1. What is the concept of human learning? Please give two examples.

It is the form of learning which requires higher order mental processes like thinking, reasoning, intelligence, etc. we learn different concepts from childhood. For example, when we see a dog and attach the term 'dog', we learn that the word dog refers to a particular animal.

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

Supervised learning, unsupervised learning, and reinforcement learning

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

Machine learning is a form of artificial intelligence (AI) that teaches computers to think in a similar way to how humans do: Learning and improving upon past experiences. It works by exploring data and identifying patterns, and involves minimal human intervention.

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

A reinforcement learning algorithm, which may also be referred to as an agent, learns by interacting with its environment. The agent receives rewards by performing correctly and penalties for performing incorrectly. The agent learns without intervention from a human by maximizing its reward and minimizing its penalty.

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

The learner searches through a space of hypotheses (we will explain what they are), to find the best one. Which one would be the best one? The answer is the one that fits the training examples the best.

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

The primary purpose of machine learning is to discover patterns in the user data and then make predictions based on these and intricate patterns for answering business questions and solving business problems.

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

Image recognition

Speech recognition

Medical diagnosis

Statistical arbitrage

Predictive analytics

8. Provide an example of the abstraction method.

# Import the python abstract base class.

import abc

ABC = abc.ABCMeta('ABC', (object,), {'\_\_slots\_\_': ()})

# Define an abstract class which must contain at least one abstract method.

class AbstractPlane(ABC):

\_\_metaclass\_\_ = abc.ABCMeta

@abc.abstractmethod

def takeoff(self):

''' data '''

@abc.abstractmethod

def land(self):

''' data '''

# Define a concrete class using an abstract class.

class Transport(AbstractPlane):

def fly(self):

print('flying')

def takeoff(self):

print('taking off')

def land(self):

print('landing')

# Instantiate and use an object.

transport1 = Transport()

transport1.takeoff()

transport1.fly()

transport1.land()

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

Generalization is a definition to demonstrate how well is a trained model to classify or forecast unseen data. Training a generalized machine learning model means, in general, it works for all subset of unseen data. An example is when we train a model to classify between dogs and cats.

10.What is classification, exactly? What are the main distinctions between classification and regression?

Classification is the task of predicting a discrete class label. Regression is the task of predicting a continuous quantity

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

Regression Analysis, a statistical technique, is used to evaluate the relationship between two or more variables. Regression analysis helps an organisation to understand what their data points represent and use them accordingly with the help of business analytical techniques in order to do better decision-making

Medical researchers often use linear regression to understand the relationship between drug dosage and blood pressure of patients. For example, researchers might administer various dosages of a certain drug to patients and observe how their blood pressure responds.

12. Describe the clustering mechanism in detail.

Clustering is an unsupervised machine learning method of identifying and grouping similar data points in larger datasets without concern for the specific outcome.

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

i. Machine learning algorithms are used

* Linear regression
* Logistic regression

ii. when the model is getting trained on a labelled dataset

designation for pieces of data that have been tagged with one or more labels identifying certain properties or characteristics, or classifications or contained objects

iii. Studying without supervision

uses machine learning algorithms to analyze datasets

uses machine learning algorithms to cluster unlabeled datasets

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

* Able to perceive and interpret its environment
* Take actions and learn through trial and error