1.Explain the term machine learning, and how does it work? Explain two machine learning applications in the business world. What are some of the ethical concerns that machine learning applications could raise?

* **the capability of a machine to imitate intelligent human behavior**
* **image recognition**
* **in medical diagnostic**
* **spam filter**

2. Describe the process of human learning:

i. Under the supervision of experts

ii. With the assistance of experts in an indirect manner

iii. Self-education

3. Provide a few examples of various types of machine learning.

* **supervised learning,**
* **unsupervised learning,**
* **reinforcement learning**

4. Examine the various forms of machine learning.

* **supervised learning,**
* **unsupervised learning,**
* **reinforcement learning**

5. Can you explain what a well-posed learning problem is? Explain the main characteristics that must be present to identify a learning problem properly.

6. Is machine learning capable of solving all problems? Give a detailed explanation of your answer.

Machine can solve most of the problems but it is not always correct

But with the help of that they can reduce human work

7. What are the various methods and technologies for solving machine learning problems? Any two of them should be defined in detail.

8. Can you explain the various forms of supervised learning? Explain each one with an example application.

9. What is the difference between supervised and unsupervised learning? With a sample application in each region, explain the differences.

10. Describe the machine learning process in depth.

a. Make brief notes on any two of the following:

MATLAB is one of the most widely used programming languages.

ii. Deep learning applications in healthcare

iii. Study of the market basket

iv. Linear regression (simple)

11. Make a comparison between:-

1. Generalization and abstraction

2. Learning that is guided and unsupervised

3. Regression and classification

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| **Regression Algorithm** | **Classification Algorithm** |
| * **In Regression, the output variable must be of continuous nature or real value.** | * **In Classification, the output variable must be a discrete value.** |
| * **The task of the regression algorithm is to map the input value (x) with the continuous output variable(y).** | * **The task of the classification algorithm is to map the input value(x) with the discrete output variable(y).** |
| * **Regression Algorithms are used with continuous data.** | * **Classification Algorithms are used with discrete data.** |
| * **In Regression, we try to find the best fit line, which can predict the output more accurately.** | * **In Classification, we try to find the decision boundary, which can divide the dataset into different classes.** |
| * **Regression algorithms can be used to solve the regression problems such as Weather Prediction, House price prediction, etc.** | * **Classification Algorithms can be used to solve classification problems such as Identification of spam emails, Speech Recognition, Identification of cancer cells, etc.** |
| * **The regression Algorithm can be further divided into Linear and Non-linear Regression.** | * **The Classification algorithms can be divided into Binary Classifier and Multi-class Classifier.** |