



14PCD13/23

USN

**First/Second Semester B.E. Degree Examination, Dec.2019/Jan.2020**  
**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. What are data types? Mention the different data types supported by C language, giving an example to each. (05 Marks)
- b. Write a C program which takes as input p, t, r, compute the simple interest and display the result. (05 Marks)
- c. What is an operator? List and explain various types of operators. (10 Marks)

**OR**

- 2 a. What is a token? What are different types of tokens available in C language? Explain. (08 Marks)
- b. Write C expressions corresponding to the following (Assume all quantities are of same type)

i)  $A = \frac{5x + 3y}{a + b}$

ii)  $B = \sqrt{s(s-a)(s-b)(s-c)}$

iii)  $C = e^{|x+y-10|}$

iv)  $D = x^{25} + y^{35}$

v)  $X = \frac{e^{\sqrt{x}} + e^{\sqrt{y}}}{x \sin \sqrt{y}}$

vi)  $X = \frac{-b + \sqrt{b^2 - 4ac}}{2a}$

(06 Marks)

- c. What is the value of 'x' in following code segments? Justify your answers :

i) int a, b ;      ii) int a, b ;

float x ;      float x ;

a = 4 ;      a = 4 ;

b = 5 ;      b = 5 ;

x = b/a ;      x = (float) b/a ;

(06 Marks)

**Module-2**

- 3 a. What are different types of conditional decision making statements? Explain each with examples. (10 Marks)
- b. Write a C program to simulate simple calculator that performs arithmetic operations using switch statement. Error message should be displayed, if any attempt is made to divide by zero. (10 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

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OR

- 4 a. Explain cascade if-else and nested if-else statements. (06 Marks)  
 b. Write a C program to implement simple calculator using operators +, -, \* and /. Also handle divide by zero error. Use switch statement. (10 Marks)  
 c. What is dangling else problem? Explain how to handle this in C programming. (04 Marks)

**Module-3**

- 5 a. Define array? How two dimension arrays are declared and initialized? (06 Marks)  
 b. Write a C program to generate Fibonacci numbers using arrays. (06 Marks)  
 c. Explain following string functions : (08 Marks)  
 i) strlen ii) strcpy iii) strcmp iv) strcat.

OR

- 6 a. Explain various ways of passing parameters to the functions. (06 Marks)  
 b. Write a C program to find factorial of an integer using recursive function. (08 Marks)  
 c. Write a C program to find length of a string without using strlen() function. (06 Marks)

**Module-4**

- 7 a. What is a structure data type? Give the general form of a structure declaration. (05 Marks)  
 b. Explain the syntax of fprintf and fscanf functions in 'C'. (05 Marks)  
 c. Using the structure data type, write a program in 'C' to read a student record from the keyboard and store it in a file called student.dot. (10 Marks)

OR

- 8 a. Explain the differences between arrays and structures. (05 Marks)  
 b. What is a file? Explain fopen() and fclose() functions in 'C' language. (06 Marks)  
 c. Write a program in 'C' using structure to read USN, name and marks in 3 subjects for each student and store it in a file called studmarks.dat. (09 Marks)

**Module-5**

- 9 a. Define point variable. Explain with an example, the declaration and initialization of pointer variable. (06 Marks)  
 b. Explain following C functions along with syntax and example to each : (08 Marks)  
 i) malloc()  
 ii) calloc()  
 iii) realloc()  
 iv) free().  
 c. Develop a C program to read two numbers and function to swap these numbers using pointers. (06 Marks)

OR

- 10 a. Explain with example # define directive. (04 Marks)  
 b. What is a stack? What are the operations we can carry out on a stack? (08 Marks)  
 c. Write a program in 'C' to create a simple linked list. (08 Marks)

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