1. What does one mean by the term "machine learning"?

The study of algorithms by which it helps to identify trends, patterns, it learn from data and makes decisions with very less intervention of human effort.

2.Can you think of 4 distinct types of issues where it shines?

It helps in places where we need to enter a lot of rules or logic, complex problems where arriving at a solution with traditional methods would be difficult.

3.What is a labeled training set, and how does it work?

Labeled training set happens on a sample of data which is unlabelled and we label it according to the nature of information present in it. It helps further to derive insights from the data or check for the relations between different types of information present in it.

4.What are the two most important tasks that are supervised?

Classification and regression

5.Can you think of four examples of unsupervised tasks?

Clustering, anomaly detection, dimension reduction and association rule learning

6.State the machine learning model that would be best to make a robot walk through various unfamiliar terrains?

One of the way to do it through reinforcement learning.

7.Which algorithm will you use to divide your customers into different groups?

clustering.

8.Will you consider the problem of spam detection to be a supervised or unsupervised learning problem?

machine learning

9.What is the concept of an online learning system?

A system is where machine learns in batches as the data is provided in multiples splits.

10.What is out-of-core learning, and how does it differ from core learning?

A system that can handle data that cannot fit into your computer memory. It may use the data in pieces from the realtime or huge data dump.

11.What kind of learning algorithm makes predictions using a similarity measure?

Instance based algorithm

12.What's the difference between a model parameter and a hyperparameter in a learning algorithm?

13.What are the criteria that model-based learning algorithms look for? What is the most popular method they use to achieve success? What method do they use to make predictions?

They search for the value of the parameters as needed in order to give the desired output. We use a cost function to reduce the errors in the model.

14.Can you name four of the most important Machine Learning challenges?

Underfitting, overfitting, lack of data, non-related data.

15.What happens if the model performs well on the training data but fails to generalize the results to new situations? Can you think of three different options?

The situation is overfitting here, we can either implement a simpler model, we can additionally get the model trained on more data, or we need to remove the outliers in the dataset.

16.What exactly is a test set, and why would you need one?

This is part of the data set which is used to fit to the model creation in order to measure the accuracy of the model performance.

17.What is a validation set's purpose?

Validation set is a set used to compare between different training models.

18.What precisely is the train-dev kit, when will you need it, how do you put it to use?

The goal of dev-set is to rank the models in term of their accuracy and helps us decide which model to proceed further with. Using Dev set we rank all our models in terms of their accuracy and pick the best performing model.

19.What could go wrong if you use the test set to tune hyperparameters?

If I use hyper parameters and training on a sample data set then the accuracy will be impacted as its not getting trained completely on the dataset considering al the variations on the dataset.