

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

T-2 EXAMINATION, April 2018

B.Tech (BI) VI Semester

COURSE CODE: 10B11BI612

MAX. MARKS: 25

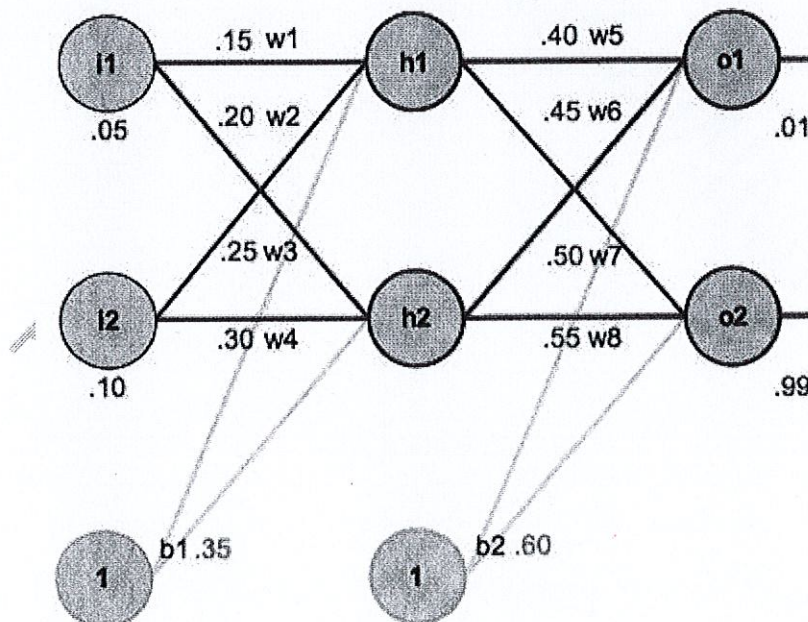
COURSE NAME: Machine learning for Bioinformatics

COURSE CREDITS: 04

MAX. TIME: 1.5 HR

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means. Marks are indicated against each question.

1. How is resilient backpropagation different from traditional backpropagation? (2)
2. Explain the role of bias input in perceptron. (1)
3. How do we circumvent the problem of local minima in Artificial neural networks? (3)
4. For the following multi-layer perceptron, you are given two inputs, two hidden neurons and two output neurons.
  - (a) Perform one forward pass and calculate the outputs of o1 and o2. (10)
  - (b) Calculate the error (SSE) of the network. (3)



5. Which are the important elements of a Hidden Markov Model (HMM)? Define each of these.(2)
  
6. Distinguish between the HMMs used for the following cases: (2+1+1)
  - (a) Identification of CpG and non-CpG island sequences given short stretches of sequences
  - (b) Given a long DNA stretch, predict the coordinates of CPG islands.
  - (c) Which of the two is more complex and why?

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