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

Ans: Learning is the **process of acquiring new understanding, knowledge, behaviors, skills, values, attitudes, and preferences**. ... Human learning starts at birth (it might even start before) and continues until death as a consequence of ongoing interactions between people and their environment.

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

Ans:Artificial Intelligence.

Learning Theories.

Machine Learning.

Reinforcement Learning.

Supervised Learning.

Unsupervised Learning.

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

Ans: In contrast, Machine Learning Engineers **focus on designing self-running software for predictive model automation**. In such models, each time the software performs a function, it uses the results of that operation to perform future operations with greater accuracy. This makes up the “learning” process of the software.

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

Ans: 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.

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

Learning can be **viewed as a search through the space of all sentences in a concept** description language for a sentence that best describes the data. Alternatively, it can be viewed as a search through all hypotheses in a hypothesis space.

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

Ans: The purpose of machine learning is **to discover patterns in your data and then make predictions based on often complex patterns to answer business questions**, detect and analyse trends and help solve problems.

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

* Ans: Image Recognition. Image recognition is one of the most common uses of machine learning. ...
* Speech Recognition. Speech recognition is the translation of spoken words into the text. ...
* Medical diagnosis. ...
* Statistical Arbitrage. ...
* Learning associations. ...
* Classification. ...
* Prediction. ...
* Extraction.

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

* Ans: # Python program demonstrate.
* # abstract base class work.
* from abc import ABC, abstractmethod.
* class Car(ABC):
* def mileage(self):
* pass.
* class Tesla(Car):
* def mileage(self):

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

Ans: In machine learning, 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.

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

Ans: A simple linear regression real life example could mean **you finding a relationship between the revenue and temperature**, with a sample size for revenue as the dependent variable. In case of multiple variable regression, you can find the relationship between temperature, pricing and number of workers to the revenue

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

Ans: Clustering itself can be categorized into two types viz. **Hard Clustering and Soft Clustering**. In hard clustering, one data point can belong to one cluster only. But in soft clustering, the output provided is a probability likelihood of a data point belonging to each of the pre-defined numbers of clusters.

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

i. Machine learning algorithms are used

ii. Studying under supervision

iii. Studying without supervision

Ans: The main distinction between the two approaches is the **use of labeled datasets**. To put it simply, supervised learning uses labeled input and output data, while an unsupervised learning algorithm does not. ... Unsupervised learning models, in contrast, work on their own to discover the inherent structure of unlabeled data.

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

Ans: Reinforcement learning is a machine learning training method based **on rewarding desired behaviors and/or punishing undesired ones**. In general, a reinforcement learning agent is able to perceive and interpret its environment, take actions and learn through trial and error.