

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

T-1 EXAMINATION) - Feb-2020

B. Tech. VIII Semester, ECE

COURSE CODE: 13B11EC831

MAX. MARKS: 15

COURSE NAME: Soft Computing Techniques

COURSE CREDITS: 03

MAX. TIME: 1 Hrs

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

Q.1 Find the intersection, union, and difference of the two fuzzy sets

(03)-CO-1

$$A = \left\{ \frac{1}{0} + \frac{0.8}{20} + \frac{0.65}{40} + \frac{0.45}{60} + \frac{0.3}{80} + \frac{0.1}{100} \right\}$$

$$B = \left\{ \frac{0}{0} + \frac{0.45}{20} + \frac{0.6}{40} + \frac{0.8}{60} + \frac{0.95}{80} + \frac{0.1}{100} \right\}$$

Q.2 Find the algebraic sum, algebraic product, bounded sum, bounded difference for the given fuzzy sets.

(04)-CO-1

$$A = \left\{ \frac{0}{0} + \frac{0.2}{1} + \frac{0.7}{2} + \frac{0.8}{3} + \frac{0.9}{4} + \frac{1}{5} \right\}$$

$$B = \left\{ \frac{0}{0} + \frac{0.1}{1} + \frac{0.3}{2} + \frac{0.2}{3} + \frac{0.4}{4} + \frac{0.5}{5} \right\}$$

Q.3 An athletic race was conducted and membership functions are defined based on the speed of athlete:

$$Low = \left\{ \frac{0.2}{1} + \frac{0.7}{2} + \frac{0.8}{3} + \frac{0.9}{4} + \frac{1}{5} \right\},$$

$$Medium = \left\{ \frac{0.1}{1} + \frac{0.3}{2} + \frac{0.2}{3} + \frac{0.4}{4} + \frac{0.5}{5} \right\},$$

$$High = \left\{ \frac{0.4}{1} + \frac{0.5}{2} + \frac{0.7}{3} + \frac{0.6}{4} + \frac{0.2}{5} \right\}. \text{ Find the following: (a) } R = Low \times Medium \text{ (b)}$$

$S = Medium \times High$ (c) $T = R \circ S$ using max-min composition

(05)-CO-2

Q.4 (a) List the properties of fuzzy sets (b) Classical sets and fuzzy sets (c) Fuzzification (d) Defuzzification

(03)-CO-2 & CO-1