Show your working in all calculations.

2. This question is related to **Clustering**.

   a) Describe briefly the main objective of Cluster Analysis.

   b) Explain the difference between *partitional clustering* amd *hierarchical clustering* approaches.

   c) Describe briefly and illustrate graphically the *elbow method* for selecting the number of clusters in k-means clustering.

   d) Discuss the basic DIFFERENCE between the agglomerative and divisive hierarchical clustering algorithms. Explain also the difference between single (MIN) and complete (MAX) linkage in the context of hierarchical clustering.