Total number of printed pages: **Programme(UG)/7th Semester/UCSE713**

2022

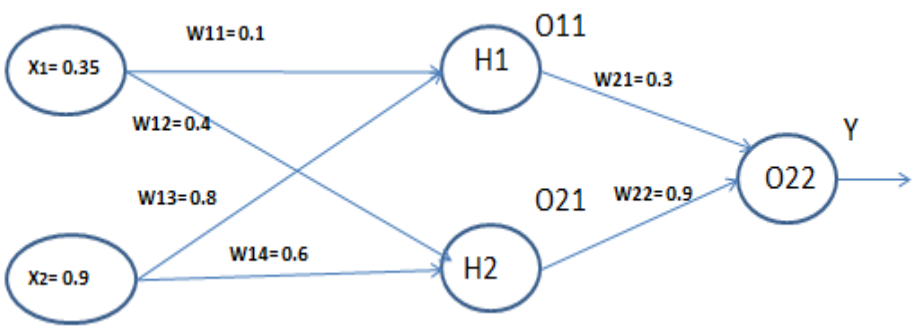
Deep learning & Neural network

Full Marks: 100

Time: Three hours

Answer any Five questions.

1.	i.	Explain the various types of activation functions in details. What is the need of activation function?	10
	ii.	Explain Vanishing Gradient Problem and Exploding Gradient problem. What are the solution to these.	10
2.	i.	Draw and explain the architecture of convolutional network .	10
	ii.	Discuss various weight initialization techniques.	10
3	i.	Draw the neural network architecture and calculate the output of the network with following inputs and weights values using the activation functions i. Binary Sigmoid ii. Bipolar Sigmoid iii. ReLU **[x1, x2, x3, x4]=[0.8, 0.6, 0.4, 0.5]** and **[w1, w2, w3, w4]= [0.1, 0.3, -0.2, 0.33] with bias b =1.**	10
	ii.	What are the feed forward and feed backward network, explain with the help of diagram.	10
4.	i.	Explain Back propagation in details with the help of a diagram. Why We Need Back propagation?	5+3=8
	ii.	Assume that the neurons have a ReU activation function, perform a forward pass and a backward pass on the network. Assume that the target output y is 0.5 and learning rate is 1. Perform back propagation only once	12

			
5.	i.	Define ANN. Describe in details the various models of ANN.	15
	ii.	Explain structure of biological neurons in details.	5
6.		Write short note on	4*5=20
	i.	Drop out layers	
	ii.	Shallow and Deep NN	
	iii.	Stochastic Gradient decent	
	iv.	Chain rule of differentiation	

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