MACHINE LEARNING

1. b) 1 and 2.
2. d) 1, 2 and 4.
3. a) True.
4. a) 1 only.
5. b) 1.
6. b) No.
7. a) Yes.
8. d) All of the above.
9. a) K-means clustering algorithm.
10. d) All of the above.
11. d) All of the above.

12. The K-means clustering algorithm is sensitive to outliers, because a mean is easily influenced by extreme values. K-medoids clustering is a variant of k-means that is more robust to noises and outliers. Instead of using the mean point as the center of a cluster, K-medoids uses an actual point in the cluster to represent it. Medoid is the most centrally located object of the cluster, with minimum sum of distances to other points.

13. K-means clustering is a very famous and powerful unsupervised machine learning algorithm. It is used to solve many complex unsupervised machine learning problems. K-means is better because
    - It is very simple to implement.
    - It adapts the new examples very frequently.

- It is scalable to a huge data set and also faster to large datasets.
- Generalization of clusters for different shapes and sizes.

14. K-Means is a non-deterministic algorithm.
    This means that a compiler cannot solve the problem in polynomial time and doesn't clearly know the next step. This is because some problems have a great degree of randomness to them. These algorithms usually have 2 steps 1) Guessing step.
    2) Assignment step.
    On similar lines is the K-means algorithm. The K-Means algorithm divides the data space into K clusters such that the total variance of all data points with respect to the cluster mean is minimized.