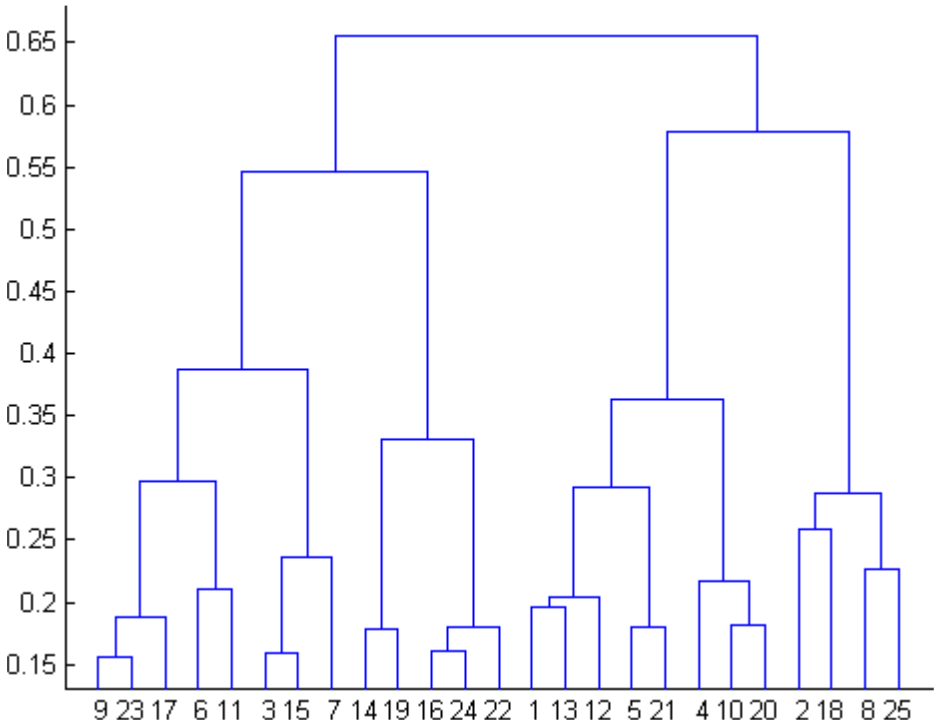
1. What is the most appropriate no. of clusters for the data points represented by the following dendrogram:



a) 2
b) 4
c) 6
d) 8

Answer: b) 4

2. In which of the following cases will K-Means clustering fail to give good results?
1. Data points with outliers
2. Data points with different densities
3. Data points with round shapes
4. Data points with non-convex shapes
Options:
a) 1 and 2
b) 2 and 3
c) 2 and 4
d) 1, 2 and 4

Answer: d) 1, 2 and 4

3. The most important part of is selecting the variables on which clustering is based.
a) interpreting and profiling clusters
b) selecting a clustering procedure
c) assessing the validity of clustering
d) formulating the clustering problem

Answer: a) interpreting and profiling clusters

4. The most commonly used measure of similarity is the or its square.

a) Euclidean distance
b) city-block distance
c) Chebyshev's distance
d) Manhattan distance

Answer: a) Euclidean distance

5. Is a clustering procedure where all objects start out in one giant cluster. Clusters are formed by dividing this cluster into smaller and smaller clusters.
a) Non-hierarchical clustering
b) Divisive clustering
c) Agglomerative clustering
d) K-means clustering

Answer: b) Divisive clustering

6. Which of the following is required by K-means clustering?
a) Defined distance metric
b) Number of clusters
c) Initial guess as to cluster centroids
d) All answers are correct

Answer; d) All answers are correct
7. The goal of clustering is to-
a) Divide the data points into groups
b) Classify the data point into different classes
c) Predict the output values of input data points
d) All of the above

Answer: d) All of the above

8. Clustering is a-
a) Supervised learning
b) Unsupervised learning
c) Reinforcement learning
d) None

Answer: b) Unsupervised learning

9. Which of the following clustering algorithms suffers from the problem of convergence at local optima?
a) K- Means clustering
b) Hierarchical clustering
c) Diverse clustering
d) All of the above

Answer: a) K- Means clustering

10. Which version of the clustering algorithm is most sensitive to outliers?
a) K-means clustering algorithm
b) K-modes clustering algorithm
c) K-medians clustering algorithm
d) None

Answer: a) K-means clustering algorithm

11. Which of the following is a bad characteristic of a dataset for clustering analysis-
a) Data points with outliers
b) Data points with different densities
c) Data points with non-convex shapes
d) All of the above

Answer: d) All of the above

12. For clustering, we do not require-
a) Labeled data
b) Unlabeled data
c) Numerical data
d) Categorical data

Answer: a) Labeled data

Q13 to Q15 are subjective answers type questions, Answers them in their own words briefly.
13. How is cluster analysis calculated?

Answer: The number of clusters should be determined according to the context and goal of your analysis.

14. How is cluster quality measured?

Answer: We can use the average value of all objects in the data set.

15. What is cluster analysis and its types?

Answer: Clustering model closely related to statistics based on the models of distribution.
Types: **centroid-based; density-based; distribution-based; hierarchical; constraint-based and fuzzy clustering.**