Assignment 1

1. What are the different topologies in neural network?
2. Compare the performance of the computer with biological neural network in terms of speed of processing, size and complexity, storage, fault tolerance and control mechanism.
3. Differentiate between feed forward and feedback neural network.
4. Differentiate between single layer feed forward and multi layer feed forward neural network.
5. What are the main differences among three models of McCulloch Pitts, Perceptron and Adaline.

Assignment 2

1. Explain McCulloch Pitts neural model and generate the output of logic AND function by McCulloch Pitts neural model.
2. Compare and contrast the difference between supervised and unsupervised learning.
3. Explain Hebbian learning. Derive an expression for weight change in case of Widrow-Hoff rule.
4. What are the different types of learning methods? Explain briefly each of them.
5. Write short notes on
   a. Stability and convergence
   b. Activation and synaptic dynamics
   c. Recall in neural network

Assignment 3

1. Define various logical operations and characteristics of the fuzzy set.
2. Consider two fuzzy set A = {0.2/a, 0.4/b, 1/c, 0.8/d, 0/e} and B = {0/a, 0.9/b, 0.3/c, 0.2/d, 0.1/e}. Calculate the union, intersection and complement of A and B.
3. Define membership function. Using your own intuition and your own definitions of the universe of discourse, plot fuzzy membership function for the weight of people such as very light, light, average, heavy and very heavy.
4. Explain different applications of fuzzy systems.
5. Define Fuzzy Inference System and explain Mamdani's inference System.

Assignment 4

1. What is genetic algorithm? How it differs from fuzzy genetic algorithm?
2. What is neuro- fuzzy systems? Explain.
3. Explain fuzzy logic application to medicine.
4. Explain genetic algorithms in search and optimization.
5. What are the basic differences between ANN. Fuzzy Systems and Genetic Algorithm? Give some examples where these are applicable.

Assignment 5

1. Explain application of neural network in biological sequence alignment and drug design.

2. Explain application of neural network in image processing and compression.
3. Explain application of neural network in Robotics and sensors.
4. Explain application of neural network in Information retrieval system.
5. Explain pattern recognition application in detail considering face (human face) as a case.