**Assignment - 2**

**Q.1 => What is the concept of human learning? Please give two examples.  
Answer:-**

Learning is the process of acquiring new understanding, knowledge, behaviors skills , value and attitudes.

Example of human learning are:

1. Learn to drive a motor car,
2. Remember the poem and mathematical table
3. Typewriting

**2. What different forms of human learning are there? Are there any machine learning equivalents?**

**Answer:-**

Three Major types of learning

1. Learning through association
2. Learning through consequence
3. Learning through Observation

**3. What is machine learning, and how does it work? What are the key responsibilities of machine learning?**

**Answer:-**

Machine Learning is the AI technique that teaches the computer to learn from data and understand the pattern.

The Main responsibility of ML Algorithm is that to find a pattern from a dataset and predict the response based on the data this is applicable for both classification as well as regression.

**4. Define the terms "penalty" and "reward" in the context of reinforcement learning.**

**Answer:-**

If it makes the right move, it gets rewarded.

If it makes the mistakes, it receives a penalty.

**5. Explain the term "learning as a search"?**

**Answer:-**

The learner searches through a space of hypotheses to find the best one.

**6. What are the various goals of machine learning? What is the relationship between these and human learning?**

**Answer:-**

The main goal of machine learning is to discover patterns in the user data and then make predictions based on these and answering business questions and solving business problem.

Humans acquire knowledge through experience either directly or shared by others.

Machine acquire knowledge through experience shared in the form of past data.

**7. Illustrate the various elements of machine learning using a real-life illustration.**

**Answer:-**

There are three main task for every machine learning algorithm and they include:

1. Representation
2. Evaluation
3. Optimization

Real life example of Machine learning algorithm are

1. Youtube video recommendation
2. Spam Email detection

**8. Provide an example of the abstraction method.**

**Answer:-**

Abstraction means “display” only the relevant attributes and hide the unnecessary information.

For example :- While driving the car, we are only concerned about driving the car like start/stop and break etc.

**9. What is the concept of generalization? What function does it play in the machine learning process?**

**Answer:-**

Generalization refers to the model ability to adapt properly new, previously unseen data, drawn from the distribution as one used to create model.

**Q.10 => What is classification, exactly? What are the main distinctions between classification and regression?**

**Answer:-**

Classification means we have output as positive number or negative number means we have two class not continuous data as a output classification algorithm predict the class as positive and negative based on the data.

The Main difference between classification and regression in output classification algorithm predict only positive or negative or some other value and regression algorithm predict the continuous value based on the data that is given as a input for regression.

**11. What is regression, and how does it work? Give an example of a real-world problem that was solved using regression.**

**Answer:-**

Real World example of Regression algorithm are

1. House price prediction or Stock Price Prediction
2. Weather analysis or prediction

=> A Regression is statistical technique that relates a dependent variable to one or more independent variables.

**12. Describe the clustering mechanism in detail.**

**Answer:-**

Clustering means divide the unlabeled data into group of cluster and similar type of data falls under same cluster than those which differ from other cluster.

**13. Make brief observations on two of the following topics:**

**i. Machine learning algorithms are used**

**ii. Studying under supervision**

**iii. Studying without supervision**

**iv. Reinforcement learning is a form of learning based on positive reinforcement.**

**Answer:-**

1. Machine learning algorithms are used to learn a patterns from data and predict the response, There are different types of algorithm falls under classification and Regression.