**CHRIST (DEEMED TO BE UNIVERSITY), BENGALURU.**

**Department of Computer Science**

**MAI272 - Advanced Machine Learning Lab**

**ETE - 1**

**Time: 2 Hrs Max. Marks: 30**

**Q1. For the provided with a dataset. Perform the following:**

1. Perform feature selection to identify the most significant features. (3 M)
2. Apply PCA, LDA, ICA, K-Means, Hierarchical Clustering, and other clustering algorithms (Chameleon and Birth) to the dataset and compare their results. (7 M)
3. Use these clustering algorithms to find the optimal number of clusters: (9)
   * K-Means to find the optimal number of clusters using the Elbow Method.
   * Hierarchical Clustering to visualize the dendrogram and determine the appropriate number of clusters using the silhouette method.
   * Chameleon to determine the optimal number of clusters and evaluate the quality.
   * Birth (Birch clustering algorithm) to find the optimal number of clusters and evaluate quality.
4. Evaluate the quality of clusters for each clustering method. (6 M)
5. By comparing the results from PCA, LDA, ICA, K-Means, Hierarchical Clustering, Chameleon, and Birch, provide a detailed analysis and conclusion regarding the clustering methods' performance with this dataset. (5 M)