ME semI (CBCGS) computer NOV-Dec 2016

CI

15|12|16

Q.P. Code : 825801

(3 Hours) **[Total Marks : 80**

N.B. : (1) **Question** No.**1** is **compulsory**.
(2) Attempt any **three** questions from remaining **five** questions.
(3) **Figure** to the right indicate **full** marks
(4) Assume suitable data whenever required.

1. Attempt any **four**
   (a) Consider the two fuzzy sets: **5**
   long pencils={0.1/ pencil1 + 0.2/pencil2 + 0.4/pencil3+ 0.6/pencil4+ 0.8/pencil5 +, 1.0/pencil6}
   medium pencils ={1.0/pencil1, 0.6/pencil2, 0.4/pencil3, 0.3/pencil4, 0.1/pencil5}
      (i) Determine the union of the two sets.
      (ii) Determine the intersection of the two sets.
      (iii) Determine a set NOT long pencils.
   (b) Describe mutation and crossover operators with example. **5**
   (c) With diagram, show activations functions used in Neural network. **5**
   (d) Describe Single Discrete Perceptron training Algorithm(SDPTA). **5**
   (e) Show Mc-culloh Pitt neuron to implement AND gate. **5**

2. (a) Explain with example how the crisp input is fuzzified? What is a role of\inference engine and fuzzy rule base in a fuzzy controller? **10**
   (b) Describe Binary SVM in brief. **10**

3. (a) Describe different methods of Selection used in Genetic Algorithms. Support your answer with example. **10**
   (b) Why hidden layer is required in neural network? **10**

4. (a) Consider the following two discrete fuzzy sets, temperature is high-t and humidity is fairly high-h. **10**

t	20	30	40
$\mu_A(t)$	0.1	0.5	0.9

h	20	50	70	90
$\mu_B(h)$	0.2	0.6	0.7	1

[TURN OVER]

(i) Construct relation R(t,h), If we have a fuzzy rule "If temperature is high, then humdity is fairly high"

(ii) Determine the humidity for the set temperature is very high? Use max-min composition.

t	20	30	40
$\mu_A(t)$	0.01	0.25	0.81

(b) Demonstrate Genetics with example. **10**

5. (a) Describe in brief Single Solution Particle Swann Optimization algorithm. **10**

(b) Perform two training steps using the Hebbian learning rule for c = 0.5 **10**
Train the network using the following patterns.
$X_1=[2\ 0\ 1]^t$, $X_2=[1\ -1\ 0.5]^t$, $X_3=[-1\ -1\ 1]^t$, $X_4=[-2\ -1\ 1]^t$. Initial vector $W=[1\ -1\ 1]^t$

6. Solve any **two**

(a) Find defuzzified output using any five methods of defuzzification for following figure. **20**

(b) Write short note on Color Recipe prediction- Single MLP approach.

(c) How ANT Colony algorithm can be used to optimize TSP problem?

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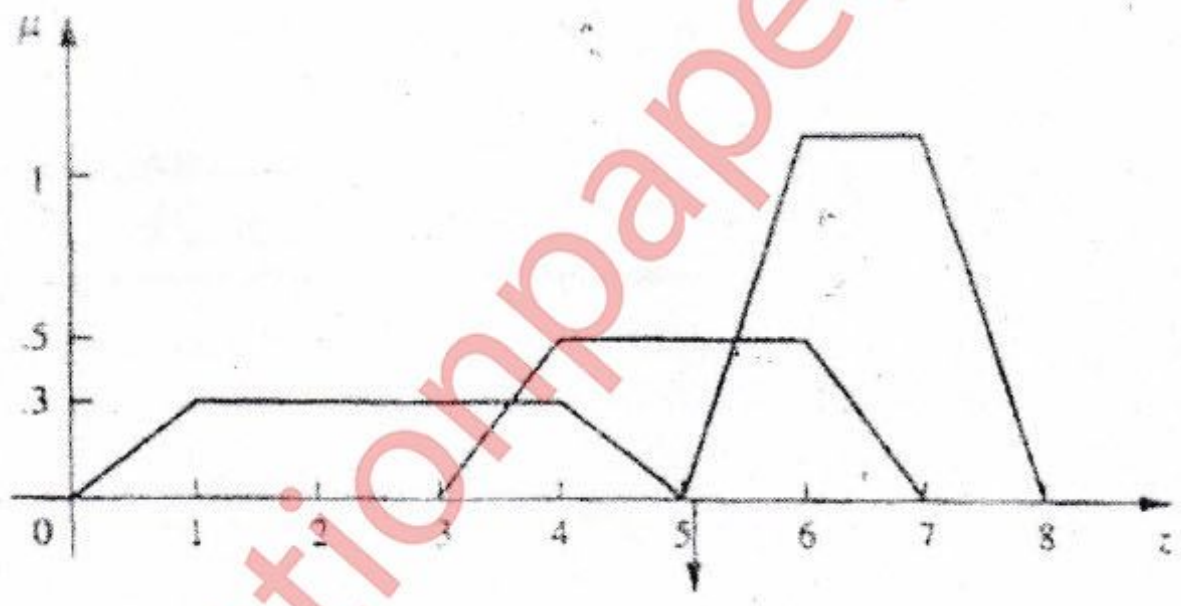
6. Solve any **two**

(a) Find defuzzified output using any five methods of defuzzification for following figure.



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