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**GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING FOR WOMEN**

(AUTONOMOUS)

(Affiliated to Andhra University, Visakhapatnam)

**B.Tech. - I Semester Regular Examinations, December / January – 2025****PROBLEM SOLVING USING C**

(Common to CSE, CSE-AIML, IT and ECE)

1. All questions carry equal marks
2. Must answer all parts of the question at one place

**Time: 3Hrs.****Max Marks: 70****UNIT-I**

1. a. Explain the structure of a C program in detail with an appropriate example. [7M]  
b. Summarize all the data types available in C language with an example. [7M]  
OR
2. a. Outline the concept of arithmetic precedence in C using a program with the following expression:  
 $a+b*c/d-e$ . [7M]  
b. Develop a program in C that converts temperature in Fahrenheit to Celsius. [7M]

**UNIT-II**

3. a. Utilize the if-else statement to Develop a program in C that checks if the given number is an Armstrong number or not. [7M]  
b. Classify a person's age group and determine through a program if they are eligible to vote. A person under 18 is a minor, between 18 and 65 is an adult, and above 65 is a senior. Only adults and seniors are eligible to vote. [7M]  
OR
4. a. Compare the 'while' and 'do-while' loops to explain the differences between them with brief examples [7M]  
b. Utilize the 'for' loop to find the factorial of an integer provided by the user. [7M]

**UNIT-III**

5. a. Explain what is a function and define its structure? What are the advantages of creating functions?  
b. Write a function that returns the cube of a given number? [7M]  
OR
6. a. Explain recursive functions? Develop a recursive function to return the factorial of a given Number?  
b. Explain Pointers in C? Write a program to print the sum of the elements of an array using Pointer variable. [7M]

**UNIT-IV**

7. a. Explain structures in C, how they differ from unions, and give an example of a structure. [7M]  
b. Apply the concept of structures to develop a C program that reads and displays specific employee information, including Employee ID, Name, Date of Joining, and Salary, based on an employee ID from a list of 20 employees. [7M]  
OR
8. a. Distinguish between self-referential structures and nested structures and provide examples of both.  
b. Analyze the use of typedef and enumerated types in C with an example and demonstrate how they enhance code readability and maintainability. [7M]

**UNIT-V**

9. a. Explain the following functions in C with examples: (i) fprintf () (ii) fscanf () (iii) fgets () (iv) feof () (v) rewind () (vi) fseek () (vii) ftell (). [7M]  
b. Construct a C program to merge two files into a single file. [7M]  
OR
10. a. Summarize the binary file modes in C, explaining each mode briefly [7M]  
b. Develop a C program that demonstrates the use of feof() and ferror() functions [7M]