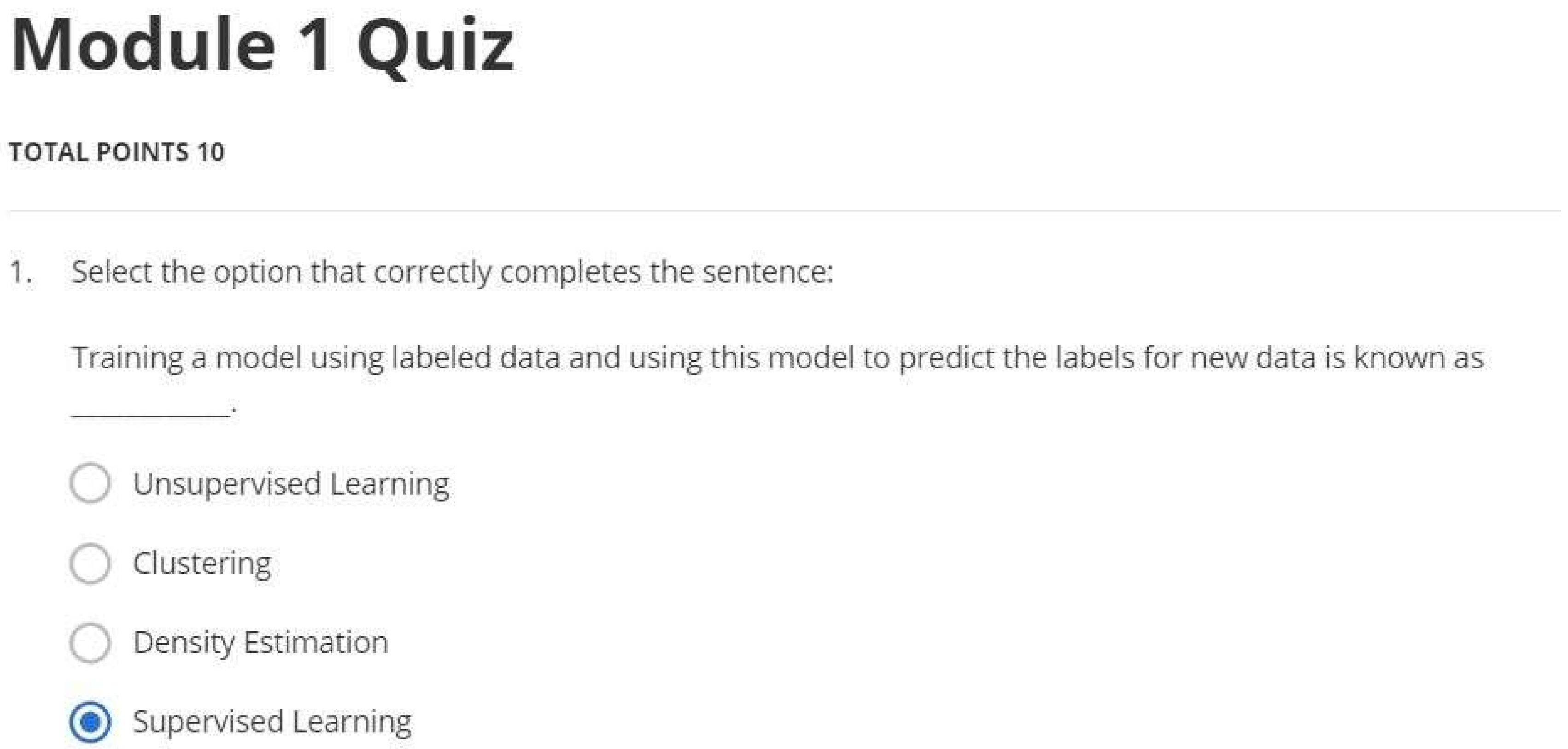


Module 1 Quiz

TOTAL POINTS 10

1. Select the option that correctly completes the sentence:

   Training a model using labeled data and using this model to predict the labels for new data is known as ____________.

   ○ Unsupervised Learning

   ○ Clustering

   ○ Density Estimation

   ● Supervised Learning

2. Select the option that correctly completes the sentence:

Modeling the features of an unlabeled dataset to find hidden structure is known as __________.

○ Regression

● Unsupervised Learning

○ Classification

○ Supervised Learning

3. Select the option that correctly completes the sentence:

Training a model using categorically labelled data to predict labels for new data is known as ________.

○ Regression

● Classification

○ Feature Extraction

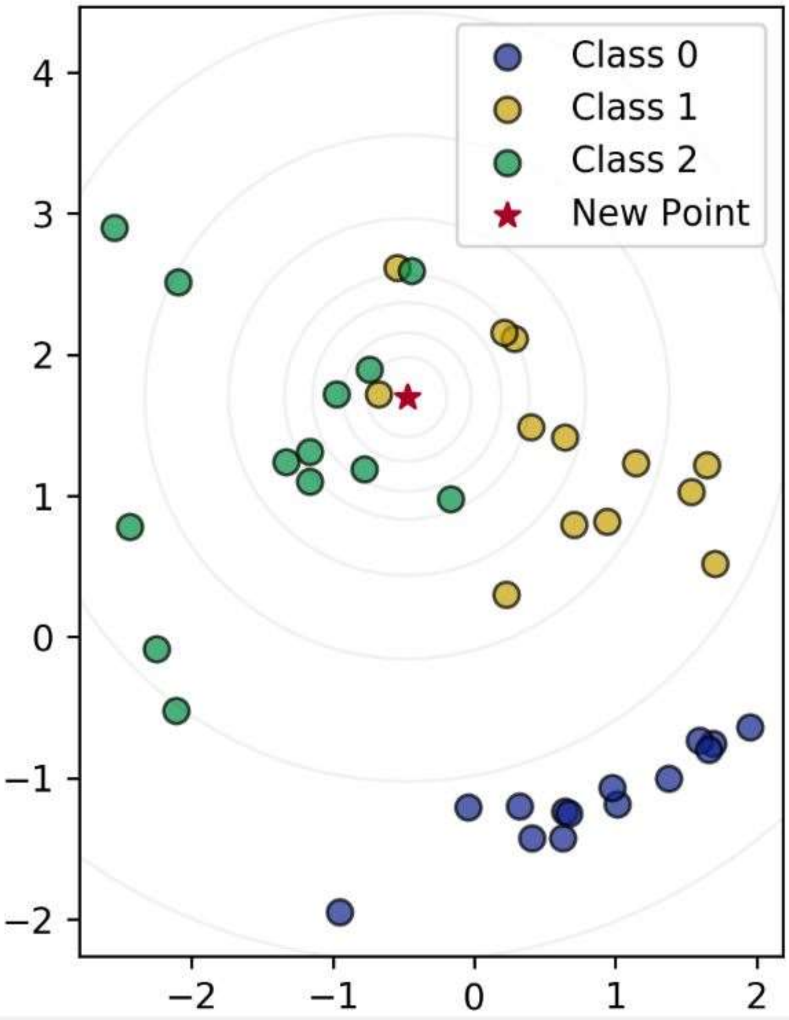
○ Clustering

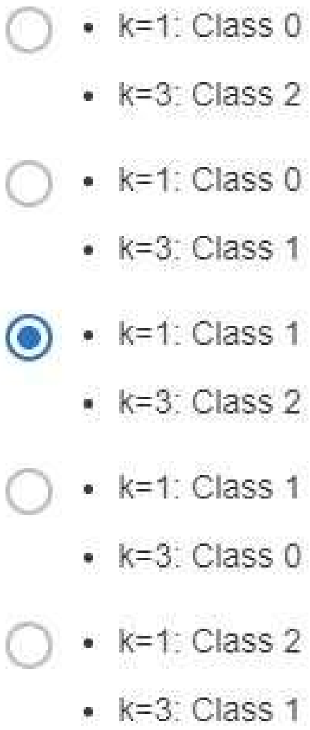
4. Select the option that correctly completes the sentence:

Training a model using labelled data where the labels are continuous quantities to predict labels for new data is known as _________.

- ● Regression
- ○ Feature Extraction
- ○ Clustering
- ○ Classification

5. Using the data for classes 0, 1, and 2 plotted below, what class would a KNeighborsClassifier classify the new point as for k = 1 and k = 3?





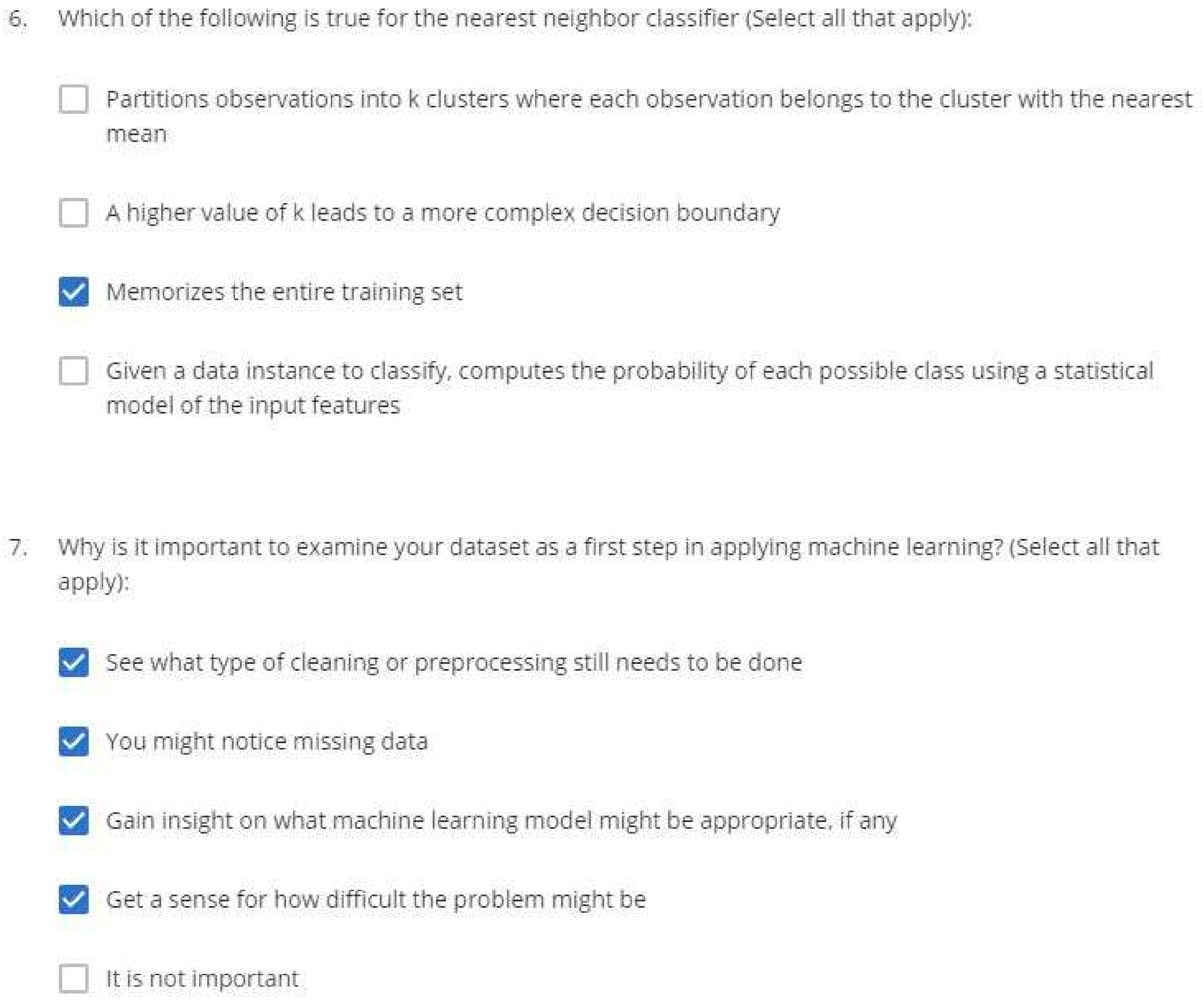
○
- k=1: Class 0
- k=3: Class 2

○
- k=1: Class 0
- k=3: Class 1

●
- k=1: Class 1
- k=3: Class 2

○
- k=1: Class 1
- k=3: Class 0

○
- k=1: Class 2
- k=3: Class 1



6. Which of the following is true for the nearest neighbor classifier (Select all that apply):

   □ Partitions observations into k clusters where each observation belongs to the cluster with the nearest mean

   □ A higher value of k leads to a more complex decision boundary

   ☑ Memorizes the entire training set

   □ Given a data instance to classify, computes the probability of each possible class using a statistical model of the input features

7. Why is it important to examine your dataset as a first step in applying machine learning? (Select all that apply):

   ☑ See what type of cleaning or preprocessing still needs to be done

   ☑ You might notice missing data

   ☑ Gain insight on what machine learning model might be appropriate, if any

   ☑ Get a sense for how difficult the problem might be

   □ It is not important

8. The key purpose of splitting the dataset into training and test sets is:

- ● To estimate how well the learned model will generalize to new data
- ○ To speed up the training process
- ○ To reduce the amount of labelled data needed for evaluating classifier accuracy
- ○ To reduce the number of features we need to consider as input to the learning algorithm

9. The purpose of setting the random_state parameter in train_test_split is: (Select all that apply)

- □ To avoid predictable splitting of the data
- □ To avoid bias in data splitting
- □ To split the data into similar subsets so that bias is not introduced into the final results
- ☑ To make experiments easily reproducible by always using the same partitioning of the data

10. Given a dataset with 10,000 observations and 50 features plus one label, what would be the dimensions of X_train, y_train, X_test, and y_test? Assume a train/test split of 75%/25%.

○
- X_train: (10000, 28)
- y_train: (10000,)
- X_test: (10000, 12)
- y_test: (10000,)

○
- X_train: (10000, 50)
- y_train: (10000,)
- X_test: (10000, 50)
- y_test: (10000,)

●
- X_train: (7500, 50)
- y_train: (7500,)
- X_test: (2500, 50)
- y_test: (2500,)

○
- X_train: (2500,)
- y_train: (2500, 50)
- X_test: (7500,)
- y_test: (7500, 50)

○
- X_train: (2500, 50)
- y_train: (2500,)
- X_test: (7500, 50)
- y_test: (7500,)