

17PCD13/23

**First/Second Semester B.E. Degree Examination, June/July 2019**  
**Programming in C and Data Structures**

Time: 3 hrs.

Max. Marks: 100

*Note: Answer any FIVE full questions, choosing ONE full question from each module.***Module-1**

- 1 a. Design a general structure of C program and explain with an example. (06 Marks)
- b. What are Identifiers? Define rules to declare an identifier. Identify the following words are valid / Invalid Identifier : i) asdl23 ii) auto iii) 2K18 iv) (i) india. (06 Marks)
- c. Design a flow chart and develop a C - program to find area of a circle for the given radius. (08 Marks)

**OR**

- 2 a. Explain the formatted input and output statements in C with suitable examples. (06 Marks)
- b. With example, explain Implicit and Explicit type conversion and convert the following Mathematical Expression to C - equivalent Expression.  
i)  $\text{area} = VS(s - a)(s - b)(s - c)$  ii)  $\frac{x - y}{a + b} \frac{a}{b}$  (08 Marks)
- c. Write a C program to find largest of three numbers using ternary operator. (06 Marks)

**Module-2**

- 3 a. Explain the following selection statements with syntax and flow chart :  
i) nested if ii) else - if ladder. (06 Marks)
- b. With example bring out the differences between while loop and do - while loop. (06 Marks)
- c. Design a C program to perform operations of a simple calculator using switch statement. Provide a provision to display an error message when an attempt is made to divide a number by zero. (08 Marks)

**OR**

- 4 a. Explain the working of for loop and write a C - program to find n - Fibonacci series, where n is specified by the user. (08 Marks)
- b. Explain the following unconditional statements with syntax and example :  
i) goto ii) continue. (06 Marks)
- c. Design a C - program to read a Four - digit number from user and calculate the reverse of the number and check if the number is palindrome or not. (06 Marks)

**Module-3**

- 5 a. Define Array. Explain the methods of initializing one dimensional array with suitable examples. (06 Marks)
- b. What are Functions? Explain the following terms with example.  
i) Function declaration ii) Function definition iii) Function call. (08 Marks)
- c. What is Recursion? Write a C program to find factorial of the given number using recursion. (06 Marks)

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- 6 a. Explain the String Manipulation Functions with syntax and code fragments.  
i) strlen ii) strcmp. (06 Marks)
- b. With example explain different type of Functions based in parameters. (08 Marks)
- e. Write a C — Function to search an element in the given array using Linear search by passing array as an argument. (06 Marks)

**Module-4**

- 7 a. What is Structure? Explain the methods of declaration and initialization of structures with example. (06 Marks)
- b. Write a C — program to maintain record of n employee details using array of structures with three fields (id, name, salary) and print details of employee whose salary is greater than 5000. (08 Marks)
- c. What is a file? Explain fopen and (close functions. (06 Marks)

**OR**

- 8 a. Explain the following file operations with example :  
i) fprintf ( ) ii) fseek ( ) iii) fputc ( ). (06 Marks)
- b. Explain Structure within a structure with example. (08 Marks)
- c. Given a file "n.txt" which contains names. Write a C — program to create a new file "abc.txt" and copy the contents from "n.txt" to "abc.txt". (06 Marks)

**Module-5**

- 9 a. What are Pointers? How pointer variables are declared and initialized. (06 Marks)
- b. Explain the concept of adding and deleting nodes in the linked list. (07 Marks)
- c. Develop a C program to swap two numbers using pointers. (07 Marks)

**OR**

- 10 a. Explain different dynamic memory allocation schemes in C with example. (08 Marks)
- b. Explain any three preprocessor directives with example. (06 Marks)
- c. What is a Stack? Explain the operations on stack. (06 Marks)

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