

University of Mumbai

Program: **Information Technology**

Curriculum Scheme: Rev2016

Examination: BE Semester VII

Course Code: **ITDLO7035**

Course Name: **Soft Computing**

Time: 2.30 hours

Max. Marks: 80

Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks (2M each)
1.	If there exist an edge from vertex i to vertex j and there is an edge pointing from vertex j to vertex i then this property is known as_____.
Option A:	Reflexivity
Option B:	Symmetry
Option C:	Transitivity
Option D:	Associativity
2.	Which of the following statement is true?
Option A:	Cartesian product of set $R \times T$ is power set of set R and T
Option B:	Cartesian product of set $R \times T$ is algebraic product of set R and T
Option C:	Cartesian product of set $R \times T$ is set of all possible ordered pair between set T and R
Option D:	Cartesian product of set $R \times T$ is set of all possible ordered pair between set R and T
3.	What is Fuzzification?
Option A:	Fuzzification is a process of converting crisp set into fuzzy set.
Option B:	Fuzzification is a process of converting Convex set into Non Convex set.
Option C:	Fuzzification is a process of converting Non Convex set into Convex set.
Option D:	Fuzzification is a process of converting fuzzy set into crisp set.
4.	A fuzzy logic controller has
Option A:	varying number of inputs
Option B:	fixed number of inputs
Option C:	infinite inputs
Option D:	no inputs
5.	Hebbian learning is _____ learning.
Option A:	Reinforcement
Option B:	Supervised
Option C:	Unsupervised
Option D:	Semi supervised

6.	Which property is not true for Artificial Neural networks?
Option A:	Non-linearity
Option B:	Adaptivity
Option C:	Linearity
Option D:	Fault tolerance
7.	In artificial neural networks, net is
Option A:	Weighted sum of its input
Option B:	Bias
Option C:	Output of activation function
Option D:	Desired response
8.	Which of the following function is linearly non separable?
Option A:	NAND
Option B:	XOR
Option C:	OR
Option D:	AND
9.	If the parents are 11000 and 10011 and if crossover site is 2, which of the following indicates one of the offspring after the crossover.
Option A:	10101
Option B:	01100
Option C:	10000
Option D:	11011
10.	A greater value of ρ the vigilance parameter leads to?
Option A:	Small clusters
Option B:	big clusters
Option C:	no change
Option D:	gigantic clusters

Q2	Solve any Two Questions out of Three (10 marks each)
A	What are the defuzzification methods in Fuzzy Logic explain any one with example.
B	Explain fuzzy composition with example.
C	Determine alpha level sets for the given fuzzy set. Consider alpha= 0.2, 0.4, 0.6, 0.7, 0.9 $A=\{0.2/x_1+0.7/x_2+0.9/x_3+0.4/x_4+0.6/x_5\}$

Q3	Solve any Two Questions out of Three (10 marks each)
A	Explain the Backpropagation Algorithm with flowchart
B	Describe Genetic Algorithms considering: Encoding, Selection, Crossover, Mutation, and Stopping Condition for Genetic Algorithms.
C	What is Linear Separability? Explain with example why single layer perceptron is not capable of solving Linearly Inseparable problems.

Q4	Solve any Two Questions out of Three (10 marks each)
A	Write short note on ART1.
B	Draw and explain ANFIS Architecture in brief.
C	Compare and contrast: ANN, Fuzzy logic and GA.