



# COMSATS University Islamabad, Attock Campus

## Department of Computer Science

Program: BS(AI)

<b>Fall 2023: Assignment 1</b>		<b>Course: Deep Learning (AIC467)</b>
<b>Dated: 14/09/2023</b>	<b>Due Dated: 21/09/2023</b>	<b>Marks: 10</b>
<b>Name:</b>		
<b>Note:- Don't write anything on Question Paper except your Name &amp; Reg. No.</b>		

The student will submit the hard copy to CR before due timing. The CR is responsible to submit the class assignments till due date in office.

### Question#1 [CLO-1(SO-1)] [10 Marks]

Understand the formula and run numerical examples on each.

//First take actual output and predicted output directly. Calculate the loss value. Then take the predicted output close to the actual output and calculate the loss value.

1. Regression Loss Functions
  - 1.1 Mean Squared Error Loss
  - 1.2 Mean Squared Logarithmic Error Loss
  - 1.3 Mean Absolute Error Loss
2. Binary Classification Loss Functions
  - 2.1 Binary Cross-Entropy
  - 2.2 Hinge Loss
  - 2.3 Squared Hinge Loss
3. Multi-Class Classification Loss Functions
  - 3.1 Multi-Class Cross-Entropy Loss
  - 3.2 Sparse Multiclass Cross-Entropy Loss
  - 3.3 Kullback Leibler Divergence Loss

Links:

- <https://machinelearningmastery.com/how-to-choose-loss-functions-when-training-deep-learning-neural-networks/>
- [https://medium.com/mlearning-ai/understanding-loss-functions-for-classification-81c19ee72c2a#:~:text=Loss%20functions%20\(%20or%20Error%20functions,output%20and%20the%20target%20values.](https://medium.com/mlearning-ai/understanding-loss-functions-for-classification-81c19ee72c2a#:~:text=Loss%20functions%20(%20or%20Error%20functions,output%20and%20the%20target%20values.)