CBCS SCHEME

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15EE661

Sixth Semester B.E. Degree Examination, June/July 2019
Artificial Neural Networks and Fuzzy Logic

Time: 3 hrs. Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. With a neat sketch, explain the parts of a biological neuron. **(08 Marks)**

b. With the help of a neat block diagram, explain the Rosenblatti's perceptron and its basic learning algorithm. **(08 Marks)**

OR

2 With the help of a neat schematic of multi layer feed forward back propogation network, explain the input layer computation, Hidden layer computation output layer computation. **(16 Marks)**

Module-2

3 a. Write a short note on effect of tuning parameters of the back propogation neural network. **(08 Marks)**

b. Explain about Heterocorrelators and the energy fucntion for BAM. **(08 Marks)**

OR

4 a. Explain about the selection of the following parameters in back propogation networks.
i) Number of hidden nodes
ii) Momentum co-efficient
iii) Learning co-efficient
iv) Sigmoidal gain. **(08 Marks)**

b. Define associative memory. What are the two types of associative memories? Define them. **(03 Marks)**

c. Write a short note on Autocorrelators. **(05 Marks)**

Module-3

5 a. Define stability and plasticity of a network. **(02 Marks)**

b. With a neat schematic, explain the ART 1 architecture and its special features. **(14 Marks)**

OR

6 a. List out any two questions posed by the "stability plasticity ditemma and How to solve it? **(06 Marks)**

b. Draw a neat schematic of the ART 2 architecture. **(10 Marks)**

Module-4

7 a. Define the following with examples for crisp sets
i) Universe of discourse ii) set iii) Vennu diagram
iv) Cardinality v) memebership vi) Family of set. **(06 Marks)**

b. Given three sets A, B, and C. Prove De Morgan's law using Venn diagram. Sets A, B, C are crisp sets. **(10 Marks)**

OR

8 a. Explain the difference between Fuzzy sets and crisp sets. **(02 Marks)**

b. Explain the following fuzzy set operations with examples.
i) Union ii) Intersection iii) Compliment iv) Equity
v) Power of fuzzy set vi) Product of two fuzzy sets vii) Disjunctive sum. **(14 Marks)**

Module-5

9 a. Consider two propositions
P : water boils at 90°C
Q : sky is blue
Prepare a Truth table for the connectives $\wedge, \vee, \sim, \Rightarrow, =$ for the following combinations of P and Q and find whether $(P \vee Q) \Rightarrow (\sim P)$ is a tautology?

P	Q
T	T
T	F
F	F
F	T

(06 Marks)

b. Define the following with respect to predicate logic with example.
i) Constants ii) Variables iii) Predicates iv) Quantifiers v) Functions. **(10 Marks)**

OR

10 Explain fuzzy based Air Conditioner Controller System. **(16 Marks)**

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