Printed Pages: 4 **EBM-803**

(Following Paper ID and Roll No. to be filled in your Answer Books)	
Paper ID : 101806	**Roll No.**

B.TECH.

Theory Examination (Semester-VIII) 2015-16

ARTIFICAIL INTELLIGENCE & ITS APPLICATIONS IN BIOMEDICAL ENGINEERING

Time : 3 Hours ***Max. Marks : 100***

Note: (i) All symbols have usual meaning.

(ii) Assume any relevant data, if missing.

Section-A

1. Attempt all parts. All parts carry equal marks. Write answer of each part in short. (2×10 = 20)

(a) Describe briefly supervised learning.

(b) What are Dendrites?

(c) What are the types of Sigmoidal Functions?

(d) Explain different parts of human brain.

(e) Explain briefly Hebbian learning.

(f) Explain membership function in Fuzzy logic.

(g) What do you mean by fuzzification?

(h) Define Defuzzification.

(i) List three operation in GA.

(j) Write two applications of Genetic Algorithm in Biomedical.

Section-B

2. Attempt any 5 questions from this section. (10×5 = 50)

(a) Develop a Perception training Algorithm.

(b) Explain the process of learning in radial basic function network.

(c) Explain Back propagation training method along with its limitation.

(d) Explain various strength and weakness of neural network and fuzzy logic.

(e) Compare various difuzzification methods.

(f) Consider the fuzzy sets &define on the interval X=[0,5] of real numbers ,by the membership grade function ì(x)=XX+1, ìB˜(x)=2-x.Determine the mathematical

formula and graphs of the membership grade functions of each of the following sets.

(a) Ac,Bc. (b) A U B (c) (A U B)c.

(g) Suppose a genetic algorithm uses chromosomes of the form x=abcdefgh with a fixed length of eight genes.Each genes can be digit metween 0 and 9.Let the fitness function of x individual calculated as

f(x)=(a+b)-(c+d)+(e+f)-(g+h)

and let the initial population consist of four individuals with the following chromosomes :

x1=65413532, x2=87126601, x3=23921285, x4=41852094

Evaluate the fitness of each individual ,showing all your working,and arrange them in order with the fittest first and the least fit last.

(h) How Genetic Algorithm is different from traditional algorithms?

Section-C

Note: Attempt any 2 questions from this section. (15×2 = 30)

3. Describe Adaptive resonance theory with an example.

4. Using your own intuition and your own definitions of the universe of discourse ,plot fuzzy membership functions of the following variables of temperature (Cold, Mild hot, Hot ,Very hot)

5. Write short notes on

   (a) Adaptive Fuzzy System.

   (b) Clustering

   (c) Crossover.