1. What is the concept of human learning? Please give two examples.
Ans-Human-guided machine learning is a process whereby subject matter experts accelerate the learning process by teaching the technology in real-time. For example, if the machine learning model comes across a piece of data it is uncertain about, a human can be asked to weigh in and give feedback.

2. What different forms of human learning are there? Are there any machine learning equivalents?
Ans-Three Major Types of Learning

- Learning through association - Classical Conditioning.
- Learning through consequences – Operant Conditioning.
- Learning through observation – Modelling/Observational Learning.

Linear regression, decision trees, random forest and support vector machines are some commonly used techniques that are actually examples of supervised learning.

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

Ans-A machine learning task is the type of prediction or inference being made, based on the problem or question that is being asked, and the available data. For example, the classification task assigns data to categories, and the clustering task groups data according to similarity.
Key responsibilities :-
Machine learning typically focus on designing and implementing adaptive algorithms that drive AI systems, working in collaboration with data scientists, data engineers, and algorithm specialists. They develop

autonomous AI software and conduct tests to ensure that software generates accurate predictions.

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

Ans-Reinforcement learning is all about gamifying the learning process. This type of machine learning uses a reward-penalty method to teach an AI system. If it makes the right move, it gets rewarded. If it makes a mistake, it receives a penalty.

5. Explain the term "learning as a search"?
a search through the space of all sentences in a concept description language for a sentence that best describes the data.

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

The objective of machine learning in business is not only for effective data collection, but to make use of the ever increasing amounts being gathered by manipulating and analysing it without heavy human input. Data science focuses on solving domain-specific problems, while Machine learning focuses on building models that can generically fit a problem context. Data science is a superset of Machine learning, data mining, and related subjects.

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

Real-World Examples of Machine Learning (ML)

- Facial recognition
- Product recommendations
- Email automation and spam filtering
- Financial accuracy
- Social media optimization
- Healthcare advancement
- Mobile voice to text and predictive text
- Predictive analytics.

8. Provide an example of the abstraction method.

Abstraction in machine learning refers to the process of simplifying complex data or concepts so that a model or algorithm can understand and make predictions about them. Think of it like breaking down a big problem into smaller, more manageable parts.For example, imagine you want to create a machine learning model that can recognize different types of animals in pictures. One way to do this would be to break down the problem into smaller parts, such as identifying specific features of animals (e.g. fur, paws, tails).

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

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

function specifies a class of problems that can be modeled and solved. Machine learning functions fall generally into two categories - supervised and unsupervised. Notions of supervised and unsupervised learning are

derived from the science of machine learning, which is a sub-area of data science.

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

classification and regression?

classification is a predictive modeling problem where the class label is anticipated for a specific example of input data. For example, in determining handwriting characters, identifying spam, and so on, the classification requires training data with a large number of datasets of input and output.

The most significant difference between regression vs classification is that while regression helps predict a continuous quantity, classification predicts discrete class labels.

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

problem that was solved using regression.

A regression is a statistical technique that relates a dependent variable to one or more independent (explanatory) variables. A regression model is able to show whether changes observed in the dependent variable are associated with changes in one or more of the explanatory variables.

Real-world examples of linear regression models

- Forecasting sales: Organizations often use linear regression models to forecast future sales. ...

- Cash forecasting: Many businesses use linear regression to forecast how much cash they'll have on hand in the future.

12. Describe the clustering mechanism in detail.

Grouping unlabeled examples is called clustering. As the examples are unlabeled, clustering relies on unsupervised machine learning.

Clustering has a myriad of uses in a variety of industries. Some common applications for clustering include the following:

- market segmentation
- social network analysis
- search result grouping
- medical imaging
- image segmentation
- anomaly detection