# Review Test Submission: Module 5 Programming Assignment

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| User | BRIAN THOMAS LOUGHRAN |
| Course | EN.605.647.81.SP21 Neural Networks |
| Test | Module 5 Programming Assignment |
| Started | 2/24/21 6:44 PM |
| Submitted | 2/25/21 6:46 PM |
| Due Date | 3/2/21 11:59 PM |
| Status | Completed |
| Attempt Score | 10 out of 40 points |
| Time Elapsed | 24 hours, 1 minute |
| Results Displayed | Submitted Answers, Feedback, Incorrectly Answered Questions |

## Question 1

10 out of 10 points

Run your code to determine the initial activation function value (do not update the weights) using the following weights for each of two input values respectively: Weights are [0.24, 0.88]; Inputs are [0.8, 0.9], the desired output is 0.95, bias = 0 and eta = 5.0. What is the activation value after this iteration? Answer to 4 significant decimal digits.

Selected Answer: 0.7279

Response Feedback: You must have coded the Perceptron and Perceptron Delta Function correctly.

## Question 2

0 out of 10 points

Now restart your program with the same initial conditions and perform 75 iterations. What is the activation function value now? Remember, this activation function value is computed *after* the 75th weight update. Again, answer to 4 significant decimal digits.

Selected Answer: 0.9421

Response Feedback: You will need to make sure you update the weights according to the Perceptron Delta Function.

## Question 3

0 out of 10 points

For this question, use the same initial values as to inputs, weights, eta, but change the desired output to 0.15. Perform the Perceptron Delta Function to update the weights and do this for 30 iterations. What is the activation function value *after* the 30th iteration? Remember, each iteration encompasses updating the weights. Thus, the actual output must be based on the 30th weight update *after* which the inputs are fed forward thru the network to produce an activation function value. Answer to 4 decimal digits.

Selected Answer: 0.1522

## Question 4

0 out of 10 points

One can consider the bias $\theta$ as a weight with a corresponding input value fixed at 1. If we want to update this "weight", i.e., the bias, we can apply the same methodology in determining $\frac{\partial E}{\partial \theta}$ in the Method of Steepest Descent (MOSD) when using the Sigmoid Activation function. If our Perceptron has a single input value of $x = 2$ and an activation value of $y = 0.3$ and desired output of 0.4, what is the value of $\frac{\partial E}{\partial \theta}$?

To answer this correctly, derive the value of $\frac{\partial E}{\partial \theta}$. Answer to 3 significant decimal digits.

Selected Answer: .021

Response Feedback: Did you actually derive the expression for $\frac{\partial E}{\partial \theta}$? If you did, you should have all the proper signs.

← **OK**