CBCS Scheme

USN | | | | | | | | | | |

17PCD13

First Semester B.E. Degree Examination, Dec.2017/Jan.2018
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. List all the logical operators and write a C program to demonstrate working of these logical operators. **(10 Marks)**

b. Explain structure of C program with an example. **(05 Marks)**

c. Classify the following as valid and invalid variable. If invalid give reasons.

i) r143
ii) help+me
iii) auto
iv) hello_how
v) *a **(05 Marks)**

OR

2 a. What is a token? What are different types of tokens available in c language? Explain. **(10 Marks)**

b. Write an algorithm and program to find biggest of three numbers. **(10 Marks)**

Module-2

3 a. Write a C program to find the roots of quadratic equation. **(10 Marks)**

b. Explain syntax of while statement. Write a C program to check the given number is palindrome or not. **(10 Marks)**

OR

4 a. Explain break and continue statements with respect to do-while, while and for loop with suitable examples. **(10 Marks)**

b. Print the following series:

```
1
1 2
1 2 3
1 2 3 4
```
(05 Marks)

c. Explain ternary operator with suitable example. **(05 Marks)**

Module-3

5 a. Define an array. Write a syntax for declaring two dimensional array and initialize the same with suitable example. **(10 Marks)**

b. Write a C program to find sum of array elements by passing array as function argument. **(05 Marks)**

c. Explain any two string manipulation functions. **(05 Marks)**

OR

6 a. Explain recursion with an example. **(06 Marks)**

b. Write a C program to sort the elements of a given array using bubble sort. **(08 Marks)**

c. Write a C program to concatenate two strings without using built-in function strcat( ). **(06 Marks)**

Module-4

7	a.	What is structure? Explain its declaration and initialization with an example.	(06 Marks)
	b.	Explain any four file operations with an example.	(06 Marks)
	c.	Write a C program to pass structure variable as function argument.	(08 Marks)

OR

8	a.	Write a C program to store and print Name, USN, SubjectName and IA Marks of student using structure.	(10 Marks)
	b.	Explain typedef with suitable example.	(05 Marks)
	c.	Explain how the input is accepted from file and displayed.	(05 Marks)

Module-5

9	a.	What is pointer? Give advantages and disadvantages of pointers in C.	(07 Marks)
	b.	Explain malloc( ) and calloc( ) functions with examples.	(06 Marks)
	c.	What is queue? Explain its operations.	(07 Marks)

OR

10	a.	Write a C program to swap two numbers using call by address.	(08 Marks)
	b.	What are primitive and non-primitive data types and explain.	(07 Marks)
	c.	Define stack. List applications of stack.	(05 Marks)

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15PCD13/23

First/Second Semester B.E. Degree Examination, Dec.2017/Jan.2018
Programming in C and Data Structures

Time: 3 hrs. Max. Marks: 80

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

Module-1

1 a. What is a variable? Explain the rules for constructing variables in C language. Give examples for valid and invalid variables. **(06 Marks)**

b. Write C expressions corresponding to the following (Assume all quantities are of same type):

i) $A = \frac{-b+\sqrt{b^2-4ac}}{2a}$ ii) $B = e^{|x+y-20|}$ iii) $C = \frac{x}{b+c} + \frac{y}{b-c}$

iv) $D = \sqrt{2\pi n}$ v) $E = \sin\theta$ vi) $F = \sin\left(\frac{b}{\sqrt{a^2+b^2}}\right)$ **(06 Marks)**

c. Write a C program to find area of a circle. **(04 Marks)**

OR

2 a. List all the operators supported in C. Explain relational, logical and bitwise operators. **(08 Marks)**

b. Write a C program to find area of a triangle, when we know the lengths of all three of its sides. **(08 Marks)**

Module-2

3 a. List all the conditional control statements used in C. Explain if...else and nested if statements with example for each. **(08 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. **(08 Marks)**

OR

4 a. Explain the different types of loops used in C with syntax and example for each. **(08 Marks)**

b. Write a C program to find the sum of series $1 + x + x^2 + x^3 + ... + x^n$. **(08 Marks)**

Module-3

5 a. What is an array? Explain different methods of initialization of single dimensional array. **(08 Marks)**

b. Write a C program to sort the given array elements in ascending order by using bubble sort. **(08 Marks)**

OR

6 a. Write a C program to compute the factorial of a given number 'n' using recursion. **(08 Marks)**

b. Explain any four string manipulation library functions with example. **(08 Marks)**

Module-4

7 a. Write a C program to input the following details of 'N' students using structure:
Roll_No: integer, Name : string, Marks : float, Grade : Char
Print the names of the students with marks ≥ 70.0. **(08 Marks)**

b. Explain the following file operations along with syntax:
i) fopen( ) ii) fclose( ) iii) fscanf( ) iv) fprintf( ) **(08 Marks)**

OR

8 a. Write a C program to maintain a record of 'n' employee detail using an array of structures with three fields (id, name, salary) and print the details of employees whose salary is above Rs.10,000. **(08 Marks)**

b. Explain structure within a structure with an example. **(08 Marks)**

Module-5

9 a. Define a pointer. Explain with an example, the declaration and initialization of a pointer variable. **(06 Marks)**

b. Develop a C program to read two numbers and function to swap these numbers using pointers. **(06 Marks)**

c. Explain the following C functions along with syntax: i) malloc( ) ii) calloc( ) **(04 Marks)**

OR

10 a. Explain stack and queue data structures along with their applications. **(08 Marks)**

b. Explain any four preprocessor directives in C language with example for each. **(08 Marks)**

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14PCD13/23

First/Second Semester B.E. Degree Examination, Dec.2017/Jan.2018
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 a token? Explain different types of tokens in C-language. **(06 Marks)**

b. What is an operator? Explain the arithmetic, relational, logical land bitwise operators in C-language. **(10 Marks)**

c. Simplify the expression a + = b* = C - = 5 where a = 5, b = 3 and c = 7. **(04 Marks)**

OR

2 a. List and explain primitive datatypes in C-language. **(06 Marks)**

b. What is a variable? Explain the rules used for naming a variable. **(07 Marks)**

c. Write a program to find the area and perimeter of a circle. **(07 Marks)**

Module-2

3 a. Explain ternary operator with an example. **(04 Marks)**

b. What is goto statement? Explain the disadvantages of a goto statement. **(06 Marks)**

c. What is a loop? Explain the different types of loops in C-language. **(10 Marks)**

OR

4 a. Write a C program to compute sin(x) using Taylor series :

$$\sin(x) = x - \left(\frac{x^3}{3!}\right) + \left(\frac{x^5}{5!}\right) - \left(\frac{x^7}{7!}\right) + - - - -$$ **(10 Marks)**

b. List the difference between break and continue statements. **(06 Marks)**

c. Explain nested for loop with an example. **(04 Marks)**

Module-3

5 a. What is an array? Explain the declaration and initialization of two dimensional arrays with example. **(06 Marks)**

b. Write a C-program to sort the given numbers in ascending order using bubble sort technique. **(06 Marks)**

c. Explain any four string manipulation library functions with examples. **(08 Marks)**

OR

6 a. What is a function? explain the different types of functions **(06 Marks)**

b. Write a recursive program to find the factorial of a given number. **(10 Marks)**

c. Explain different parameter passing techniques used in C functions. **(04 Marks)**

Module-4

7 a. What is a structure? Explain the syntax of structure declaration with an example. **(06 Marks)**

b. Write a C program to maintain an employee information consisting of three fields (empid, name, salary) using array of structures. **(10 Marks)**

c. Explain with an example how fscanf( ) and fprintf( ) function is used with the file. **(04 Marks)**

OR

8 a. Write a program to copy the content of one file to other file. **(08 Marks)**

b. What is a file? Explain the different modes in which the file can be opened. **(06 Marks)**

c. What are command line arguments? Explain its parameters. **(06 Marks)**

Module-5

9 a. What is a pointer? Mention the advantages of pointers. **(04 Marks)**

b. List out the difference between malloc( ), calloc( ) and realloc( ) functions. **(06 Marks)**

c. what is a stack? Write a program in C to perform various operations on stacks. **(10 Marks)**

OR

10 a. What is a macro? Write a program to find the square of a number using macros. **(06 Marks)**

b. List out the difference between static memory allocation and dynamic memory allocation. **(08 Marks)**

c. Explain : i) preprocessor directives ii) symbolic constants. **(06 Marks)**

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