

2020

**MATHEMATICS**

**Semester-III Examination (DODL)**

**Paper : MATC-3.3**

**[Fuzzy Set Theory, Computer Programming in "C"]**

Full Marks : 50

Time : 2 Hours

*The figures in the right-hand margin indicate marks.*

*Candidates are required to give their answers in their own words as far as practicable.*

*Symbols have their usual meanings.*

**Block-I**

**[Fuzzy Set Theory]**

**(Marks : 20)**

Answer any **two** questions :

10×2=20

1. a) Define interval union and interval hull of two intervals  $I$  and  $J$ . Show by a counter example that the union of two intervals need not be an interval.
- b) Define midpoint of an interval  $I$ . State the subdistributivity law of intervals. Show that the distributive law does not hold for intervals.

2+3+1+1+3=10

*[Turn over]*

2. a) State and prove the First Decomposition theorem for Fuzzy sets.
- b) State the relationship between

$$\bigcup_{i \in I} A'_a \text{ and } \left( \bigcup_{i \in I} A^i \right)_a$$

Does some analogous relationship hold if the union is replaced by intersection? Justify your answer.

5+1+4=10

3. a) Show that  $A_a = \bigcap_{b < a} A_b = \bigcap_{b < a} A'_b$
- b) Find the max-min composition of the following fuzzy relations:

$$R_1 = \begin{bmatrix} 0.6 & 0.5 \\ 1 & 0.1 \\ 0 & 0.7 \end{bmatrix} \text{ and } R_2 = \begin{bmatrix} 0.7 & 0.3 & 0.4 \\ 0.9 & 0.1 & 0.6 \end{bmatrix}$$

4+6=10

**Block - II**

**(Computer Programming in "C" (Theory))**

**(Marks: 30)**

Answer any **three** questions:

10×3=30

4. a) Write a C program to illustrate the use of the preprocessor compiler directive **#define**.

- b) Write a C program to find the addition of two numbers.  $5+5=10$
5. a) Write short notes on each of the following:
- Identifier
  - C tokens
  - Integer Data type
- b) Write down the rules for constructing real constants expressed in exponential form.  $2+2+2+4=10$
6. a) Write short notes on each of the following:
- Integer Arithmetic
  - Real Arithmetic
- b) Write a C program to illustrate a simple *if* statement.  $5+5=10$
7. a) By drawing flow chart diagrams, differentiate between **entry controlled** and **exit controlled** loops.
- b) Write a short note on the **do-while** statement  $5+5=10$
8. a) Write a C program to illustrate the use of **for** statement.

- b) List five errors in the following C program and rewrite the program correctly:

```
//C Program to find the area of a circle//
#include<stdio.h>
# include<conio.h>
main()
{
    float p,r;
    p=3.142;
    printf("Enter the value of r:")
    scanf("%d",r);
    area=p*r*r;
    printf("The area of the circle is %f.", area);
}
5+5=10
```