cluster use for simplify the processing of large datasets. It is used to identify groups of similar objects or closed objects in the datasets.

14. How can I improve my clustering performance?

    Ans: Clustering performance can improve using a better initialization technique, and by repeating (re-starting) the algorithm. If the clustering algorithm separates dissimilar observations apart and similar observations together, then it has performed well.