1)A shallow neural network has only one or a few layers of neurons, while a deep neural network has many.
2)Back Propagation is the process of adjusting the weights and bias to reduce deviation of actual output from expected output.This helps in increasing the accuracy of the model.It moves from right to left direction.
3)Vanishing gradient problem is a phenomenon that occurs during the training of deep neural networks, where the gradients that are used to update the network become extremely small or vanish as they are backpropagated from the output layers to the earlier layers.If the gradients vanish, the network stops learning as it loses its ability to capture long-term dependencies.
4) The activation function decides whether a neuron should be activated or not by calculating the weighted sum and further adding bias to it. The purpose of the activation function is to introduce non-linearity into the output of a neuron.
5)Linear function,Sigmoid function,tanh function,softmax function,relu function,leaky relu function,exponential linear unit are some activation functions.For Classification problems use sigmoid,linear or tanh and softmax whereas for regression you can use leaky relu,elu.The kind of activation function you use depends on how well the function will model the data that is being used.
6)Overfitting occurs when the model cannot generalize and fits too closely to the training dataset instead. Overfitting happens due to several reasons, such as: The training data size is too small and does not contain enough data samples to accurately represent all possible input data values.You can avoid it by using the foll.techniques:
a)Using more data
b)Data augmentation
c)Feature Selection
d)Cross-Validation
e)Regularization
f)Ensembling

7)Dropout regularization is done by randomly removing some nodes from the network during training. The removed nodes do not participate in the parameter updating process.The number of nodes to be removed from the network depends on the probability value that we set during the dropout regularization.Dropout regularization is very effective at reducing overfitting in deep learning models. This is because it forces the model to learn more robust features that are not specific to the training data.

8)The convolutional layer is an important part of a CNN, and its main function is to extract features. It uses convolution operators to convolute the input image and saves the convolution results to different channels of the convolution layer.The Fully Connected layers are densely connected, meaning that every neuron in the output is

connected to every input neuron. On the other hand, in a Convolution layer, the neurons are not densely connected but are connected only to neighboring neurons within the width of the convolutional kernel.

9)Pooling layers are used to reduce the dimensions of the feature maps. Thus, it reduces the number of parameters to learn and the amount of computation performed in the network. The pooling layer summarises the features present in a region of the feature map generated by a convolution layer.

10)The RNN takes an input vector X and the network generates an output vector y by scanning the data sequentially from left to right, with each time step updating the hidden state and producing an output. It shares the same parameters across all time steps.Because of their internal memory, RNNs can remember important things about the input they received, which allows them to be very precise in predicting what's coming next. This is why they're the preferred algorithm for sequential data analysis.

11)YOLO (You Only Look Once) is a real-time object detection algorithm. It is a single-stage object detector that uses a convolutional neural network (CNN) to predict the bounding boxes and class probabilities of objects in input images.It trains the model and then predicts the object based on the data fed it to it in the training stage.It is used in face detection,Face recognition,Image Classification,Autonomous driving,etc.