JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST -3 EXAMINATIONS-2022
B.Tech-VIII Semester (ECE)

COURSE CODE (CREDITS): 18B1WEC851 (3) MAX. MARKS: 35
COURSE NAME: Soft Computing Techniques
COURSE INSTRUCTORS: Er. Munish Sood MAX. TIME: 2 Hours

Note: *All questions are compulsory. Marks are indicated against each question in square brackets.*

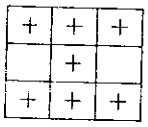
Q1) What is adaptive resonance theory? How does it solve the plasticity-elasticity dilemma of artificial neural networks? What are the different types of adaptive resonance theory networks? **(5)**

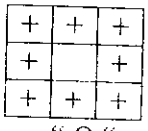
Q2) Implement **OR** gate using Widrow Hoff/ Adaline delta learning rule. Use bipolar inputs and target. Consider learning rate $\alpha = 0.1$, perform two epochs for network training. **(5)**

Q3) What is correlation learning rule in ANN? What is the "winning criteria" for a neuron ? How are the weights updated for the winning neuron? **(3)**

Q4) Implement **AND** gate using perceptron learning rule. **(5)**

Q5) Use Hebb's rule find the weights required to do the following classification of given input pattern '+' symbol represents the value 1 and empty symbol equals -1. Consider " I " belongs to member of class (so that target value = 1) and " O" does not belong to members of class (so the target value = -1). **(5)**


" I "


" O "

Q6) Construct Kohenen self organizing map to cluster 4 given vectors [0 0 1 1] , [1 0 0 0] , [0 1 1 0] and [0 0 0 1]. Number of clusters to be formed are 2. Assume an initial learning rate of 0.5. **(5)**

Q7) Write short notes on the following **(4)**

a) Credit assignment problem
b) Competitive learning rule

Q8) What is the concept of linear seperability? Implement **XOR** gate using multilayer perceptron. **(3)**