

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
 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
 3. Can decision trees be used for performing clustering?
a) True
b) False
 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
 5. What is the minimum no. of variables/ features required to perform clustering? a) 0
b) 1
c) 2
d) 3
 6. For two runs of K-Mean clustering is it expected to get same clustering results? a) Yes
b) No
 7. Is it possible that Assignment of observations to clusters does not change between successive iterations in K-Means?
a) Yes
b) No
c) Can't say
d) None of these
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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
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
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
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

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

- 12. Is K sensitive to outliers?
- 13. Why is K means better?
- 14. Is K means a deterministic algorithm?

Ans1: b
Ans2: a
Ans3: a
Ans4: c
Ans5: a
Ans6: a
Ans7: a
Ans8: c
Ans9: a
Ans10: d
Ans11: b

Ans12: yes, it is sensitive to outliers, because a mean is easily influenced by extreme values. For example data set points are 1 2 3 4 5 6 8 80. now 80 is outlier.

Ans13: yes, k means better because it works slight easier way it is simple to implement it can hold large dataset can warm start the positions of centroids it easily adapts new examples and it generalize clusters in different shapes and sizes.

Ans14:k-means not deterministic algorithm it is non-deterministic nature of k-means due to its random selection of data points as initial centroids.