Name :
Reg No :

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

07 THRISSUR CLUSTER

SECOND SEMESTER M.TECH. DEGREE EXAMINATION APRIL 2018

Chemical engineering

Process Control

07CH6110 FUZZY SYSTEMS AND CONTROL

Time : 3 hours **Max.Marks: 60**

Answer all six questions. Part 'a' of each question is compulsory.

Answer either part 'b' or part 'c' of each question

Q.no.	Module 1	Marks
1a	What are activation functions and different types of activation functions	**4**
	Answer b or c	
b	What are the appliances of artificial intelligence in process modelling and simulation?	**5**
c	What are the appliances of artificial intelligence in process engineering?	**5**

Q.no.	Module 2	Marks
2a	What are artificial neural networks and why are they used.	**4**
	Answer b or c	
b	Write the input layer computation of multilayer neural networks.	**5**
c	What are recurrent networks?	**5**

Q.no.	Module 3	Marks
3a	What are asymmetric networks?	**4**
	Answer b or c	
b	How are Hopfield networks used as associative memory	**5**
c	What are competitive networks and how does it differ from Kohonen maps.	**5**

Q.no.	Module 4	Marks
4a	What is involution and transitivity in crisp set theory.	**4**
	Answer b or c	
b	Explain the significance of fuzzy sets and how are they represented.	**5**
c	Given A = {(x1, 0.2), (x2, 0.4)} and B = {(x1, 0.6), (x2, 0.8) be two fuzzy sets defined on the universe of discourse X={x1, x2} Then find i) AUB, ii) A^c , iii) A.B, IV) A-B, V) A∩B.	**5**

Q.no.	Module 5	Marks
5a	What is fuzzy number? Explain with an example.	**5**
	Answer b or c	
b	Explain Cartesian product with an example.	**7**
c	If A = {(x1, 0.2), (x2, 0.4), (x3, 0.8) } and B = {(y1, 0.3), (y2, 0.6) be two fuzzy sets defined on universe of discourse X= {(x1,x2,x3)} and Y={(y1,y2)}, then find the fuzzy relation R.	**7**

Q.no.	Module 6	Marks
6a	Explain the dynamic properties of fuzzy controller	**5**
	Answer b or c	
b	How does inference mechanism work.	**7**
c	Describe with a case study the functioning of fuzzy controller	**7**