

AJ-134

April-2015

4th Year M.Sc. (CA & IT), Integrated Soft Computing

Time : 3 Hours]

[Max. Marks : 100

1. Answer the following short questions : (Any **10**) **20**
 - (1) What is soft computing ? Explain with one example.
 - (2) Explain linear inhibition structure.
 - (3) Explain sigmoid activation function.
 - (4) Why we need bias ? Explain with simple net.
 - (5) Explain perceptrone learning rule.
 - (6) Explain with architecture "Fuzzy logic control system".
 - (7) In crisp set, explain universe of discourse.
 - (8) Explain partitioning and covering, with respect to crisp set.
 - (9) What do you mean by fuzzy logic ? Explain it with example.
 - (10) How Encoding will help in genetic algorithm ?
 - (11) What is mutation ? Explain it.

2. Differentiate between following terms : (Any **four**) **20**
 - (1) Differentiate between Fuzzy set and Crisp set.
 - (2) Differentiate between Supervised and reinforcement learning.
 - (3) Differentiate between reproduction and crossover.
 - (4) Differentiate between predicat logic and prepositional logic.
 - (5) Differentiate between Brain and computer.

3. Do as directed : (Any **4**) **20**
 - (1) Perceptrone training algorithm for multiple output.
 - (2) Flow chart for Back-propagation training network.
 - (3) Explain defuzzification, with its methods.
 - (4) Explain all basic fuzzy set operations.
 - (5) Explain crossover, with any three types of crossover.

4. Do as directed.

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- (1) Apply the fuzzy Modus Ponens rule to increase result of MCA students.
 - (i) If the faculties are very good then result is very high.
 - (ii) All faculties in MCA are too good.

Let \tilde{H} (high), $\tilde{V}G$ (very good), \tilde{L} (Low), $\tilde{Q}L$ (very low) indicates all associate fuzzy sets as follows:

for $X=\{ 1,2,3,4,5,6,7,8\}$ the set of faculties and $Y=\{1,2,3,4,5,6,7,8,9,10\}$ the set of result of students.

$$\tilde{H} = \{(1,1)(2,0.7)(5,0.5)(8,0)\}$$

$$\tilde{V}G = \{(4,0.3)(7,0.2)(8,0.4)(10,0.1)\}$$

$$\tilde{L} = \{(10,0)\}$$

$$\tilde{Q}L = \{(2,0)(5,1)\}$$

- (2) Explain composition of relations with this example.

$$X=\{(x1,0)(x2,0.3)(x3,0.4)(x4,0.7)\}$$

$$Y=\{(y1,1)(y2,0)(y3,0.6)\}$$

$$Z=\{(z1,0)(z2,0.5)(z3,0.4)\}$$

5. Explain in detail : (Any 2)

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- (1) Explain Encoding with its all types of encoding with example.
- (2) Architecture and operation of FLC (Fuzzy logic control) system.
- (3) Linear seperability.
- (4) Explain properties of crisp set.
- (5) Explain Fuzzy Quantifiers and fuzzy Inference.