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15PCD13

First Semester B.E. Degree Examination, Dec.2015/Jan.2016
Programming in C ad 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 variable? Explain the rules for constructing variables in C language. Give examples for valid and invalid variables. **(06 Marks)**

   b. Evaluate the following expressions :

     i) $100\% \ 20 < = 20 - 5 + 100\% \ 10 - 20 = = 5 > = 1 \ != 20$

     ii) $a \mathrel{+}= b \mathrel{*}= c \mathrel{-}= 5$ where $a = 3 \ b = 5$ and $c = 8$. **(04 Marks)**

   c. Write a C program to find the area and perimeter of a rectangle. **(06 Marks)**

OR

2 a. Write a C program which takes as input p, t, r. Compute the simple interest and display the result. **(06 Marks)**

   b. Convert the following mathematical expression into C expressions :

     i) $\dfrac{x}{b+c} + \dfrac{y}{b-c}$ ii) $a + \dfrac{b(ad+e)}{b-a} - \dfrac{c}{d}$. **(04 Marks)**

   c. What is value of "x" in following code segments? Justify your answers :

```
i) int a, b ;            ii) int a, b ;
   float x ;                float x ;
   a = 4 ;                  a = 4 ;
   b = 5 ;                  b = 5 ;
   x = b/a ;                x = (float) b/a ;
```
(06 Marks)

Module-2

3 a. Explain the syntax of do-while statement. Write a C program to find the factorial of a number using do-while, where the number n is entered by user. **(08 Marks)**

   b. What is two way selection statement? Explain if, if else, and cascaded if-else with examples. **(08 Marks)**

OR

4 a. Write a C program that takes from user an arithmetic operator ('+', '–', '*' or '/') and two operands. Perform the corresponding arithmetic operation on the operands using switch statement. **(08 Marks)**

   b. What is an array? How to declare and initialize the two dimensional array? **(08 Marks)**

Module-3

5 a. What is a function? Write a C program to find the cube of a number using function. **(05 Marks)**

   b. Write a C program to check a number is a prime or not using recursion. **(05 Marks)**

   c. Write a program to replace each constant in a string with the next one except letter 'z' 'Z' and 'a', 'A'. Thus the string "programming in C is fun" should be modified as "Qsphsannjoh jo D jt gvo". **(06 Marks)**

OR

6 a. Write a C program to sort the elements by passing array as function argument. **(08 Marks)**
  b. Write a C program to concatenate two strings without using built – in function strcat( ). **(08 Marks)**

Module-4

7 a. What is structure? Explain the C syntax of structure declaration with example. **(05 Marks)**
  b. Write a C program to pass structure variable as function argument. **(07 Marks)**
  c. Explain fopen( ) and fclose( ) functions. **(04 Marks)**

OR

8 a. Write a C program to store and print name, USN, subject and IA marks of students using structure. **(08 Marks)**
  b. Explain fputc( ) , fputs( ), fgetc( )and fgets( ) functions with syntax. **(08 Marks)**

Module-5

9 a. What is a pointer? Write a C program to find the sum and mean of all elements in an array using pointer. **(08 Marks)**
  b. What is stack? Explain its operations with examples. **(08 Marks)**

OR

10 a. Write a C program to swap two numbers using call by address. **(06 Marks)**
   b. Explain any five preprocessor directives in C. **(05 Marks)**
   c. What are primitive and non–primitive data types? Explain with examples. **(05 Marks)**

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