Machine Learning Assignment-3

Question no.	Answers
1	D
2	D
3	C
4	B
5	D
6	C
7	D
8	A
9	A
10	B
11	A
12	B

Q13. What is the importance of clustering?

Ans. Clustering is considered to be a general task to solve the problem, which formulates optimization problems. It plays key importance in the field of data mining and data analysis.

- Clustering helps in understanding the natural grouping in a dataset. Their purpose is to make sense to partition the data into some group of logical groupings.
- Clustering quality depends on the methods and the identification of hidden patterns.
- Having clustering methods helps in restarting the local search procedure and removing the inefficiency. In addition, clustering helps to determine the internal structure of the data.
- This clustering analysis has been used for model analysis, and vector region of attraction.
- They play a wide role in applications like marketing economic research and weblogs to identify similarity measures, Image processing, and spatial research.
- They are used in outlier detections to detect credit card fraudulence.

Q14. How can I improve my clustering performance?

Ans. Graph-based clustering performance can easily be improved by applying **ICA blind source separation** during the graph Laplacian embedding step.
Applying unsupervised feature learning to input data using either **RICA or SFT**, improves clustering performance.
Surprisingly for some cases, high clustering performance can be achieved by simply performing K-means clustering on the ICA components after PCA dimension reduction on the input data. However, the number of **PCA and ICA** signals/components needs to be limited to the number of unique classes.