AR18

CODE: 18IET321   **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.Tech I Semester Regular/Supplementary Examinations, February,2022
FUNDAMENTALS OF FUZZY LOGIC

Time: 3 Hours   **Max Marks: 60**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1 Let X be the Universal set and let A,B and C sets be defined by   12M

$$A = \{(x_1, 0.9), (x_2, 0.7), (x_3, 0.6), (x_4, 0.8), (x_5, 0)\}$$

$$B = \{(x_1, 0.4), (x_2, 0.1), (x_3, 0.4), (x_4, 1), (x_5, 0.9)\}$$

$$C = \{(x_1, 0.1), (x_2, 0.5), (x_3, 0.2), (x_4, 0.2), (x_5, 1)\}.$$

Find 1. $(A-B)$ 2. $A^c \cap B$ 3. $(A^c)^c = A$ 4. $A \cup A^c \neq X$ 5. $A \cap A^c \neq \emptyset$. 6)$(A \cup B)^c = A^c \cap B^c$

(OR)

2 Consider two fuzzy sets A, B and C defined on [1,5] of real numbers by the membership   12M
grade function $\mu_A(x) = \frac{x}{x+2}$, $\mu_B(x) = \frac{1}{1+10(x-2)^2}$, $\mu_c(x) = 2^{-x}$. Find the membership
grade functions of 1. A^c, 2. B^c, 3. C^c 4. $A \cup (B \cup C)$ 5. $A \cap (B \cap C)$ 6. $(A \cup B)^c$

UNIT-II

3. Give a brief explanation on : (i) Fuzzy Propositions, (ii) Fuzzy Connectives.   12M
     (iii) Fuzzy Quantifiers, (iv) Fuzzy Inference.

(OR)

4. Let $A = \left\{ \frac{0}{-2}, \frac{0.5}{-1}, \frac{1}{0}, \frac{0.5}{1}, \frac{0}{2} \right\}$, $B = \left\{ \frac{0}{0}, \frac{0.6}{1}, \frac{1}{2}, \frac{0.6}{3}, \frac{0}{4} \right\}$. (1).Construct the relation for the rule "if   12M
A then B" (2). If we introduce new antecedent $A' = \left\{ \frac{0}{-2}, \frac{0.1}{-1}, \frac{0.3}{0}, \frac{0.6}{1}, \frac{1}{2} \right\}$ then using Rule P:
If x is A then y is B , Fact   Q: x is A' then estimate B' using generalized Modus Ponens
rule.

UNIT-III

5. a) Construct a fuzzy set using "Lagranges Interpolation" method for the following data: 6M
        {(0,0), (4, 0.4),(5.5,0.8), (10,1), (14,0.8), (17,0.3), (20,0)}.
    b) Explain the "Direct method with multiple experts" in construction of a fuzzy set. Give   6M
        an example.

(OR)

6. a) Explain the method of construction of fuzzy set. Give an example.   6M
    b) Explain the "Direct method with one expert" in construction of a fuzzy set. Give an   6M
   example.

7.   Define a fuzzy controller to determine the wash time of domestic washing machine,   12M
      assume that the input variables are dirt and grease on the cloth, use 3 linguistic
      variables for each of the input variable and 5 linguistic variables for output variables.
      Derive the Fuzzy Rule base and Defuzzification to indicate that if the cloths are of
      large degree then wash time will be more. Find the wash time if dirt and grease levels
      are 60 and 70 respectively.

(OR)

8. a)   Explain Fuzzy Controllers with diagram and given an example.   6M
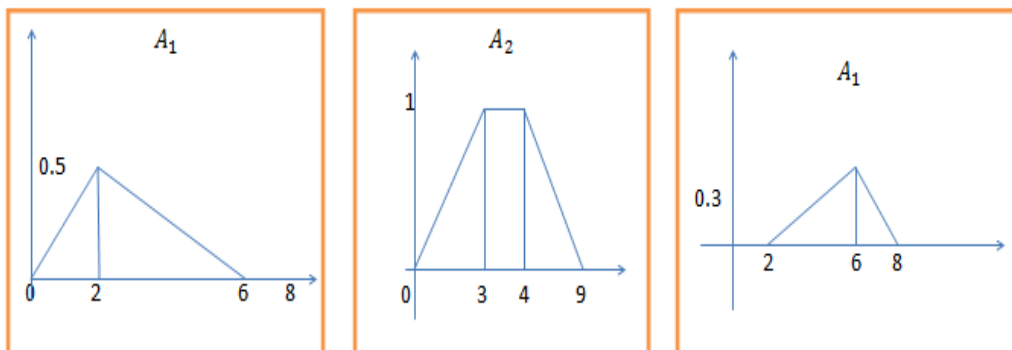   b)   Explain the working of "Fuzzy Rule Base".   6M

UNIT-V

9.   For the union of two fuzzy sets A_1 & A_2 as shown below, Calculate the defuzzified value of   12M
      Z^* using 1. Centroid Method   2. Center of Sums method   3. Mean of Maxima method
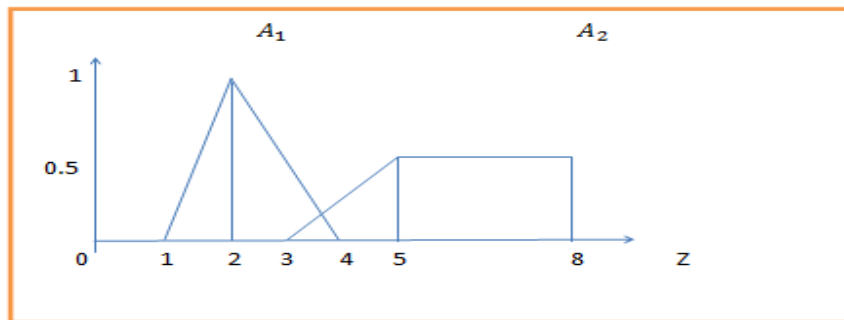
(OR)

10.   Given three fuzzy sets A_1, A_2 & A_3 as shown below, Calculate the defuzzified value of z^* 12M
      using 1. Centroid Method 2. Centre of Sums method 3. Mean of Maxima method

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.Tech I Semester Regular/Supplementary Examinations, February,2022

ELEMENTS OF BUILDING PLANNING
(Mechanical Engineering)

Time: 3 Hours   Max Marks: 60

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1.	a)	Write the Chemical composition of cement	6M
	b)	List the Testing of cement and explain one of the test	6M

(OR)

2.	a)	What are different types of aggregates for making mortar and concrete	6M
	b)	Explain the Classification of aggregate and their sources	6M

UNIT-II

3.	a)	Explain the following defects of timber (i) Shakes (ii) Rind gall (iii) Upset (iv) knots	6M
	b)	What are the causes of foundation failures? suggest the remedial measures to overcome them	6M

(OR)

4.	a)	What factors are considered for the selection of foundation for a residential building	6M
	b)	Define foundation and mention its objects?	6M

UNIT-III

5.	a)	State the merit and demerit of English and Flemish bond.	6M
	b)	Distinguish between load bearing walls and partition wall. When and where are the partition walls are used?	6M

(OR)

6.	a)	What is meant by orientation of a building ?	6M
	b)	what are factors effecting orientation of a building?	6M

UNIT-IV

7.	a)	Explain building bye-Laws with reference to (i) open space requirements (ii) Height limitations (iii) Plinth area regulations	6M
	b)	What is floor area Index ? explain its significance	6M

(OR)

8.	a)	What is floor space Index? Explain its practical significance in construction industry	6M
	b)	Explain the importance of lightening and ventilation as per building buy-Laws	6M

UNIT-V

9.	a)	Draw the two roomed residential building plan and elevation	6M
	b)	Draw the two roomed office building section and elevation	6M

(OR)

10.	a)	Draw the two roomed residential building plan and section	6M
	b)	Draw the three roomed residential building plan and elevation	6M

AR18

CODE: 18IET325   **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.Tech I Semester Supplementary Examinations, February-2022

PRINCIPLES OF MECHANICAL MEASUREMENTS

Time: 3 Hours   **Max Marks: 60**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1.	State and explain (a) Any four desirable static characteristics and (b)Two dynamic characteristics of an instrument.	12M

(OR)

2.	Define accuracy, precision, sensitivity, repeatability, tolerance, range, span and resolution.	12M

UNIT-II

3.	With a neat sketch explain working principle and operation of any one pressure gauge for measuring of pressure.	12M

(OR)

4.	a)	With a neat sketch explain working principle and operation of rota meter .	6M
	b)	Explain working principle and operation of hot wire anemometer with a neat sketch.	6M

UNIT-III

5.	Explain working principle of bimetallic thermometer with a neat diagram. And list out their advantages and disadvantages.	12M

(OR)

6.	a)	Briefly discuss working principle of liquid in glass thermometer with neat sketch.	6M
	b)	Explain working principle of pyrometer	6M

UNIT-IV

7.	Explain working principle and operation of LVDT and state their advantages, disadvantage and applications.	12M

(OR)

8.	With a sketch explain working principle and operation of capacitive transducer and state their advantages, disadvantage and application.	12M

UNIT-V

9.	With a neat sketch explain working principle and operation of stroboscope and list merits, demerits and applications.	12M

(OR)

10.	a)	Differentiate mechanical load cell with hydraulic load cell.	6M
	b)	Write a short note on strain gauge load cell.	6M

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AR18

CODE: 18IET329   SET-1

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.Tech I Semester Regular/Supplementary Examinations, February, 2022

PYTHON PROGRAMMING

Time: 3 Hours   **Max Marks: 60**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1. a) Brief introduction of history & features of Python.   6M
   b) Explain Python environment setup & modes of running programs using IDLE.   6M

(OR)

2. a) Classify the basic data types in Python with suitable examples.   6M
   b) Explain Python built-in functions & type casting with suitable examples.   6M

UNIT-II

3. a) Illustrate Python conditional suites (if, if…else, if…elif…else, nested).   6M
   b) Illustrate Python loop control statements (break, continue, pass).   6M

(OR)

4. a) Explain indentation, multiline statements, quotation, comments in Python.   6M
   b) Write a Python program to check password for a user id.   6M

UNIT-III

5. a) Explain the operation of concatenation, repetition, indexing, slicing in Python sequences.   6M
   b) Explore the working of **string** operations & functions in Python.   6M

(OR)

6. a) Explore the working of **list** operations & functions in Python.   6M
   b) Explore the working of 'user-defined' functions with a Python program.   6M

UNIT-IV

7. a) Define Error. Classify the Errors in a PYTHON program.   6M
   b) Explore the working of single and multiple exceptions with a Python program.   6M

(OR)

8. a) Define file. Describe file I/O (read, write, append) functions in Python.   6M
   b) Write a Python program to count lines, words & characters in a text file.   6M

UNIT-V

9. a) Overview of OOPs features in Python.   6M
   b) Define 'class' & 'object' with a suitable Python program.   6M

(OR)

10. a) Explain the concept of Data Hiding with a Python program.   6M
    b) Illustrates the concept of Class Inheritance with a Python program.   6M

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AR18

CODE: 18IET32A   **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B. Tech I Semester Regular/Supplementary Examinations, February,2022

ADVANCED CODING – I

Time: 3 Hours   **Max Marks: 60**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1. a) Define String. Explain String slicing with example. Also write any four string manipulation functions in python.   8M

   b) Develop a python code to solve the following problem.   4M
   Given 4 numbers, the task was to check whether fourth number can be obtained using arithmetic operators (+,-,X) between other three numbers. Knowing that an operator can be used only once. input will contain 4 integers and out will be **Yes** if you found fourth number using three otherwise **No**.
   Sample Test case:
   Input:
   3 4 5 23
   Output:
   Yes

(OR)

2. a) What is the difference between Mutable and Immutable Sequence? Explain with example.   8M

   b) Develop a python code to solve the following problem.   4M
   A pangram is a string that contains every letter of the alphabet. Given a sentence determine whether it is a pangram in the English alphabet. Ignore case. Input consists of a string and output should Print "Yes" if pangram otherwise "No".
   Sample Test case:
   Input:
   The quick brown fox jumps over the lazy dog
   Output:
   Yes

UNIT-II

3. a) Explain user defined exception with example.   6M
   b) Define Polymorphism. How it can be achieved in python? Give example(s).   6M

(OR)

4. a) Define exception. How python handle exceptions? Give example(s).   6M
   b) With example, explain constructor and destructor in python.   6M

5. a) What are Efficiency measures of an Algorithm? Explain.   6M

    b) Solve the following recurrence relation for finding time complexity   6M
        using back substitution method.
        $T(n) = 2T(n-2) + n$, $T(1)=1$

<p align="center">(OR)</p>

6. a) Explain the characteristics of an algorithm.   6M
    b) Explain the Asymptotic notations used for complexity representation.   6M
        Evaluate the time complexity of the following code.

```
m = i= 1
while(m<n):
    m=m+i
    i+=1
j=1
while(j<=m):
    print(j)
    j*=2
```

UNIT-IV

7. a) What is Josephus Circle problem. Give a solution using python.   6M
    b) Develop a python code to solve the following problem.   6M
        Given an integer array with n elements check if it contains a sub array
        having Zero-sum if such array exists print exists otherwise not exists.
        Sample Test case:
        Input: 3 4 -7 3 1 3 1 -4 -2 -2
        Output: Exists

<p align="center">(OR)</p>

8. a) Develop a python code to solve the following problem.   6M
        Count the number of prime numbers in the given range using Sieve of
        Eratosthenes.
        Sample Test case:
        Input: 50
        Output: 15
    b) Implement Extended Euclidean algorithm. Give example.   6M

UNIT-V

9. a) Implement Queue using Linked List.   8M
    b) Write an algorithm for the following operations on Double Linked   4M
        List.
        i) Delete at the begin
        ii) Traversing the list in reverse

<p align="center">(OR)</p>

10. a) Implement Stack using Queues.   8M
    b) Differentiate Array and Linked Lists.   4M

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.Tech I Semester Regular/Supplementary Examinations, February,2022
COMPETITIVE PROGRAMMING-I
(Common to All)

Time: 3 Hours   Max Marks: 60

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1. a) How to convert an HexaDecimal value into Decimal value? Explain in detail.   6M
   b) Check given number is prime or not using O(sqrt(n)).   6M

(OR)

2. a) Write the procedure for converting a Binary value into Decimal and a Decimal value into Binary?   6M
   b) Write the procedure for converting a Hexa Decimal value into Decimal and Octal value into Decimal?   6M

UNIT-II

3. a) Given an array of n sorted integers and a target, print the indices of the two numbers such that they add up to target. using two pointer approach .   6M
   input: 4
   nums = [2,7,11,15]
   target = 9
   output: 0,1
   # output: Because nums[0]+nums[1]==9
   b) A person is getting ready to leave and needs a pair of matching socks. If there are n colors of socks in the drawer, how many socks need to be removed to be certain of having a matching pair.   6M
   input: 5
   Output: 6

(OR)

4. a) What is the use of Scanner class? How to assign values for one Dimensional array using Scanner class? Explain with an example program.   6M
   b) What are the looping statements in java? Explain with a program.   6M

UNIT-III

5. a) Write a java program for sorting a given list of names in ascending order. 6M
   b) Write a java program that illustrates how java achieved Run Time Polymorphism. 6M

(OR)

6. a) Write a program for Method overloading and Method overriding? 6M
   b) Write a java program to implement the concept of importing classes from user defined package and creating package. 6M

UNIT-IV

7. a) How Exception Terminates Java Program? Explain with suitable example. 6M
   b) Write a java program that implements Arithmetic Exception using
      built-in-Exception. 6M

(OR)

8. a) Write a java program to implement the concept of exception handling by all exceptions using finally block? 6M
   b) Differentiate throw and throws with suitable program. 6M

UNIT-V

9. a) What is the time complexity of following code & explain in detail: 6M
   ```
   int i, j, k = 0;
   for (i = n / 2; i <= n; i++) {
      for (j = 2; j <= n; j = j * 2) {
         k = k + n / 2;
      }
   }
   ```
   b) Write a java program for Binary Search using Recursion. 6M

(OR)

10. a) Write a java program for Fibonacci sequence using recursive? 6M
    b) Find out both time complexity and space complexity for any algorithm? 6M

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.Tech I Semester Supplementary Examinations, February,2022

Time: 3 Hours   **FUNDAMENTALS OF FUZZY LOGIC**   **Max Marks: 70**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1. Let A be the fuzzy set of below average students, B be a fuzzy set of average students and **14 M** C be a fuzzy set of above average students defined as

$$A = \{(x_1, 0.6), (x_2, 0.5), (x_3, 0.3), (x_4, 0.2)\}, B = \{(x_1, 0.5), (x_2, 0.8), (x_3, 1), (x_4, 0.6)\}$$

$$C = \{(x_1, 0.6), (x_2, 0.8), (x_3, 0.9), (x_4, 1)\},$$ Find 1. $(A \cup B)$ 2. $(B \cup C)$ 3. $(A \cup B) \cup C$

4. $(A \cap B) \cap C$ 5. $(A \cap B)^c$ 6. $A^c \cap B^c$ 7. $A^c \cup B^c$

(OR)

2.   **14 M**

Consider a set $C = \{AITAM, GMRIT, Venkateshwara\}$ and four category of faculty

$F = \{Lectures, Asst. Professors, Assoc. Professors, Professors\}$ affecting the four

colleges and students of four different branches. $S = \{ECE, EEE, CSE, CIVIL\}$.

Let R_1 be the relation $C \times F$ and R_2 be the relation $F \times S$ as

$$R_1 = \begin{matrix} C_1 \\ C_2 \\ C_3 \\ C_4 \end{matrix} \begin{bmatrix} F_1 & F_2 & F_3 & F_4 \\ 0.6 & 0.6 & 0.9 & 0.8 \\ 0.1 & 0.2 & 0.9 & 0.8 \\ 0.9 & 0.3 & 0.4 & 0.8 \\ 0.9 & 0.8 & 0.1 & 0.2 \end{bmatrix} \text{ and } R_2 = \begin{matrix} F_1 \\ F_2 \\ F_3 \\ F_4 \end{matrix} \begin{bmatrix} S_1 & S_2 & S_3 & S_4 \\ 0.8 & 0.8 & 0.8 & 0.9 \\ 0.8 & 0.8 & 0.8 & 0.9 \\ 0.8 & 0.8 & 0.8 & 0.9 \\ 0.8 & 0.8 & 0.7 & 0.9 \end{bmatrix}$$ find the association

between the colleges and students

$R_1 \circ R_2$ by $max - min$ composition and by $min - max$ composition

UNIT-II

3. Let   X= $\{x_1, x_2, x_3\}$, $Y = \{y_1, y_2\}$ be   the   universal   sets, **14 M**
$A = \left\{\frac{0.6}{x_1}, \frac{0.9}{x_2}, \frac{1}{x_3}\right\}$, $B = \left\{\frac{0.6}{y_1}, \frac{1}{y_2}\right\}$, $B' = \left\{\frac{0.5}{x_1}, \frac{0.9}{x_2}, \frac{1}{x_3}\right\}$ be the fuzzy sets. Suppose we have

fuzzy propositions,   Rule   P: If x is A then y is B Fact   Q: y is B' then estimate A'

using generalized Modus Tollens rule.

(OR)

4. Let $X = \{0, 50, 100, 150, 200\}$, $Y = \{0, 50, 100, 150, 200\}$, two fuzzy sets on X are **14 M**

defined as: $W = weak\ stimulus = \left\{\frac{0.1}{0}, \frac{0.9}{50}, \frac{0.3}{100}, \frac{0}{150}, \frac{0}{200}\right\}$, $M = medium\ stimulus$

$= \left\{\frac{0}{0}, \frac{0.4}{50}, \frac{1}{100}, \frac{0.4}{150}, \frac{0}{200}\right\}$ and one fuzzy set on the output universe Y is given by

$S = Severe\ response = \left\{\frac{0}{0}, \frac{0}{50}, \frac{0.5}{100}, \frac{0.9}{150}, \frac{1}{200}\right\}$ (1) Find the truth value of the implication

if "weak stimulus" then "not severe response" i.e $T(W \rightarrow \sim S)$, (2) $T(M \rightarrow \sim S)$.

5. Construct a fuzzy set using "Lagranges Interpolation" method for the following data: **14 M**
   $\{(0,0),(0.5,0.2),(0.8,0.9),(1,1),(1.2,0.9),(1.5,0.2),(2,0)\}$. Draw the diagrams.

(OR)

6. Construct a fuzzy set using "Least square curve fitting" for the following data **14 M**
   $\{(0,0),(0.5,0.2),(0.8,0.9),(1,1),(1.2,0.9),(1.5,0.2),(2,0)\}$. Using

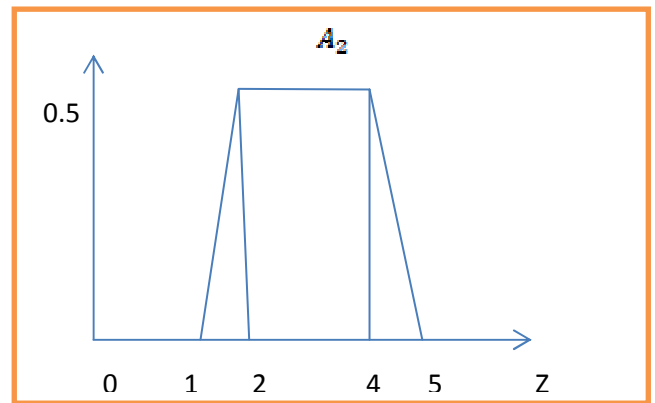$$f(x,\alpha,\beta,\gamma) = \gamma e^{\frac{-(x-\alpha)^2}{\beta}}$$
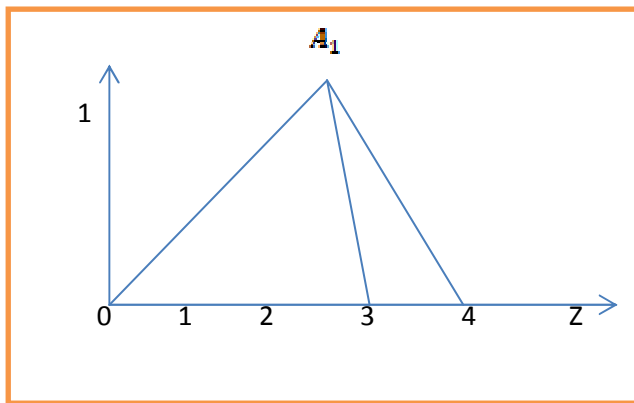
UNIT-IV

7. a) Explain Fuzzy Controllers with diagram and given an example. **7 M**
   b) Explain the working of "Fuzzy Rule Base". **7 M**

(OR)

8. a) Explain the working of "Fuzzy Inference Engine" **7 M**
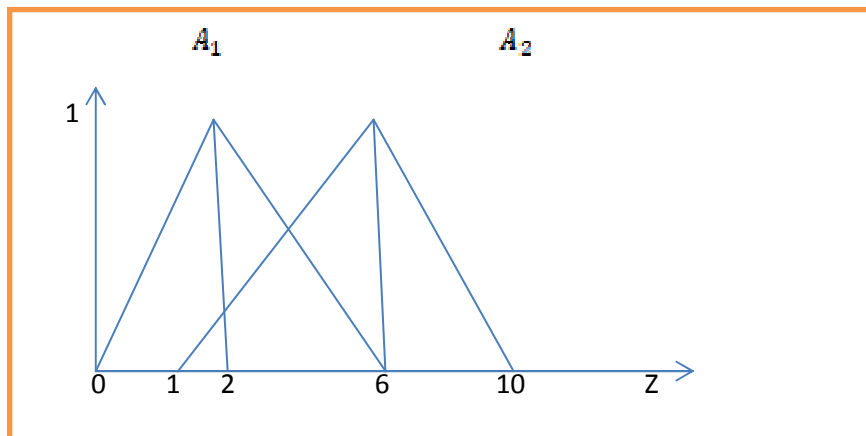   b) Explain the process of Fuzzification. **7 M**

UNIT-V

9. Fuzzy set A_1 & A_2 are given by **14 M**

Calculate the defuzzified value Z^* using 1. Centroid Method 2. Center of Sums method

(OR)

10. For the union of two fuzzy sets A_1 & A_2 as shown below, find the defuzzified value of **14 M**
    Z^* using   1. Centroid method   2. Mean of Maxima method.

AR16

Time: 3 Hours   **Max Marks: 70**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1. a) Define EIS, identify the main factors will affect the EIA during impact evaluation and analysis.   8 M
   b) Outline the major environmental parameters to be considered for evaluation in case of thermal power plants.   6 M

(OR)

2. a) Compare the differences between Rapid EIA and Comprehensive EIA.   7 M
   b) Examine the key aspects associated with the Initial Environmental Examination.   7 M

UNIT-II

3. a) Define economic externality and discuss how B/CR method is helpful in preparing EIA report.   7 M
   b) Explain about API (Air Pollution Index) to establish air quality of an industrial area.   7 M

(OR)

4. a) Demonstrate the advantages and disadvantages with the Ad-hoc method.   5 M
   b) Evaluate the Leopold interaction matrix method with an example.   9 M

UNIT-III

5. a) Analyze the threat facing by wildlife through various Land Clearing Activities.   6 M
   b) Assess a range of environmental problems to be occurring by deforestation.   8 M

(OR)

6. a) List out various environmental problems encountering by the recent expansion of National Highway-16.   7 M
   b) Elaborate the major parameters to be considered to evaluate vegetation for impact assessment by an LCA.   7 M

UNIT-IV

7. a) Discover in detail about on-site environmental audit activities.   8 M
   b) Prioritize the key points during preparation of an environmental audit report for a premier educational institute.   6 M

(OR)

8. a) Recall the main goals and general types of environmental audit.   7 M
   b) Examine the general parameters considered for evaluation and preparation of audit report at a thermal power plant.   7 M

UNIT-V

9. a) Summarize the functions of State Pollution Control Boards under Water (Prevention and Control of Pollution) Act-1974.   8 M
   b) Develop an EIA report for a medium coal mining project.   6 M

(OR)

10. a) Explain the significance of provisions provided under law and discuss the major provisions of Wildlife (Protection) Act-1972.   8 M
    b) Develop an EIA report for a quarry activity by considering Tekkali granite quarry as a case study.   6 M

AR16

CODE: 16OE3035   **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.Tech I Semester Supplementary Examinations, February,2022
INTRODUCTION TO SIGNAL PROCESSING

Time: 3 Hours   **Max Marks: 70**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1. a) Explain causality and stability of a linear time invariant system   6M
    b) For the following discrete time signals, determine whether or not the system is   8M
       linear, shift invariant, causal and stable.
       (i) $y(n)=x(n-1)+x(n+7)$ (ii) $y(n)= nx^2(n)$

(OR)

2. a) Define the terms : linearity, time invariance and causality for a discrete time   7M
       system with examples.
    b) Define ROC.State all the properties of ROC of Z transform.   7M

UNIT-II

3. a) Derive the relation between fourier transform and Z transform   6M
    b) Determine the 8-point DFT of the sequence $x(n) = \{1,1,1,1,1,1,0,0\}$.   8M

(OR)

4. a) Find IDFT of the sequence $X(k) =\{5,0,1-j,0,1,0,1+j,0\}$ 7M
    b) Determine the output $y(n)$ if $h(n)=\{1,2,1,1\}$; $x(n)=\{1,-1,1,-1\}$ by using Linear 7M
       Convolution.

UNIT-III

5. a) Find the DFT of the sequence $x[n]=\{1,2,1,2,1,2,1,2\}$ using decimation in time   8M
       algorithm.
    b) Develop a radix-2 DIF FFT algorithm for evaluating the DFT for N=8.   6M

(OR)

6. a) Compare DIT and DIF FFT algorithms   4M
    b) Find the IDFT of the sequence $X(k)=\{4,1-j2.414,0,1-$ 10M
       $j0.414,0,1+j0.414,0,1+j2.414\}$using DIF algorithm.

UNIT-IV

7. a) Write the steps to design an analog Chebyshev lowpass filter.   6M
    b) Design a Butterworth Low pass filter to meet the following specifications $\alpha_{p=}$ 8M
       $3dB,\alpha_s =18dB,f_p =1kHz,f_s =2kHz$

(OR)

8. a) Given the specifications $\alpha_{p=}$ $3dB,\alpha_s =16dB,f_p =1kHz,f_s =2kHz$.Determine the order 7M
       of the filter using Chebyshev approximation.Find H(s).
    b) Apply bilinear transformation to $H(s) = 2/(S+1)(S+2)$ with T=1 sec and find H(z).   7M

UNIT-V

9. a) Compare FIR and IIR filters.   4M
    b) The desired frequency response of a low pass filter is   10M
       $H_d(e^{jw}) =1$ for $(\pi/4)\leq I \omega I \leq \pi$. $=0$ otherwise.Determine
       $H(e^{jw})$ for N =11 using a Hammimg window

(OR)

10. a) What is a Hamming window function? Obtain its frequency domain characteristics.   6M
    b) The desired frequency response of a low pass filter is   8M
       $H_d(e^{jw}) =1$ for $(\pi/4)\leq I \omega I \leq (3\pi/4)$. $=0$ otherwise.Determine $H(e^{jw})$ for N =11
       using a Hanning window

AR16

CODE: 16OE3037   **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.Tech I Semester Supplementary Examinations, February,2022

FUNDAMENTALS OF COMPUTER GRAPHICS

Time: 3 Hours   **Max Marks: 70**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1.	a)	Explain various applications of computer graphics	10M
	b)	Explain briefly Pixel and Frame buffers.	4M

(OR)

2.	a)	Explain the construction and working of CRT Display.	7M
	b)	Write about various input devices.	7M

UNIT-II

3.	a)	Explain briefly DDA Algorithm	7M
	b)	Write about boundary fill and flood fill algorithm.	7M

(OR)

4.	a)	Explain briefly Bresenhams line drawing algorithm.	7M
	b)	Rasterize a line by using Bresenhem's algorithm for slope (m<1) having end point coordinates as (5,2) & (10,6).	7M

UNIT-III

5.	a)	Explain briefly all 2D Geometrical transformations	7M
	b)	Explain about composite transformation.	7M

(OR)

6.	a)	Define a shearing. Shear a unit square whose vertices are at (0,0) (0,2),(2,0) and (2,2) by
		    i) 2 units along x-axis
		    ii) 3 units along y-axis
			8M

	b)	Explain the homogeneous coordinates Matrix representations.	6M

UNIT-IV

7.	a)	Explain the Cohen-Sutherland line clipping algorithm with an example.	7M
	b)	Write a difference between a window and viewport.	7M

(OR)

8.	a)	Describe Sutherland-Hodgeman Polygon clipping algorithm what is its limitations	7M
	b)	Explain 3D basic transformations	7M

UNIT-V

9.	a)	What is hidden surface? Explain it with any algorithm.	7M
	b)	Explain Z-buffer algorithm	7M

(OR)

10.	a)	Discuss painter's algorithm in detail.	7M
	b)	Briefly explain back-face detection algorithm.	7M

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