

[19092105-19]



GANESWARA VIDYA PARISHAD  
FOR DEGREE AND PG COURSES (AUTONOMOUS)  
ENGINEERING & TECHNOLOGY PROGRAM

IIV B. Tech. : ECE/ME

SUBJECT : COMPUTER PROGRAMMING WITH C AND

NUMERICAL METHODS

(w.e.f 2019-2020 admitted batch)

Date: 10-12-2020  
TIME: 10:00 AM TO 12:00 NOON  
Max. Marks: 50

1 Answer any Four of the following. -

$$4 \times 2 = 8 \text{ M}$$

- a) Write about primitive data types in c each with its size in bytes.
- b) Define variable. Write syntax of variable declaration.
- c) Define function. Differentiate user defined and pre-defined functions.
- d) Define structure. Differentiate union and structure.
- e) Define pointer. How to access variables using pointer.
- f) State intermediate value theorem.
- g) Define both forward difference and backward difference.

PART – B

II Answer any Three of the following.

$$3 \times 14 = 42 \text{ M}$$

- 2 (a) Write a program to implement calculator using switch-case.
- (b) Discuss various looping control structures each with its syntax. Difference between while and do-while loop.
- 3 (a) Write a program to find factorial of a number using recursion.
- (b) Write a program to implement pass-by-value and pass-by-reference.

- 4 (a) Write a program to implement array of structures to calculate percentage of marks obtained by ten students in four various subjects.
- (b) Write a program to demonstrate accessing of elements of both structure and union.
- 5 (a) Define pointer. Write a program to swap TWO numbers using pointers without using 3<sup>rd</sup> variable.
- (b) Explain pointers to structures using an example
- 6 (a) Write a program to create, open and read a file
- (b) Write a program to write even and odd numbers between 1 to 100 in to two files even.txt and odd.txt respectively.
- 7 (a) Define rate of convergence.
- (b) Using RK method compute  $y(2)$  for  $\frac{dy}{dx} = x^2y$ , when  $x_0=0, y_0=1, h=1$ .
- (c) Prove that rate of convergence of Newton-Raphson method is 2.
- 8 (a) Use Lagrange interpolation formula to compute  $f(3)$  from the following data
- | $x$    | 0  | 1  | 2  | 4 | 5 | 6  |
|--------|----|----|----|---|---|----|
| $f(x)$ | -1 | 14 | 15 | 5 | 6 | 10 |
- (b) Evaluate  $\int_0^{\pi} e^x dx$  using Trapezoidal rule and Simpson's rule and hence compare the results with actual value of  $\int_0^{\pi} e^x dx$  which method is close to actual value.

GAYATRI VIDYA PARISHAD  
COLLEGE FOR DEGREE AND PG COURSES  
(AUTONOMOUS)  
ENGINEERING & TECHNOLOGY PROGRAM  
I/IV B. Tech. :: CE / CSE  
SEMESTER - I  
SUBJECT:: COMPUTER PROGRAMMING WITH C AND  
NUMERICAL METHODS  
(w.e.f 2019 -2020 admitted batch)

Date: 22-07-2021

Max. Marks: 70

TIME: 10:00 AM TO 01:00 PM

PART - A

- 1 Answer all the following.  $7 \times 2 = 14$  M
- a) What is the difference between assignment and equality operator?
  - b) What is the difference between while and do-while loops.
  - c) What are advantages of a function?
  - d) Explain about bit fields.
  - e) What is the use of EOF?
  - f) Write Newton's backward interpolation formula.
  - g) Write Simpson's  $\frac{1}{3}$ -rule formula.

PART - B

Answer any Four of the following.  $4 \times 14 = 56$  M

- 2a) What is data type? What is the size and range of each data type? Explain with examples
- b) Write a C program, which takes two integer operands and one operator from the user, performs the operation and then prints the result. (Consider the operators +,-,\* , /, % and use Switch Statement)
- 3a) What is recursion? Write a program to find the factorial of a given number using Recursion.

- b) Explain various parameter passing techniques.
- 4a) What is structure? Explain the structure declaration and initialization and accessing Elements.
- b) What is nested structure? Write a program to create employee database using Nested structures
- 5a) What is double pointer? Explain about pointer arithmetic with example program
- b) Explain the concept of pointers to structures with suitable example.
- 6a) What is file? Explain different file operations.
- b) Write a program to copy the content of data from one file to another file.
- 7a) Use Newton's-Raphson method with  $x_1 = 1.5$  to find  $x_3$  to three decimal places given  $x^7 - 2x - 15 = 0$ .
- b) Use the Trapezoidal rule with  $n = 4$  to approximate the integral  $\int_1^5 \frac{1}{x} dx$ .
- 8a) Using  $x_0 = 0, x_1 = 0.5$ , and  $x_2 = 1$  find the Lagrange interpolation polynomials for  $f(x) = \sqrt{x+1}$  And then evaluate it at  $x = 0.75$ .
- b) Use Euler's method with step size 0.2 to compute the approximate y-values  $y_1, y_2, y_3, y_4$  And  $y_5$  of the solution of the initial value problem  $y' = 3 - xy, y(0) = 0$ .

**GAYATRI VIDYA PARISHAD**  
**COLLEGE FOR DEGREE AND PG COURSES(A)**

(Affiliated to Andhra University), VISAKHAPATNAM

**ENGINEERING & TECHNOLOGY PROGRAM**

**I/IV B. Tech. SEMESTER – I Supplementary Examinations, Apr-2022**

Common For CE and CSE

**SUBJECT :: COMPUTER PROGRAMMING WITH C AND NUMERICAL METHODS**  
**(19091105)**

(w.e.f 2019 -2020 admitted batch)

**Date: 20-04-2022 (A.N) Time:02:00 PM TO 05:00 PM Max. Marks: 70**

**PART - A**

1 Answer ALL the questions                            **7 x 2 = 14M**

- a) What is an Array? Explain the syntax for declaring an Array.
- b) Differentiate between While and do... While loops.
- c) What is Recursion?
- d) Differentiate between a Structure and Union.
- e) Explain Command Line Arguments? Explain how they are passed.
- f) Explain Newton Raphson Method.
- g) Explain Simpson's 1/3 Rule.

**PART - B**

Answer any **FOUR** the questions                            **4 x 14= 56 M**

- 2a) Explain (i) Else..If Ladder      (ii) Ternary Operator.  
 (iii) For Loop
- b) Write a Program to multiply two different Matrices with different sizes.
- 3a) What are Functions? Explain different types of Functions with syntax.
- b) Write a program to check for string palindrome without using string functions.
- 4a) Explain what is a structure? With an example, explain how structures are called inside another structure.

- b) Write a program to create a structure of students marks in a class and calculate the average marks of students in each subject.
- 5a) Write a program to append few lines of text into a File.
- b) What is a pointer? Explain how pointers are used in accessing functions. Explain with an Example.
- 6a) Explain different modes of opening a file. Write a program to take the file pointer to a specific location as defined by the user.
- b) Write a program to demonstrate the use of Command Line Arguments.
- 7a) Find the Roots of the following equation using Bisection Method.  $f(x) = x^3 - x - 2$
- b) Approximate  $\int_2^3 \frac{dx}{x+2}$  using Simpson's Rule.
- 8a) Derive the formula for Newton's Backward Interpolation.
- b) Using trapezoidal rule for  $n = 5$ , approximate the integral  $\int_0^1 \sqrt{x^2 + 1} dx$

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**GAYATRI VIDYA PARISHAD**  
**COLLEGE FOR DEGREE AND PG COURSES (AUTONOMOUS)**  
**ENGINEERING & TECHNOLOGY PROGRAM**

I/IV B. Tech. :: CE / CSE

**SEMESTER - I**

**SUBJECT :: COMPUTER PROGRAMMING WITH 'C' AND  
NUMERICAL METHODS**

(w.e.f 2020 -2021 admitted batch)

Date: 22-07-2021

TIME: 10:00 AM to 01:00 PM

Max. Marks: 70

**PART - A**

1 Answer All of the following questions  $5 \times 2 = 10M$

- a) Explain the Structure of a C Program.
- b) Explain different ways in which a function can call a value.
- c) Differentiate between structure and union.
- d) What are the different modes in which a file can be opened.
- e) Explain else if ladder with the help of an example.

**PART - B**

Answer the following questions  $5 \times 12 = 60 M$

2 (a) Write a C program to add two matrices.

(b) Explain the General forms for while and do..while.

**OR**

3 (a) Write a c program to display the name of the month given month number as input.

(b) Differentiate between Type casting and Type Conversion.

4 (a) Write a C program to find the factorial of a number using functions.

(b) What is Recursion? Explain in detail with the help of an example.

**OR**

- 5 (a) Explain the functions (a) strcpy. (b) strcat. (c) strlen in detail.  
(b) Write a c program to find if a string is palindrome or not using string functions.

6 (a) Explain with a program, how structure pointer can be passed as a function argument.

- (b) What are Bit fields? Explain with an example the usage of bit fields.

OR

7 (a) Write a c program to find the size of a union having the variables of type int, float, char [20].

- (b) Explain different ways in which members in the union can be accessed.

8 (a) Write a C program to append the contents of one file to another file.

- (b) What is a null pointer? Write a c program to demonstrate the use of a null pointer.

OR

9 (a) What are pointers? Explain how pointers are used for passing arguments.

- (b) Write a c program to perform arithematic operations on two numbers using c Pointers.

10(a) Write a C program that accepts 4 integers p, q, r, s from the user where r and s are positive and p is even. If q is greater than r and s is greater than p and if the sum of r and s is greater than the sum of p and q print "Correct values", otherwise print "Wrong values".

(b) What is an algorithm? Write an algorithm for subtracting two complex numbers.

OR

11(a) Write a program in C to print individual characters of string in reverse order.

(b) Write a C program to sort 5 numbers using functions.

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[19091105-19]

GAYATRI VIDYA PARISHAD  
COLLEGE FOR DEGREE AND PG COURSES (AUTONOMOUS)  
ENGINEERING & TECHNOLOGY PROGRAM

I/IV B. Tech. : CE / CSE

Semester - I

COMPUTER PROGRAMMING WITH 'C' AND NUMERICAL METHODS  
(w.e.f 2019 -2020 admitted batch)

Date: 16-12-2019

Max. Marks: 70

TIME: 10:00 AM TO 1:00 PM

PART-A is Compulsory.  
Answer any other FOUR questions from PART-B.

All questions carry equal marks.

**PART - A**

1 Answer the following:

$7 \times 2 = 14 \text{ M}$

- a) Explain the use of switch statement with an example.
- b) Explain the C declaration and initialization supported by C. Give examples for each section.
- c) What is recursion?
- d) Write a program which accepts a string from the user and print whether it is a palindrome or not.
- e) What is meant by structure within structure?
- f) How to define and open a file?
- g) Distinguish the Newton's forward and backward interpolations.

**PART - B**

Answer any Four of the following

$4 \times 14 = 56 \text{ M}$

- 2 (A) What is an array? Explain with an example how an array will be declared and initialized.
- (B) Write an algorithm to find whether the given number is even or odd.

[P.T.O]

3 (A) Explain the following operators with sample program.

- i) Increment and Decrement Operators
- ii) Assignment Operator

(B) Write an algorithm and C program to print sum of N natural numbers.

4 (A) Explain the parameter passing mechanism in C with example programs.

(B) Write a C program to demonstrate all arithmetic operations using functions.

5 (A) Differentiate between a structure and union

(B) Write a program to store and print the roll no, age and marks of a student using structures

6 (A) Explain the file handling functions.

(B) Write a C program to print the contents of given file.

7 (A) Discuss the advantages of using pointers with examples.

(B) Write a program to input two  $n \times n$  matrices and display their product.

Using lagrange's formula find the values of

- 8
- i)  $Y_8$ , if  $y_1=4, y_3=120, y_4=340, y_5=2544$
  - ii)  $Y_7$ , If  $y_{30}=30, y_{12}=34, y_3=38, y_{18}=42$

**GAYATRI VIDYA PARISHAD**  
**COLLEGE FOR DEGREE AND PG COURSES (AUTONOMOUS)**  
**ENGINEERING & TECHNOLOGY PROGRAM**  
**I/IV B. Tech. :: ECE / ME**  
**SEMESTER - II**  
**SUBJECT :: COMPUTER PROGRAMMING WITH 'C' AND**  
**NUMERICAL METHODS**  
(w.e.f 2020 -2021 admitted batch)

**DATE: 22-10-2021****Max. Marks: 70****TIME: 10:00 AM TO 01:00 PM****PART - A****1 Answer All of the following questions****5 x 2 = 10M**

- a) Differentiate between 1 D & 2D Array.
- b) Define an array.
- c) What is structural Initialization.
- d) Explain simson 1/3 rd rule.
- e) Identify few input & output operations of file.

**PART - B****Answer the following questions****5 x 12= 60 M**

- 2(a) Explain the block structure of a C program.
- (b) Write the general structure of C. Explain with an example.

**OR**

- 3(a) What is Recursion? Write a C program to compute polynomial co-efficient  $nCr$  using recursion.
- (b) Write a C program for evaluating the binomial coefficients using a function factorial(n).
- 4(a) What is the purpose of scanf() and printf() statement?
- (b) Write a C program in C to find the area and perimeter of a circle.

**OR**

- 5(a) What is two way selection statements? Explain if, if else, and cascaded if-else with examples.

- (b) Write a C program that reads from the user an arithmetic operator and two operands, perform the corresponding arithmetic operation on the operands using switch statement
- 6(a) Write a C program to search a name in a given list using binary search technique
- (b) Write a C program to find the greatest number from two dimensional array

**OR**

- 7(a) Write a c-program using function to check whether the given number is prime or not.
- (b) Write a C program to eliminate multiple spaces from a sentence and make it single
- 8(a) Write a C program to maintain a record of „n“ students details using an array of structures with four fields(roll no, name, marks, and grade). Assume appropriate datatype for each field. Print the marks of the student given the student name as input.
- (b) Write a C program to store and print name, USN, subject and IA marks of students using structure

**OR**

- 9(a) Define structure in C with an examples. What are different ways to access members of the structure?
- (b) Explain differences between structure and union.
- 10(a) Find the real root of  $f(x) = x^3 + x^2 + x + 7 = 0$  correct the three decimal places using bisection method.
- (b) Find the roots of  $f(x) = x^3 - 4x + 1 = 0$  using Newton Raphson method.

**OR**

- 11(a) What is the meaning of “convergence of an iterative procedure”?
- (b) Given  $dy/dx = y - x$  where  $y(0)=2$  find  $y(0.1)$  and  $y(0.2)$  correct to four decimal places.

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**GAYATRI VIDYA PARISHAD**  
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**ENGINEERING & TECHNOLOGY PROGRAM**  
**IIV B. Tech. Semester - II Regular Examinations, Sep-2022**

**Common For ECE and ME**  
**SUBJECT :: COMPUTER PROGRAMMING WITH C**  
**AND NUMERICAL METHODS (20092105)**

**Date: 21-09-2022 (F.N) Time:10:00 AM TO 01:00 PM Max. Marks: 70**

**PART - A**

**1 Answer ALL the questions**

**$5 \times 2 = 10 M$**

- a) Why and when do we use the # define directive?
- b) Define function. Write any one use of function.
- c) Distinguish between structure and union.
- d) What is the purpose of feof( ) and ferror( ) functions?
- e) Outline bisection method.

**PART - B**

**Answer ALL the questions**

**$5 \times 12 = 60 M$**

- 2a) Illustrate the process of creating, compiling and executing a c program.
- b) Write a program to print the following output using for loop.

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**OR**



**GAYATRI VIDYA PARISHAD**COLLEGE FOR DEGREE AND PG COURSES(A)  
(Affiliated to Andhra University), VISHAKHAPATNAM**ENGINEERING & TECHNOLOGY PROGRAM****IV B. Tech. Semester – II Supplementary Examinations, Sep-2022**

Common For ECE and ME

**SUBJECT :: COMPUTER PROGRAMMING WITH C  
AND NUMERICAL METHODS (20092105)**

(W.e.f 2020-2021 admitted batch)

Date:21-09-2022 (F.N) Time:10:00 AM TO 01:00 PM Max. Marks: 70

**PART – A****1 Answer ALL the questions**

- What is C language?
- List the Storage Classes in C.
- Explain Array of Structures in C.
- What is a NULL pointer in C?
- What is the difference between the = symbol and == symbol?

**PART – B****Answer ALL the questions** **$5 \times 12 = 60$  M**

- What is an array? What are the different ways of initializing the arrays? Discuss.
- Explain the structure of a C Program.

**OR**

- List and explain formatted input-output statements with example.
- Explain if and if-else decision making statements in C language.

4a) Explain the call by value mechanism with suitable example.

b) What is recursive function? In what way recursive function is different from iteration. Explain with an example.

**OR**

5a) Define string? How to declare and initialize strings with an example?

b) Explain the following string handling functions with examples:

i) strlen            ii) strcpy            iii) strcmp

6a) What are the differences between structures and union?

b) Write a C program to read, display, add and subtract two complex numbers using structures.

**OR**

7a) Explain how to define and initialize a structure with suitable examples.

b) What are bit fields? What is the use of bit fields in a Structure declaration?

8a) What is pointer in c programming? What are its benefits?

b) Explain about command line arguments with suitable examples.

**OR**

9a) What is an array of pointer? How it can be declared? Explain with an example.

b) What is a file? Explain various file operations in C.

10a) Evaluate the following expression in step by step:  $X = \frac{9}{2} + 3^4 \% 5 * 4 + 55 - 34 + 2 * 9 / 3$ .

b) Build a C program to print first 10 even numbers using any loop.

**OR**

11a) Explain the various categories of user defined functions in C with examples.

b) Write a C program to check whether the given string is a palindrome or not.

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**GAYATRI VIDYA PARISHAD**  
**COLLEGE FOR DEGREE AND PG COURSES(A)**  
(Affiliated to Andhra University), VIZAKHAPATNAM

**ENGINEERING & TECHNOLOGY PROGRAM**

**I / IV B. Tech. SEMESTER - I Regular Examinations, Apr-2022**

Common For CE and CSE

**SUBJECT :: COMPUTER PROGRAMMING WITH ‘C’ AND  
 NUMERICAL METHODS (20091105)**  
(w.e.f 2020-2021 admitted batch)

Date: 20-04-2022 (A.N) Time: 02:00pm to 05:00pm Max. Marks: 70

**PART - A**

**1 Answer ALL the questions**

$$5 \times 2 = 10\text{M}$$

- a) Explain with an example the ternary operator.
- b) Explain different categories of functions.
- c) Are array of structures possible? Justify.
- d) Explain fseek function in detail.
- e) Differentiate between while and do...while.

**PART - B**

**Answer ALL the questions**

$$5 \times 12= 60\text{ M}$$

- 2(a) Write a c program to find the maximum and minimum of three numbers using else if ladder.
- (b) Explain different Operators available in C.

**OR**

- 3(a) Write a c program to multiply two different matrices.

- (b) What is Type Conversion? With the help of an example, distinguish type casting and type conversion.

- 4(a) Write a C program to find the fibonacci numbers upto n using functions.

- (b) What are functions? Explain in detail how arrays are passed as argument to functions.

**OR**

- 5(a) Explain the following functions  
(a) strcmp    (b) strchr    (c) strstr in detail.
- (b) Write a c program to compare two strings without using string functions.
- 6(a) Explain with a program, how structures can be passed as a function argument.
- (b) Explain the different ways in which structure members can be accessed.

**OR**

- 7(a) Write a c program to find the size of a union having the variables of type int[30], float[10], char [20]
- (b) Are union within unions and array of unions possible? Explain.
- 8(a) Write a c program to convert the contents of a file from lower case to upper case and vice versa.
- (b) Write a C program to write contents to a file.

**OR**

- 9(a) Explain (i) Pointers as function arguments. (ii) Pointers to functions.
- (b) Write a c program to demonstrate the use of & (address of) and \*(value at address) operator.
- 10(a) Write a C program to print a block F using hash (#), where the F has a height of six characters and width of five and four characters.
- (b) What is a flowchart? Draw a flowchart for adding two complex numbers.

**OR**

- 11(a) Write a program in C to copy one string to another string.
- (b) Write a c program to search for a number in an array using linear search with the help of functions.

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**GAYATRI VIDYA PARISHAD**  
**COLLEGE FOR DEGREE AND PG COURSES (AUTONOMOUS)**  
**ENGINEERING & TECHNOLOGY PROGRAM**

I/IV B. Tech. :: ECE / ME

SEMESTER - II

**SUBJECT :: COMPUTER PROGRAMMING AND NUMIRECAL  
METHODS**

(w.e.f 2019 -2020 admitted batch)

**DATE: 22-10-2021**

**Max. Marks: 70**

**TIME: 10:00 AM TO 01:00 PM**

**PART - A**

- 1 Answer All of the following questions                     $7 \times 2 = 14M$
- Distinguish between Constants and Variables.
  - List out four categories of functions.
  - What is the syntax of structure declaration and initialization?  
Give example of it.
  - Distinguish between the two Dimensional array initialization and one Dimensional array initialization.
  - What is the syntax of pointers to structures.
  - Explain Newton Raphson method.
  - Explain Simpson 1/3 rule.

**PART - B**

**Answer any FOUR of the following questions       $4 \times 14 = 56M$**

- Explain any three decision making Statements with flowcharts and compare them.
- Write a program to display Fibonacci series where N is as size of input using while loop.
- Write a short notes on following concepts?
  - Recursion with example. [2M]
  - Scope and lifetime of variable. [3M]
  - Declaration and initialization of Strings. [2M]

- b) Write a C program to read and print a string titled "CPNM IS GOOD SUBJECT" without using string handling functions.
- 4a) Difference between structure and union in C and how do you justify that "Structure concept is more efficient than Union concept".
- b) Write a C program to add two complex numbers by passing structure to a function.
- 5a) What is a chain of pointers? How is it initialized? What are its use? Give an example.
- b) Write a C program to swap two floating point numbers using pointers.
- 6a) Write a short notes on following terms  
i) Error Handling using I/O operations. [3M]  
ii) Random access to files. [2M]  
iii) Command line arguments. [2M]
- b) Write a program to print contents of file using file handling function.
- 7a) Find the real root of  $f(x) = x^3 + x^2 + x + 7 = 0$  correct the three decimal places using bisection method.
- b) Using Euler's method, compute  $y(0,1)$ , given  
$$\frac{dy}{dx} = 1 - y, y(0) = 0.$$
- 8a) Difference between Euler's method and modified Euler's methods with proper example?
- b) Using Runge-Kutta method of order four, solve  $y' = x^2y^2 - y^2, y(0) = 1, y(0) = 0$  for  $x=0.2$  correct to 3 decimal places with  $h = 0.2$ .

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**GAYATRI VIDYA PARISHAD**

**COLLEGE FOR DEGREE AND PG COURSES.(A)**  
 (Affiliated to Andhra University), VISHAKHAPATNAM

**ENGINEERING & TECHNOLOGY PROGRAM**

**I/IV B. Tech. SEMESTER – I Regular Examinations, Apr-2022**

Common For CE and CSE

**SUBJECT :: COMPUTER PROGRAMMING WITH C & NUMERICAL METHODS**

(20091105)

(W.e.f. 2021-2022 Admitted Batch)

Date: 20-04-2022 (A.N) Time: 02:00 PM to 05:00 PM

Max. Marks: 70

**PART - A****1 Answer ALL the questions**

- What is type conversion? Give example.
- List various string handling functions.
- Identify what members are needed to define a structure for a bus ticket.
- How to initialize pointer variable.
- Write Newton's forward interpolation formula.

$$5 \times 2 = 10\text{M}$$

**PART - B****Answer ALL the questions**

- Illustrate the structure of c program in detail.
- Write any c program using nesting of if....else statement.

**OR**

- Write a program to print multiplication table of given number.
- Write a program to print the following output using for loop.

1	1 2	1 2 3	1 2 3 4	1 2 3 4 5
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- Write a C program to swap two numbers using call by value.

(b) Describe nesting of functions with any c program.

OR

5(a) Write a program to find largest element of given numbers

using passing arrays to functions.

(b) Demonstrate two dimensional arrays with example  
program.

6(a) Demonstrate any simple program using structures within  
structures.

(b) Write a program to print student's information using  
arrays of structures. OR

7(a) Write a program to print employee details using the  
method of sending an entire structure as a parameter to a  
function.

(b) Illustrate Unions with example.

8(a) Build a program using pointers as function argument.

(b) Demonstrate any program using array of pointers.

OR

9(a) Summarize various input/output operations on files.

(b) Write a C program to read data from a file.

10(a) Find the root of the equation  $x^3 - 5x + 3 = 0$ , using  
Newton-Raphson method and correct the result up to 3  
decimal places.

(b) Evaluate  $\int_0^1 dx / (1+x^2)$  by using Simpson's 1/3<sup>rd</sup> rule taking  
 $h=0.25$ .

OR

11(a) Use the Trapezoidal rule to evaluate  $\int_0^1 x^3 dx$ ,

corresponding five subintervals.

(b) Describe Modified Euler's method with example.

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**GAYATRI VIDYA PARISHAD**  
**COLLEGE FOR DEGREE AND PG COURSES(A)**  
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**ENGINEERING & TECHNOLOGY PROGRAM**  
**1B. Tech. Semester – II Supplementary Examinations, Sep-2022**  
**Common For ECE and ME**  
**SUBJECT :: COMPUTER PROGRAMMING WITH C AND**  
**NUMERICAL METHODS (CPNM) (19092105)**  
 (w.e.f 2019 -2020 admitted batch)

Date: 21-09-2022 (F.N)      Time: 10:00AM TO 01:00PM      Max. Marks: 70

**PART - A**

1 Answer ALL the questions       $7 \times 2 = 14$  M

- a) List out the operators in ‘C’ Language.
- b) What is the difference between Formal and Actual arguments?
- c) Write the differences between Structure and Union?
- d) Explain about the “\*”, “\*\*” and “&” keywords.
- e) What formula is bisection method? Which property is used in bisection method?
- f) List ‘C’ Tokens.
- g) Define Interpolation.

**PART - B**

Answer any FOUR of the following questions       $4 \times 14 = 56$  M

- 2(a) Define Array. How to declare and initialize 1-D and 2-D array with an example.
- (b) Write a program to find sum of the individual digits of a given number.
- 3(a) Discuss the various string functions that can be performed on Strings.
- (b) What is the difference between Call by value and Call by reference? Discuss the problems associated with each.

- 4(a) Define Structure and write the general syntax for declaring and accessing members.
- (b) Write a C program to calculate student-wise total for three students using an array of structure.
- 5(a) What is Pointer? How to initialize and declare pointer variables? Explain with examples.
- (b) Describe the process of handling errors during file operations.
- 6(a) Using Newton-Raphson's method find correct to four decimal places, the roots lying in the interval 0 and 1 for the equation  $x^3 - 6x + 4 = 0$ .
- (b) Find the value of y for  $x=0.2$  when  $dy/dx = \log(x+y)$  with the initial condition that  $y=1$  for  $x=0$  by using Euler's modified method.
- 7(a) Briefly explain about the basic data types that C language supports.
- (b) Define Recursion. Write a C program to find the factorial of a given number using recursion.
- 8(a) Describe the process of deflation and, initializing a union with an example.
- (b) Apply fourth order Runge-Kutta method to find the approximate value of  $y(0.2)$  from  $y' = y - x$ ,  $y(0) = 2$  taking  $h = 0.1$ .

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**GAYATRI VIDYA PARISHAD**  
**COLLEGE FOR DEGREE AND PG COURSES (AUTONOMOUS)**  
**ENGINEERING & TECHNOLOGY PROGRAM**

I/IV B. Tech. : ECE / ME

**SEMESTER – II**

**SUBJECT: COMPUTER PROGRMMING WITH C AND NUMERICAL  
METHODS**

(w.e.f 2019 -2020 admitted batch)

Date: 20-10-2020

Max. Marks: 50

TIME: 3:00 PM TO 5:00 PM

**PART - A**

1 Answer any Four of the following

**4 x 2 = 8 M**

a) What are two dimensional arrays? [CO 1]

b) What is nesting of functions? [CO 2]

c) Explain size of structures [CO 3]

d) What are pointer expressions? [CO 4]

e) What is error handling during I/O operations? [CO 4]

f) What is bisection method? [CO 5]

g) Explain Lagranges interpolation. [CO 5]

**PART - B**

**Answer any Three of the following**

**3 x 14= 42 M**

[CO 1]

2 (a) Describe the different types of operators in C.

(b) Explain about switch statement? Explain importance of break [CO 1] and continue in switch statement.

- 3 (a) What is a function? Explain call by value and call by reference. [CO 2]
- (b) Explain declaration and initialization of strings. [CO 2]
- 4 (a) Differentiate between structure and unions. [CO 3]
- (b) How to access structure elements? Discuss. [CO 3]
- 5 (a) What is a pointer? Discuss advantages of pointer. [CO 4]
- (b) Explain the concept of pointers to structure with suitable example. [CO 4]
- 6 (a) Discuss file handling functions. [CO 4]
- (b) Write a program to copy contents of one file to another file? [CO 4]
- 7 (a) Find the root of the following equation using Newton-Raphson [CO 5] method, correct the result upto 3 decimal places  $x^3-5x+3=0$ .
- (b) Apply Trapezoidal rule to the integral  
 $I = \int_0^1 \sqrt{1-x^2} dx$  [CO 5]  
Continually halving the interval for better accuracy.
- 8 (a) Given  $\frac{dy}{dx} = \frac{y-x}{y+x}$ ,  $y(0)=1$ , find  $y$  for  $x = 0.1$  by Euler's method. [CO 5]
- (b) Derive the formula for Newton forward Interpolation. [CO 5]

NOTE : Course outcomes (CO) which convey what the student learns from each unit of the syllabus.