

15PCD13/23

## First/Second Semester B.E. Degree Examination, Dec.2016/Jan. 2017 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

e) 1 a. Define an Algorithm. Write an algorithm to find the area and perimeter of a rectangle.
b. Write a General structure of C. Explain with an example.
(06 Marks)
c. Convert the following mathematical expression into C equivalent:
i) $\quad$ area $=V \mathrm{~V}(\mathrm{~s}-\mathrm{a})(\mathrm{s}-\mathrm{b})(\mathrm{sc})$
ii) $\mathrm{x}-\mathrm{-b}^{-\mathrm{b}}{ }^{-4 \mathrm{ac}}$ 2a

## OR

${ }^{1} 7^{\circ}+2$ a. Explain different types of input output functions in C with syntax and examples. ( $\mathbf{0 6}$ Marks) b. Explain the following operators :

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OR
6 a. What is string? Write a C program that reads a sentence and prints the frequency of each of the vowels and total count of consonants.
(06 Marks)
b. What is a Function? Explain the type of functions based on parameters.
(06 Marks)
c. What is Recursion? Write a C program to compute polynomial co-efficient. Cr using Recursion.
(04 Marks)

## Module_4

7 a. What is structure? Explain the C Syntax of structure declaration with example. ( $\mathbf{0 4}$ Marks)
b. What is a FILE? Explain any five file manipulation functions with example. (06 Marks)
c. What are actual and formal parameters? Explain various storage classes available in C.
(06 Marks)

OR
8 a. Explain array of structure and structure within a structure with an example.
(06 Marks)
b. Write a C program to maintain a record of ' $n$ ' students details using an array of structures with four fields (roll no, name, marks and grade). Assume appropriate data type for each field. Print the marks of the student given the student name as input.
(06 Marks)
c. Explain various modes of FILE with example.
(04 Marks)

## Module_5

9 a. What is a pointer? Explain how the pointer variable is declared and initialized.
(04 Marks)
b. What is dynamic memory allocation? Explain different dynamic memory allocation functions in C.
(06 Marks)
Write a C program using pointers to compute the Sum, Mean and Standard deviation of all elements stored in an array of ' $n$ ' real numbers.
(06 Marks)

## OR

10 a. Explain the Array of pointers with example.
(04 Marks)
b. Explain any two pre-processor directives in C.
(04 Marks)
c. What is Stack? Explain operations on Stack.
(04 Marks)
d. What is a Queue? Explain its applications.

