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VII SEMESTER B.TECH(COMPUTER SCIENCE AND ENGINEERING) DEGREE
END-SEMESTER EXAMINATION-NOVEMBER/DECEMBER 2014
SUBJECT: NEURAL NETWORKS AND FUZZY SYSTEMS (CSE 431)
DATE: 08-12-2014

TIME: 3 HOURS MAX.MARKS: 50

Instructions to Candidates
Note: ANSWER ANY FIVE FULL QUESTIONS. Missing data, if any may be suitably assumed.

1A. What is an artificial neural network? Explain any four benefits of artificial neural networks.
1B. Distinguish between conventional computing and neuro computing.
1C. Draw a neat diagram and explain the Perceptron model of a neuron. (5+3+2)

2A. Define learning. Draw neat diagrams to explain learning with a teacher and without a teacher. Give an example for the learning law under each category.
2B. Design a neural network using McCulloch Pitts model to realize the following logic function:

$S(a1,a2,a3)= a1(a2^c+a3)+(a1+a3)^c+a2(a1+a1^c a3^c)$.
Use +1 or -1 for the synaptic weights. Also write the truth table. (5+5)

3A. What are the pattern recognition tasks that can be performed by the feedback neural networks?
3B. Consider the network given below. Assume threshold activation function and verify whether the network can solve the XOR problem or not.

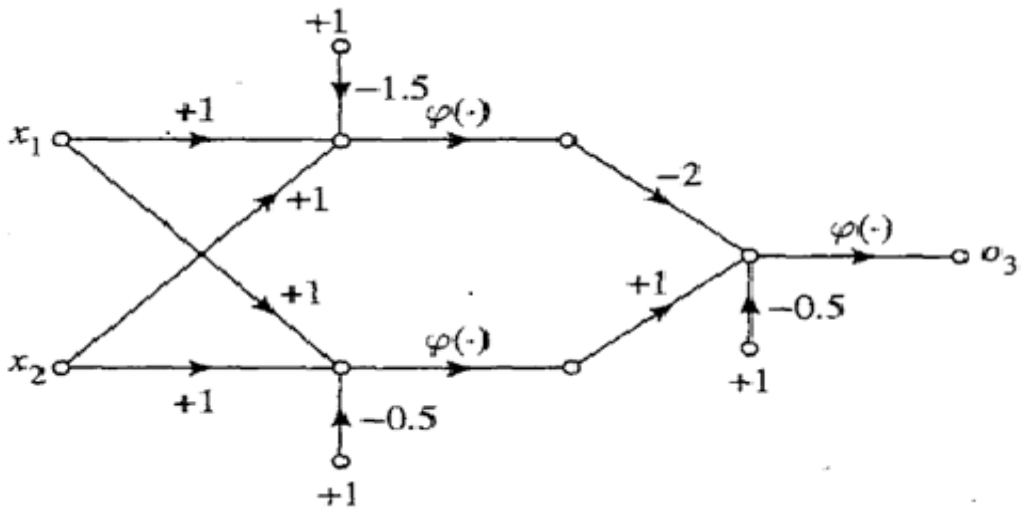

Fig. 3b (6+4)

4A. Explain the following with regard to back propagation algorithm:
i) Stopping Criteria.
ii) Sequential and batch modes of training.
4B. Explain the steps involved in Principal component analysis.
4C. What is an orange recognizer? (4+3+3)

5A. What is a Hamming network?
5B. What are the properties of fuzzy sets?
5C. A and B are two fuzzy sets defined as follows:
A={(F,0.4),(E,0.3),(X,0.1),(Y,0.1),(I,0.9),(T,0.8)}
B={(F,0.99),(E,0.8),(X,0.1),(Y,0.2),(I,0.5),(T,0.5)}
Find the following:
i) A-B
ii) A⊕B (3+3+4)

6. Write short notes on the following:
i) Generalization.
ii) Problems with competitive layers.
iii) Self organizing map. (3+3+4)

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