USN | | | | | | | | | | **14PCD13/23**

First/Second Semester B.E. Degree Examination, June/July 2015
Programming in C and Data Structures

Time: 3 hrs.   Max. Marks; 100

Note: *Answer FIVE questions, selecting*
ONE full question from each part.

PART-1

1 a. What are data types? Mention the different data types supported 43) 'language, giving an example to each. **(05 Marks)**

b. Write a C program which takes as input p, t, r, compute the . life interest and display the result. **(05 Marks)**

c. What is an operator? List and explain various types of op &ors. **(40 Marks)**

2 a. What is a token? What are different types of t9,I**k j** available in C language? Explain. **(08 Marks)**

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

i) $A = \dfrac{5x+3y}{a+b}$
ii) $B = \sqrt{s(s-90,-13)(s-c)}$
iii) $C = e^{lx} + Y^{-101}$

iv) $D = x^{25} + y^{35}$
v) $X = \dfrac{4:}{Nnji}$
vi) $X = \dfrac{-b \pm \sqrt{42-4ac}}{2a}$ **(06 Marks)**

What is the value of `x' ' **M**owing code segments? Justify your answers :

```
i) int a, b ;          ii) •     , b ;
   float x ;              Ciloat x ;
   a = 4 ;          (   ) a = 4 ;
   b = 5 ;            4  b = 5 ;
   x = bk:-,             x = (float) b/a ;
```
(06 Marks)

PART-2

3 C'What are different types of conditional decision making statements? Explain each with examples. **(10 Marks)**

. 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. **(10 Marks)**

4 a. Explain with examples formatted input output statements in C. **(06 Marks)**

b. List four differences between while loop and do-while loop along with syntax and example. **(06 Marks)**

c. Design and develop a C program to reverse a given four digit integer number and check whether it is a palindrome or not. **(08 Marks)**

14PCD13/23

PART-3

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

   b. Write a C program to read N integers into an array A and to
   i) find the sum of odd numbers
   ii) find the sum of even numbers
   iii) find the average of all numbers
   Output the results computed with appropriate headings.   **kuo Marks)**

   c. How string is declared and initialized? Explain any FOUR string manipulation
   with examples.   **(08 Marks)**

6 a. Explain function call, function definition and function prototype with examples to each.
   (06 Marks)

   b. What are actual parameters and formal parameters? Illustrate velli4xample.   **(06 Marks)**

   c. What is recursion? Write a C program to compute the factors of a given number 'n' using
   recursion.   **(08 Marks)**

PART-A

7 a. How structure is different from an array? ExtA em declaration of a structure with an example.
   (06 Marks)

   b. Explain with an example, how to creatc,structure using `typedef.   **(04 Marks)**

   c. Write a C program to input the foll6Orig details of 'N' students using structure :
      Roll No : integer, Name : e.ri4g; Marks : float, Grade : char
   Print the names of the students$ith marks 70.0%.   **(10 Marks)**

   Explain following file rations along with syntax and examples :
   i) fopen( )   ii) ftet)   iii) fscanf( )   iv) fprintf( )   v) fgets( ).   **(10 Marks)**

   Write a C pro_ , o read the contents from the file called abc•text, count the number of
   characters,. number of lines and number of white spaces and output the same.   **(10 Marks)**

PART — 5

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

   b. Explain following C functions along with syntax and example to each :
      i) malloc( ) ii) calloc( ) iii) realloc( )   iv) ( ).   **(08 Marks)**

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

10   Write short notes on following :
   a. Preprocessor directives
   b. Primitive and non primitive data types
   c. Stack operations
   d. Types of queues.   **(20 Marks)**