14STP16A

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION MAY 2018
(Third Semester)

Branch-**STATISTICS**

FUZZY LOGIC

Time: Three Hours Maximum: 75 Marks

Answer **ALL** questions
ALL questions carry **EQUAL** marks (5 x 15 = 75)

a Explain the fuzzy set operations. (7)

b Discuss the application of fuzzy relations in detecting virus infected cells. (8)

OR

Explain the properties of fuzzy sets. (7)

Let $\underset{\sim}{A} = \left[\frac{1}{2} + \frac{0.5}{3} + \frac{0.3}{4} + \frac{0.2}{5}\right]$ and B = $\left[\frac{0.5}{2} + \frac{0.7}{3} + \frac{0.2}{4} + \frac{0.4}{5}\right]$ Find

(i) A (ii) B (iii) AuB (iv) An B (v) A B (vi) B **A** **(8)**

2 a Define a fuzzy equivalence relation. Give an example of a fuzzy equivalence relation. **[8]**

b Explain the Max-Min method. (7)

OR

c Explain the cosine amplitude method with an example. (15)

3 a Discuss the features of the membership function with examples. (15)

OR

b Explain : (i) Intuition (ii) Inference (iii) Rank ordering. (15)

4 a Suppose we have a crisp set A = {0, 1} defined on the universe X = {-2, -1,0, 1,2} and a simple mapping y = |4x| + 2 . Find the resulting crisp set B on an output universe Y using the extension principle. (7)

' b Explain the fuzzy transform. (8)

OR

c Let A = $\frac{0.2}{1} + \frac{1}{2} + \frac{0.7}{4}$ and B = $\frac{}{1}$ Determine the membership values for the algebraic product mapping. (5)

d Discuss the application of extension principle to the harmonic function x = cos(w t), (10)

5 a Explain the various forms of tautologies in fuzzy logic. (8)

b Explain the application of fuzzy logic in evaluating a new invention to determine its commercial potential. (7)

OR

c Write a short note on : (i) Contradiction (ii) Equivalence (iii) Exclusive OR (iv) Exclusive nor. (10)

d Discuss about the logical proof with an example. (5)