Printed Pages: 2 **NEC035/NIC035**

(Following Paper ID and Roll No. to be filed in your Answer Book)
PAPER ID: Roll No.

B. Tech.

(SEM. VII) THEORY EXAMINATION 2016-17

APPLIED FUZZY ELECTRONIC SYSTEMS

Time: 3 Hours ***MaxMarks: 100***

Section A

1. Attempt all Parts (10X2=20)

a) What are the two motivations for developing fuzzy logic?
b) What is possibility degree in fuzzy set?
c) Name various types of Fuzzy rule based models.
d) Give an example of fuzzy mapping rule related to your daily life.
e) What are the various design issues in Fuzzy Control?
f) Enlist the different design process of Control Engineering.
g) Explain Defuzzification.
h) What is the principle of incompatibility?
i) What is Extension Principle?
j) Explain Crisp Function.

Section B

2. Attempt any five of the following questions (10X5=50)

a) Explain the method of fuzzy to crisp conversion using an appropriate example.
b) Describe DSW algorithm with a suitable example.
c) Explain Vertex method for continuous valued fuzzy variable.
d) How does a linguistic variable differ from a symbolic variable in conventional AI system? Also, compute the value of adding the following two fuzzy integers:

A1 = 0.2/2 + 0.5/3 + 1/ 4 + 0.6/5 + 0.3/6
A2 = 0.3/0 + 0.7/1 + 1/ 2 + 0.8/3 + 0.4/4

e) Let X = 6.3/3 + 1/ 4 + 0.5/6
  i. Using a compositional rule of inference, compute the output of the Mamdani model before defuzzification.
  ii. Using the SAM model, compute defuzzified output.
f) Explain Sugeno- Takagi Architecture in detail.
g) What are the steps involved in fuzzy rule based inference? Also, illustrate the tradeoff between precision & cost using a problem.
h) Write short note on (i) Fuzzy Flip Flop , & (ii) Crisp Function Mapping.

Section C

Attempt any two of the following questions (15X2=30)

3. Explain how fuzzy logic can serve as a tool in developing intelligent control system. Also, describe the concept of stability for the TSK model.
4. Under what condition will the Godel implication satisfy criteria II-2?Also,prove that if A & B are the two fuzzy events of sample space S, then: P (A/B) + P (A^c/B) = 1
5. Using the axioms of t-norms, show that all t-norms are bounded above by min, & bounded below by drastic product, i.e. $t_i(x,y) \leq t(x,y) \leq \min(x,y)$.