

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -I EXAMINATION- Oct 2017

M.Tech III Semester

COURSE CODE: 17M1WEC332

MAX. MARKS:15

COURSE NAME: COMPUTATIONAL INTELLIGENCE AND APPLICATIONS

COURSE CREDITS: 3

MAX. TIME: One Hr

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.

Q1. What is Computational Intelligence?
How it is different from Artificial Intelligence? [3]

Q2. How fuzzy logic is different from a) crisp logic b) probability theory [3]

Q3. Explain the following terms with respect to membership function [1.5]
i) The core ii) The Support iii) Convex fuzzy set

Q4. Three elements for a medicinal research are defined as [3]

$$D = \left\{ \frac{0.3}{1} + \frac{0.7}{1} + \frac{1}{2} \right\}$$

$$I = \left\{ \frac{0.5}{20} + \frac{0.75}{30} + \frac{0.6}{40} \right\}$$

$$V = \left\{ \frac{0.7}{20} + \frac{0.8}{30} + \frac{0.5}{40} \right\}$$

Find the following a) $R = D \times I$, B) $V \cup R$ C) $V \cap R$

Q5. Design a computer software to perform image processing to locate objects within a scene.
The two fuzzy sets representing a plane and a train image [4.5]

$$\text{Plane} = \left\{ \begin{array}{l} 0.2/\text{train} + 0.5/\text{bike} + 0.3/\text{boat} + 0.8/\text{plane} + 0.1/\text{house} \end{array} \right\}$$

$$\text{Train} = \left\{ \begin{array}{l} 1/\text{train} + 0.2/\text{bike} + 0.4//\text{boat} + 0.5/\text{plane} + 0.2/\text{house} \end{array} \right\}$$

Find the following

Plane \cup train b) $\overline{\text{Plane} \cup \text{train}}$ c) $\overline{\text{Plane} \cap \text{train}}$ d) $\overline{\text{Plane} \cup \text{train}}$ e) $\overline{\text{Plane} \cap \text{train}}$