DL ASSIGNMENT 1

Q1) the addition of individual parameters (after multiplying with their weights) at the junction is the function of summation junction. Neuron is activated after threshold and deactivated if lower than threshold.

Q2) jumps occur in function after specific input values resulting in steps in step function. In threshold function, there is only one threshold and only two output values based on threshold. Thus, there is only one step in threshold function.

Q3) inputs and weights are multiplied. Then all these are added and sent as input to activation function. Output comes from activation function.

Q4) in addition to above, bias is also added in Adeline model.

Q5) simple perceptron has limited learning capability, is slow in learning, cannot take multiple weights and inputs and hence cannot reflect many features of the learning, has no gain from cooperative learning and cannot solve linearly inseparable problem..

Q6) the linearly inseparable problem cannot be solved with linearity or straight lines. Hidden layer performs non linear transformations.

Q7) since problem cannot be solved through straight line, an additional layer (hidden layer) has to be incorporated. So, 2 layer 2 input taking neural network would solve it.

Q8)

Q9) there are only two layers, one input layer and one output layer in single layer feed forward structure of ANN. the input layer is not counted since no computation is performed here.

Q10) competitive network consists of two networks - hemming net and maxnet. While hemming net balances weights and inputs, maxnet finds perceptron with maximum value.

Q11) neural network first predicts. Then it back propagates. It calculates loss and gradient for loss function. Then it updates weights backward based on chain rule.

Q12) major advantage includes learning which is not possible by simple programmes. Major disadvantage is neural network is limited by limitations of artificial architecture and development of algorithms. It also is presently highly dependent on human beings for supervision, model selection, use case understanding etc.

Q13) biological neuron receives, transports and transfers electromagnetic signals that are capable of holding wide range of information. Relu function is zero upto a certain value and then it is linear.