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) *(ii* 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) area = VS(s - a)(s - b)(s - c) ii) $\frac{x}{a+b} + \frac{y}{ab}$ (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 - ifladder. **(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)**

OR

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)**