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First Semester B.E. Degree Examination, Dec.2015/Jan.2016 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 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) $a += b * = c -= 5$ 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) $\frac{x}{b+c} + \frac{y}{b-c}$ ii) $a + \frac{b(ad+e)}{b-a} - \frac{c}{d}$ (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 "Qspsphannjoh jo D jt gvo". (06 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator, will be treated as malpractice.

15PCD13**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)
