1-

\*In the summation, **all features are multiplied by their weights and bias are summed up**. (Y=W1X1+W2X2+b). This summed function is applied over an Activation function. The output from this neuron is multiplied with the weight W3 and supplied as input to the output layer.

\*A threshold activation function **results in an output signal only when an input signal exceeding a specific threshold value comes as an input**

2 –

\*A step function is **a function like that used by the original Perceptron.**

**3 –**

The McCulloch-Pitts model was an extremely simple artificial neuron. **The inputs could be either a zero or a one.** **And the output was a zero or a one.** **And each input could be either excitatory or inhibitory.** **Now the whole point was to sum the inputs**.

4-

ADALINE network model is **a three-layer (input, hidden, output), fully connected, feed-forward artificial neural network architecture for classification that uses ADALINE units in its hidden and output layers**, i.e. its activation function is the sign function. The three-layer network uses memistors.

5 –

* Perceptron networks have several limitations. First, **the output values of a perceptron can take on only one of two values (0 or 1) because of the hard-limit transfer function**. Second, perceptrons can only classify linearly separable sets of vectors.
* Perceptrons only represent linearly separable problems. They fail to converge **if the training examples are not linearly separable**

6-

* Linear separability is **the concept wherein the separation of input space into regions is based on whether the network response is positive or negative**. A decision line is drawn to separate positive and negative responses.
* Hidden Layer  **allow us to model complex data thanks to their nodes/neurons**. They are “hidden” because the true values of their nodes are unknown in the training dataset. In fact, we only know the input and output.

7-

* The XOr problem is that **we need to build a Neural Network (a perceptron in our case) to produce the truth table related to the XOr logical operator**.