

CS544 2021 Quiz 2

Multiple correct choices may exist. You need to identify all correct choices for getting marks. No part marking is there. Time is 15 mins

Points:

8.5/10

1. Generating node embeddings of a graph by passing the adjacency matrix directly through a multi-layer neural network is not a good idea because
(1.5/2 Points)

- ☐ **The number of parameters may be too large**
- ☐ **Not possible to use the model if the network expands**
- ☐ The model becomes node permutation invariant
- ☐ High degree nodes generate similar representations

2. You want to test the performance of a GNN model that is used for predicting whether a given molecular structure represents that of a safe or toxic drug. Which of the following is true?

(1.5/2 Points)

- ☐ Considering the molecular structure as a graph, using a single graph to generate node representations using GNNs can be useful for the task
- ☐ In the drug database that we use to train our model, 97% of the data belongs to safe drug. This data cannot be used for training the model as it would be biased towards safe drugs
- ☐ Accuracy of the model would be a suitable measure of the performance as compared to ROC curves
- ☐ **Both accuracy and precision would be bad measures to evaluate the performance**

3. Inductive capability of GNNs is achieved specifically by
(2/2 Points)

- ☐ Use of the adjacency matrix in the aggregation terms
- ☐ Using sum, average or max pool as aggregation functions
- ☐ **Sharing same aggregation weights for all nodes**
- ☐ GNNs are inherently transductive and inductive capability cannot be achieved

4. When the number of layers in a GNNs increase, which of the following are true

(1.5/2 Points)

- ☐ The receptive field of the nodes becomes entirely different
- ☐ **May lead to similar representations of the nodes**

☐ **Rather than increasing layers, using multi-layer perceptrons at each aggregation module may be preferred**

☐ Use of cluster-GNN may be a better alternative to increasing GNN layers

5. Which of the following is true

(2/2 Points)

☐ In spectral graph partitioning we partition the graph into partitions of given size that maximizes the cut size

☐ Spectral graph partitioning will always produce optimal results when the graph has inherent communities

☐ **Modularity matrix captures the density of links within a group of nodes**

☐ **In Kernighan-Lin method, the choice of initial partition matters in the final outcome**