CBCS SCHEME

USN

18CPS13/23

# First/Second Semester B.E. Degree Examination, Dec.2019/Jan.2020
## C Programming for Problem Solving

Time: 3 hrs. Max. Marks: 100

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



### Module-1

1 a. How would you explain the components of a computer with the block diagram? **(08 Marks)**

b. Describe the types of computers. **(06 Marks)**

c. Convert the following mathematical expression into C equivalent statements.

i) $m = x^4 + \sqrt{x + \frac{y}{k}} - 4x + 6$

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

iii) $Area = \pi r^2 + 2\pi rh$ **(06 Marks)**

**OR**

2 a. How can you write the basic structure of a C program? Explain with examples. **(08 Marks)**

b. Define a token. Explain the different tokens available in C language. **(08 Marks)**

c. How would you explain logical operator in a C language. **(04 Marks)**

### Module-2

3 a. With examples how would describe the formatted input and formatted output statements in C language. **(08 Marks)**

b. How would you explain if – else statement in C language? Give the relevant example. **(06 Marks)**

c. Write a program in C to display the grade based on the marks as follows :

| Marks | Grades |
|---|---|
| 0 to 39 | F |
| 40 to 49 | E |
| 50 to 59 | D |
| 60 to 69 | C |
| 70 to 79 | B |
| 80 to 89 | A |
| 90 to 100 | O |

**(06 Marks)**

**OR**

4 a. How would you explain switch statement with an example? **(08 Marks)**

b. How the while loop differs from do-while loop? **(06 Marks)**

c. Write a program to check whether a given integer is palindrome or not? **(06 Marks)**

### Module-3

5 a. Define an array. How would you explain declaration and initialization of one dimensional array? **(06 Marks)**

b. Write a program in C to implement binary searching technique. **(06 Marks)**

c. How would you explain with examples, the string manipulation functions? **(08 Marks)**





**OR**

6 a. Write a program to read N integers and to arrange them in ascending order using bubble sort technique. **(06 Marks)**

b. How would you explain the declaration and initialization of string variables? **(06 Marks)**

c. Write a program to multiply 2 matrices, by ensuring their multiplication compatibility. **(08 Marks)**

### Module-4

7 a. How would you illustrate the elements of user defined functions with examples? **(10 Marks)**

b. Write a program in C to find the factorial of a given integer using functions. **(05 Marks)**

c. Explain how call by value differs from call by reference while invoking a function. **(05 Marks)**

**OR**

8 a. How would you explain the categories of user defined functions? **(10 Marks)**

b. Write a program in C to compute the Fibonacci series up to n terms using recursion. **(06 Marks)**

c. List the storage class specifiers. Explain any one of them. **(04 Marks)**

### Module-5

9 a. Define a structure. How would you declare and initialize structure variables? Give examples. **(07 Marks)**

b. Define Pointer. How the pointers are declared and initialized? **(06 Marks)**

c. Write a C program to read details of 10 students and to print the marks of the student if his name is given as input. **(07 Marks)**

**OR**

10 a. Write a program in C to add two numbers using pointers. **(05 Marks)**

b. How would you explain the categories of preprocessor directives in C? **(10 Marks)**

c. How would you explain nested structures? **(05 Marks)**

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# First Semester B.E. Degree Examination, Dec.2018/Jan.2019
## C Programming for Problem Solving

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



### Module-1

1 a. Explain the basic structure of a C program with example. **(10 Marks)**
b. Define a variable. Explain the rules for constructing variables in C language. **(04 Marks)**
c. Write a C program to compute simple interest. Draw the flowchart for the same. **(06 Marks)**

**OR**

2 a. Define data type. Explain primitive data types supported by C language with example. **(10 Marks)**
b. List all the operators used in C language and evaluate following expression.
i) $x = a - b/3 + c * 2 - 1$ when $a = 9$, $b = 12$, $c = 3$
ii) $10! = 10 \| 5 < 4 \&\& 8$. **(04 Marks)**
c. Describe the various types of computers. **(06 Marks)**



### Module-2

3 a. Explain the formatted I/O functions of C language with syntax and example. **(04 Marks)**
b. Write a C program to implement commercial calculator using switch statement. **(06 Marks)**
c. Write the syntax of different branching statements and explain their working. **(10 Marks)**

**OR**

4 a. Differentiate between while loop and do-while loop. Explain with syntax and example. **(08 Marks)**
b. Write a program to find the sum of N natural numbers using for loop. **(04 Marks)**
c. Write a C program to plot Pascal's triangle. **(08 Marks)**

### Module-3

5 a. Define array. Write the syntax for and with declaring and initializing 1D and 2D array with suitable example. **(10 Marks)**
b. Write a C program to find the transpose of a give matrix. **(10 Marks)**

**OR**

6 a. Define string. List out all string manipulation function. Explain any two with examples. **(10 Marks)**
b. Write a C program for [consider integer data] :
i) Bubble sort ii) Linear search. **(10 Marks)**





### Module-4

7 a. What is a function? Explain the different type of functions based on parameter. **(10 Marks)**
b. Write a program to find the factorial of a given number using functions. **(14 Marks)**
c. Write a program to find GCD and LCM of two numbers using concept of functions. **(06 Marks)**

**OR**

8 a. Explain recursion and write a program to find $n^{th}$ term of Fibonacci series. **(10 Marks)**
b. Give the scope and lifetime of following :
i) External variable ii) Static variable iii) Automatic variable
iv) Static variable iv) Register variable. **(10 Marks)**

### Module-5

9 a. What is a structure? Explain the syntax of structure declaration in C with example. **(04 Marks)**
b. Write note on . i) Arrays within structures ii) arrays of structures. **(04 Marks)**
c. Implement structures to read, write and compute average marks and the students scoring above and below average marks for class of N students. **(12 Marks)**

**OR**

10 a. What is a pointer? Show how pointer variable is declared and initialized. **(05 Marks)**
b. Explain any two preprocessor directives in C. **(05 Marks)**
c. Write a C program to find sum and mean of all elements is an array using pointer. **(10 Marks)**