School of Computing and Informatics

|BCS 474E | Assignment I | Due: Tue 17-12-2019 |rangulu@mmust.ac.ke|

1. Given a neural network implementation of XOR shown in Figure 1 where the weights and biases are shown.

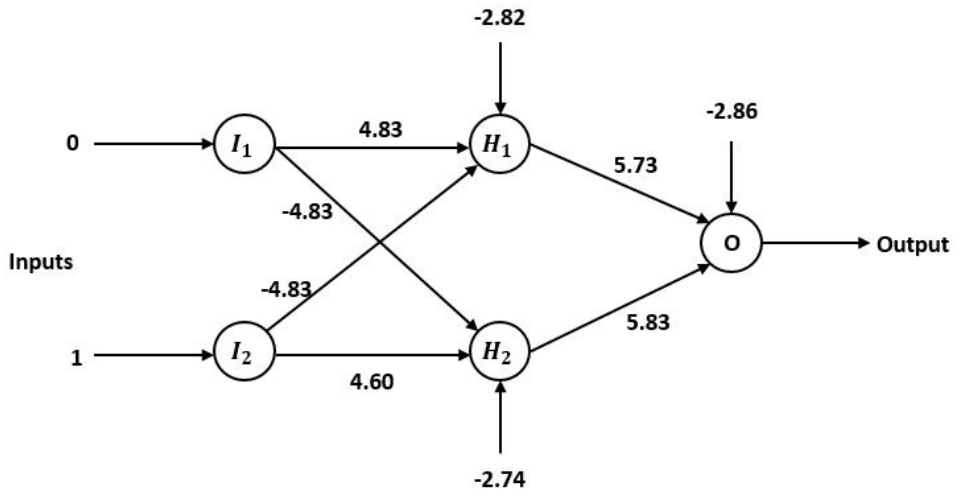

Figure 1: XOR Neural Network

Given that the inputs are as shown in Figure 1 and all nodes use sigmoid activation function. Write a C/C++/Java/Python program that implements the Neural Network shown in Figure 1. [10 Marks]

2. Figure 2 shows a perceptron The threshold function at the output node is defined as

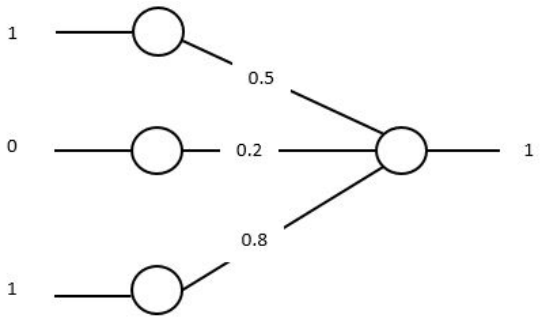

Figure 2: A Perceptron

$$f(x) = \begin{cases} 1 & \text{if } x \geq 1.2 \\ \\ 0 & \text{otherwise} \end{cases}$$

Given that the output is as shown in Figure 2, write a C/C++/Java/Python program to implement such a perceptron. Include a function that can be used to learn new eights to improve perceptron accuracy. [10 Marks]