DWT Question Bank

1.	State the Difference between Machine learning and Deep learning based on the following parameters a.Data b.Hardware requirements c.Training time d.Data interpretation
2.	State 4 applications of deep learning.
3.	Sate 4 reasons why deep learning is getting so famous?
4.	Differentiate between a biological neuron and a perceptron.
5	Build a perceptron to predict the student success in exam based on time spent on study and sleep. Let x1=sleep time,x2=study time, w1=2, w2=6 and b=-20. Which feature contributes more towards positive prediction? Justify your answer.
6.	Use a perceptron to implement an OR gate with the following information. The line equation is x1+x2-0.5=0 and step activation function is as follows. $$f(z) = \begin{cases} 0, if\ z < 0 \\ 1\ if\ z \geq 0 \end{cases}$$
7.	Use a perceptron to implement an AND gate with the following information. The line equation is x1+x2-1.5=0 and step activation function is as follows. $$f(z) = \begin{cases} 0, if\ z < 0 \\ 1, if\ z \geq 0 \end{cases}$$
8	State the logic gates which can be implemented using a single perceptron.
9	Consider a perceptron with 3 inputs x1=1, x2=1, x3=0, the weights corresponding to the 3 inputs are w1=2, w2=-4, w3=1 and the activation function is the step function. Find the output value Y_{pred} of the perceptron.
10	State whether the perceptron given in Q9 needs to be updated for Y_{actual}=1 or not?
11	State the perceptron learnable parameters and the update rules.
12	State the effect of learning rate if it is too high and too low during training a neural network?
13	State the ideal value for the learning rate.
14	State and discuss the activation functions that can be used in a perceptron as a binary classifier?
15	State different nonlinear activation functions.
16	What is the limitation of ReLu activation function? State the variance of ReLu function.
17	What is vanishing gradient problem? Which activation functions exhibit this problem?
18	Consider a neural network with one input layer, one hidden layer with 2 neurons and one output layer with one neuron. Draw the architecture of the neural network with the given data and calculate the total learnable parameters.
19	The network parameters for the neural network in Q18 are as follows: inputs x1=0.5, x2=0.6. Weights and bias: input to hidden layer:w11=0.1,w12=0.3, w21=0.3,w22=0.4, b1=0.1,b2=0.1 Hidden to output layer: wh1=0.4,wh2=0.6, b=0.1 Calculate the output of the network in the forward propagation. Calculate the error at the output layer for the actual output Y=1.
20	State the difference between batch gradient descent, stochastic gradient descent (SGD) and Mini batch gradient descent?
21	Calculate the number of updates per epoch in Batch, stochastic and mini batch gradient descent with 1000 training samples and batch size=100.
22	Arrange the above optimization algorithms 1) from fastest to slowest convergence 2) from fastest to slowest computational time
23	What is overfitting in Neural network? How to combat over fitting?
24	State the significance of validation set in training a neural network.
25	What is the objective of using loss functions in neural network?
26	State the loss functions used in Regression Problem.
27	State the loss functions used in classification problem.

28	State the measures used for validating a classifier.
29	What is confusion matrix? Discuss the parameters of confusion matrix.
30	State the difference between specificity and sensitivity.