

# CBCS SCHEME

USN

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17PCD13/23

## First/Second Semester B.E. Degree Examination, Dec.2018/Jan.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. What is an algorithm? Write an algorithm to find largest of 3 numbers. (08 Marks)  
b. Explain any five operators used in C language. (10 Marks)  
c. Explain two types of type conversions. (02 Marks)

**OR**

- 2 a. Explain the structure of 'C' program with an example program. (10 Marks)  
b. Explain scanf() & printf() function in C language with syntax and example program. (10 Marks)

### Module-2

- 3 a. Explain if, if-else, nested if-else and cascaded if-else with examples and syntax. (10 Marks)  
b. Write a C program to simulate simple calculator that performs arithmetic operations using switch statement. An error message should be displayed, if any attempt is made to divide by zero. (10 Marks)

**OR**

- 4 a. List the differences between while loop and do-while loop. Write a C program to find the sum of natural numbers from 1 to N using for loop. (10 Marks)  
b. Write a C program to read a year as an input and find whether it is a LEAP YEAR or not. (04 Marks)  
c. Write a C program to find reverse of a number and check whether it is a PALINDROME or not. (06 Marks)

### Module-3

- 5 a. What is an array? Explain the declaration and initialization of one dimensional and two dimensional array with an example. (10 Marks)  
b. Explain any three string manipulation library function with example. (06 Marks)  
c. Write a C program to implement string copy operation STRCOPY(Str1, Str2) that copies a string Str1 to another string Str2 without using library function. (04 Marks)

**OR**

- 6 a. What is function? Explain the two categories of argument passing techniques, with example. (10 Marks)  
b. Write a C function isprime(num) that accepts an integer argument and return 1 if the argument is a prime or a 0 otherwise. Write a program that invokes this function to generate prime number between the given range. (10 Marks)

**Module-4**

- 7 a. What is structure data type? Explain. (04 Marks)  
 b. Show how a structure variable is passed as a parameter to a function, with an example. (06 Marks)  
 c. Explain the concept of array of structures, with a suitable C program. (10 Marks)

**OR**

- 8 a. What is FILE? Explain fopen( ), fclose( ) functions. (05 Marks)  
 b. Explain various modes of FILE. (05 Marks)  
 c. Given two files "Studentname.txt" and "USN.txt" that contains students name and USN respectively. Write a C-program to create a new file called "output.txt" and copy the contents of files "Studentname.txt" and "USN.txt" into output file in the sequence shown below :

Student name	USN
Name - 1	USN - 1
Name - 2	USN - 2
-	-
-	-
-	-
-	-

(10 Marks)

**Module-5**

- 9 a. Define a pointer. Explain how pointer variable is declared and initialized. (05 Marks)  
 b. What are primitive and non - primitive data types? Give examples. (05 Marks)  
 c. Write a program using pointers to compute sum, mean and standard deviation of all elements stored in an array of "n" real numbers. (10 Marks)

**OR**

- 10 a. Explain any 2 pre-processor directives in 'C' language. (05 Marks)  
 b. What is a STACK? Explain its applications. (05 Marks)  
 c. What is a QUEUE? Explain with example. (05 Marks)  
 d. Write a program to swap 2 numbers using call-by-reference method. (05 Marks)

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