

Islamic University of Technology (IUT), Department of Computer Science & Engineering
CSE 4621: Machine Learning, Quiz #01, Marks: 15, Time: 30 Minutes

1. Define the Cost Function $J(\theta)$ for a multivariate Linear Regression problem. Prove that this cost function is convex. [Marks: 05]
2. For the Gradient Descent technique, derive the weight update equation for each θ_j . Use the cost function $J(\theta)$ in the previous question. [Marks: 02]
3. How can you normalize the range of values for a feature element within the new range of -1.0 ~ 3.0? [Marks: 02]
4. Compare between Supervised, Semi-Supervised, and Unsupervised Learning approaches. [Marks: 06]