**Assignment-1**

**Q.1 => What does one mean by the term "machine learning"?**

Answer:- The main aim of “Machine Learning” is to learn computers automatically without any human interaction.

**Q.2 => Can you think of 4 distinct types of issues where it shines?**

**Answer:-**

1. Spam Detection
2. Wafer Fault Detection
3. Automatically Driving Vehicles
4. Whether Prediction

**Q.3 => What is a labeled training set, and how does it work?**

**Answer:-**

The Training Set is used to train a model for training set and that model we used on Testing set to predict a response value that are already known.

Final Thing is to compare the Predicted value and actual value.

**Q.4 => What are the two most important tasks that are supervised?**

**Answer:-**

Classification and Regression

**Q.5 => Can you think of four examples of unsupervised tasks?**

**Answer:-**

1. Clustering
2. Dimensionality Reduction
3. Visualization

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

Answer:-

Reinforced Learning

**Q.7 => Which algorithm will you use to divide your customers into different groups?**

**Answer:-**

Clustering Algorithms

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

**Answer:-**

Supervised learning Problem

**Q.9 => What is the concept of an online learning system?**

**Answer:-**

Online Learning System means you learn remotely.

It’s also referred as a distance learning or E-Learning.

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

**Answer:-**

It is way to train your model on data that cannot fit on your core memory.

**Q.11 => What kind of learning algorithm makes predictions using a similarity measure?**

**Answer:-**

Instance-based algorithm

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

**Answer:-**

Model Parameters are estimated from data automatically and model hyperparameters are set manually and are used in process to help estimate model parameters.

**Q.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?**

**Answer:-**

Model based learning are search for optimal value of parameter in a model that will give the best result for a new instance.

**Q.14 => Can you name four of the most important Machine Learning challenges?**

**Answer:-**

Lack of training data

Underfitting

Overfitting

Poor Quality of data

**Q.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?**

**Answer:-**

If Model perform well on training data but not performed well on testing data,

Means model predict inaccurate predictions for testing data This is called Overfitting.

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

**Answer:-**

A test set is portion of data set used in data mining to assess the likely future performance of a single predictions.

**Q.17 => What is a validation set's purpose?**

**Answer:-**

A validation set is a set of data used to train the AI with the goal to finding and optimizing a best model to solve a given problem.

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

Answer:-

A Validation data set is a data set of examples used to tune the hyperparameter of a classifier. It is sometime also call a development set or Dev set.

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

**Answer:-** If you use the test set to tune hyperparameters that’s means you give a chance to see your test data and to develop a bias towards the test data.