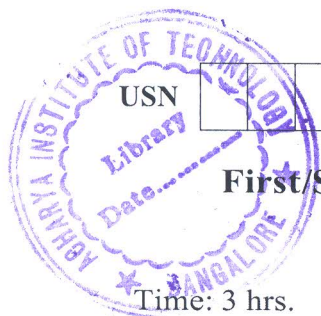


# CBCS SCHEME



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17PCD13/23

First/Second Semester B.E. Degree Examination, Jan./Feb. 2021

## Programming in C and Data Structure

Time: 3 hrs.

Max. Marks: 100

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

### Module-1

- 1 a. Define an algorithm? Write an algorithm to find perimeter and area of a circle. (06 Marks)  
b. Write the structure of a C program. Explain with an example. (06 Marks)  
c. What is an identifier? Classify the following as valid and invalid identifier. If invalid give reason.  
i) \_apple ii) continue iii) one\_10 iv) #abc123 v) avErAgE. (08 Marks)

OR

- 2 a. Explain printf() and scanf() function with example. (08 Marks)  
b. Convert the following mathematical expression into C expression :  
i)  $E = \frac{e^{\sqrt{x}} + e^{\sqrt{y}}}{x \sin \sqrt{y}}$   
ii)  $a + \frac{b(ad + e)}{b - a} - \frac{c}{d}$ . (06 Marks)  
c. Write a C program to find simple interest and display the results. (06 Marks)

### Module-2

- 3 a. Explain switch statement with syntax and example. (08 Marks)  
b. Differentiate between while and do while loops. (06 Marks)  
c. Write a C program to reverse an integer number and check whether it is a palindrome or not. (06 Marks)

OR

- 4 a. List all branching statements. Explain any two with proper syntax and example. (08 Marks)  
b. Explain break and continue statement with example. (06 Marks)  
c. Write a C program to find a factorial of a number using for loop. (06 Marks)

### Module-3

- 5 a. What is an array? How one and two dimensional arrays declared and initialized? Give an example. (08 Marks)  
b. Write a C program to concatenate two strings without using built in function strcat(). (06 Marks)  
c. What is C function? Write a C function to find cube of a number. Display the result in main() function. (06 Marks)

OR

- 6 a. Explain any four string manipulation functions with example. (08 Marks)  
b. Write a C program to read N elements and find biggest element in an array. (06 Marks)  
c. Write a C program to check a number is a prime number or not using recursion. (06 Marks)

**Module-4**

- 7 a. What is a structure? Write a syntax of structure declaration with an example. (06 Marks)  
b. Write a C program to pass structure variable as function argument. (08 Marks)  
c. What is file? Explain fopen() and fclose() with example. (06 Marks)

**OR**

- 8 a. Write a C program to maintain a record of 'N' employee detail using an array of structure with three fields(id, name, salary) and print details of employees whose salary is above 10000. (08 Marks)  
b. Write a C program to open a file for input, read in a series of numbers until end of file (eof) and display each number on the monitor. (06 Marks)  
c. Explain fgetc(), fgets(), fputc() and fputs() function with syntax. (06 Marks)

**Module-5**

- 9 a. What is a pointer? Write a C program to read two numbers and function to swap these numbers using pointers. (06 Marks)  
b. Explain different dynamic memory allocation function in C with syntax. (08 Marks)  
c. What is Stack? Explain operation of stack. (06 Marks)

**OR**

- 10 a. What are primitive and non primitive data types explain with example. (06 Marks)  
b. Explain any two preprocessor directives in C with example. (08 Marks)  
c. What is queue? Explain its application. (06 Marks)

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