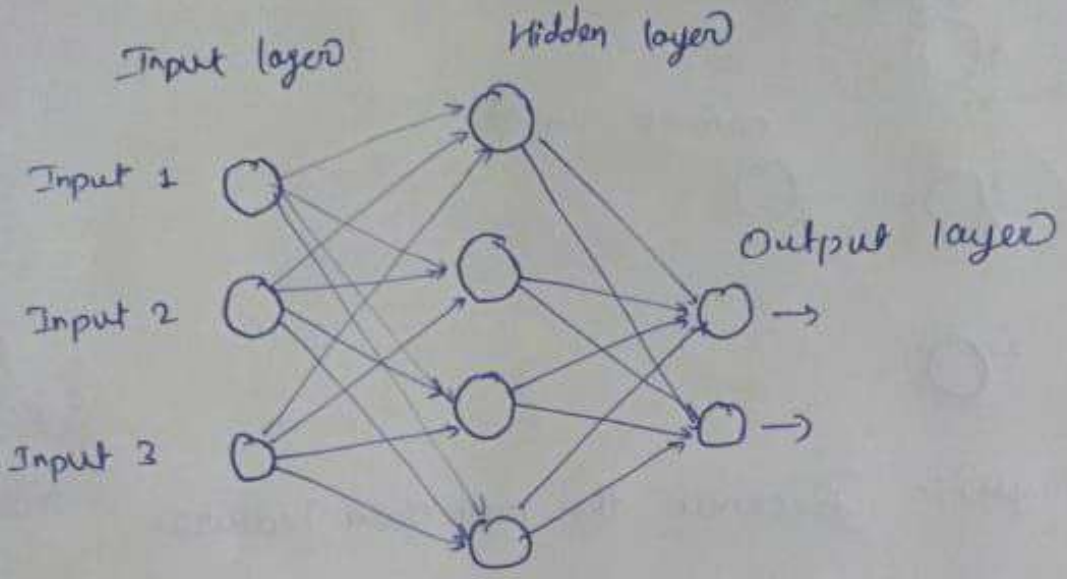
Q1 What is multi . . .

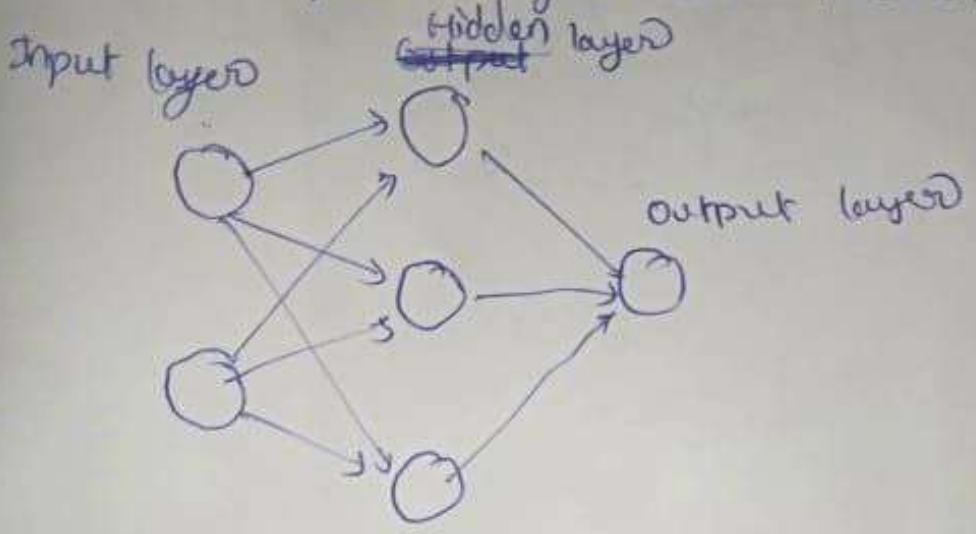
Ans. A multi layer perceptron is a type of neural network that consist of input layer, output layer and hidden layers. It processes data through these layers to learn pattern which helps in solving complex problems like image recognition and prediction



A multi layer perceptron has multiple layer of ~~perceptron~~ neurons which helps it to learn complex and non linear patterns. And ~~to~~ single layer perceptron has only input and an output layer due to which it can only solve linear seperable problems.

Q2

Ans) A multi layer perceptron includes input layer, output layer and hidden layer



Input layer :- Receive the raw data features

Hidden layer :- One or more layers where neurons process inputs through weighted connections and activation functions, learning complex patterns.

Output layer : Produces the final prediction or result.

Q3

Ans Weights are initialized in MLP using Random initialization, Xavier Initialization, He initialization. Weight initialization in MLP is important as it affects the network's ability to learn. They are also called as learnable parameters. We have to optimize weights so that we have a very low loss. If we set them all the same, the network might not learn anything useful.

Q4

Ans:- The purpose of Activation function in MLP is to enable the network to learn complex pattern and relationship in data. The decide ~~weather~~ wether a neuron should be activated or not based on the input it receives.

Commonly Used Activation function are

1) Rectified Linear Unit (RELU)
2) Sigmoid
3) Tanh
4) Softmax.

Q5

Ans:- It is a method where we iteratively adjust the weights of the network based on the difference between predicted and actual point. It work by propagating error information backward through the network layers by layer, to understand each neuron contribution to the error. Using this information, weights are updated to minimize the errors. This continues for multiple time, allowing MLP to learn from its mistakes and refine its internal representation.

Q6

Ans:- Start by accessing problems complexity and aiming to avoid overfitting or underfitting. We will start with one or two hidden layers and moderate neurons count, adjusting based on experimentation and validation performance. Regularization techniques like dropout can help overfitting.