

## MACHINE LEARNING

**Q1 to Q11 have only one correct answer. Choose the correct option to answer your question.**

1. Movie Recommendation systems are an example of:

- i) Classification
- ii) Clustering
- iii) Regression

Options:

- a) 2 Only
- b) 1 and 2
- c) 1 and 3
- d) 2 and 3

**Ans: b) 1 and 2**

2. Sentiment Analysis is an example of:

- i) Regression
- ii) Classification
- iii) Clustering
- iv) Reinforcement

Options:

- a) 1 Only
- b) 1 and 2
- c) 1 and 3
- d) 1, 2 and 4

**Ans: d) 1, 2 and 4**

3. Can decision trees be used for performing clustering?

- a) True
- b) False

**Ans: a) True**

4. Which of the following is the most appropriate strategy for data cleaning before performing clustering analysis, given less than desirable number of data points:

- i) Capping and flooring of variables
- ii) Removal of outliers

Options:

- a) 1 only
- b) 2 only
- c) 1 and 2
- d) None of the above

**Ans: a) 1 only**

5. What is the minimum no. of variables/ features required to perform clustering?

- a) 0
- b) 1
- c) 2
- d) 3

**Ans: b) 1**

6. For two runs of K-Mean clustering is it expected to get same clustering results?

- a) Yes
- b) No

**Ans: b) No**

7. Is it possible that Assignment of observations to clusters does not change between successive iterations in K-Means?

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- a) Yes
- b) No
- c) Can't say
- d) None of these

**Ans: a) Yes**

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8. Which of the following can act as possible termination conditions in K-Means?
- i) For a fixed number of iterations.
  - ii) Assignment of observations to clusters does not change between iterations. Except for cases with a bad local minimum.
  - iii) Centroids do not change between successive iterations.
  - iv) Terminate when RSS falls below a threshold.

Options:

- a) 1, 3 and 4
- b) 1, 2 and 3
- c) 1, 2 and 4
- d) All of the above

**Ans: d) All of the above**

9. Which of the following algorithms is most sensitive to outliers?
- a) K-means clustering algorithm
  - b) K-medians clustering algorithm
  - c) K-modes clustering algorithm
  - d) K-medoids clustering algorithm

**Ans: a) K-means clustering algorithm**

10. How can Clustering (Unsupervised Learning) be used to improve the accuracy of Linear Regression model (Supervised Learning):
- i) Creating different models for different cluster groups.
  - ii) Creating an input feature for cluster ids as an ordinal variable.
  - iii) Creating an input feature for cluster centroids as a continuous variable.
  - iv) Creating an input feature for cluster size as a continuous variable.

Options:

- a) 1 only
- b) 2 only
- c) 3 and 4
- d) All of the above

**Ans: d) All of the above**

11. What could be the possible reason(s) for producing two different dendrograms using agglomerative clustering algorithms for the same dataset?
- a) Proximity function used
  - b) of data points used
  - c) of variables used
  - d) All of the above

**Ans: d) All of the above**

Q12 to Q14 are subjective answers type questions, Answers them in their own words briefly

12. Is K sensitive to outliers?

Ans: The K-Means clustering algorithm is sensitive to outliers, because a mean is easily influenced by extreme values. K-medoids is a variant of K-means that is more robust to noises and outliers.

13. Why is K means better?

Ans: K-Means better because Many common implementations; Popular and well studied and Comparatively fast.

14. Is K means a deterministic algorithm?

Ans: K-Means is a non-deterministic nature due to its random selection of data points as initial centroids.

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