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JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- FEBRUARY 2019

B. Tech 8<sup>th</sup> Semester

COURSE CODE: 18B1WEC837

MAX. MARKS: 15

COURSE NAME: THEORY AND APPLICATION OF INTELLIGENT SYSTEMS

COURSE CREDITS: 3

MAX. TIME: 1 Hrs.

*Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.*

1. What is gradient descent method? Derive the back-propagation algorithm for a 4-layer feedforward neural network with sigmoid activation function. [6 marks]
2. How do you measure intelligence of a system? Differentiate between real neural network and artificial neural network. [5 marks]
3. A neuron  $j$  receives inputs from four other neurons whose activity levels are 10, -20, 4, and -2. The respective synaptic weights of the neurons are 0.8, 0.2, -1.0, and -0.9. Calculate the output of neuron  $j$  for the following situations.
  - a. The neuron is linear
  - b. The neuron is represented by the McCulloch-Pitts model. [4 marks]