Topics for CAT 1
Deep Learning (MAT6007)

Module	Topics	Marks
1	What is neural network – Idea of computational units – McCulloch–Pitts unit and Thresholding logic – Linear Perceptron Perceptron Learning Algorithm – Convergence theorem for Perceptron Learning Algorithm – Linear separability – Feed-forward networks, input, hidden and output layers – Organization and architecture of neural networks – linear and nonlinear networks	15
2	Learning the weights – Cost functions – unit saturation – Back-propagation algorithms, gradient descent (GD) algorithm, Momentum based GD, Nestorov GD – heuristics to avoid local optima, accelerated algorithms – Batch, mini-batch, SGD algorithms – Multilayer Perceptron	20
4	Newer optimization methods for neural networks (Adagrad, rmsprop, adam)	15