VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN
|AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI|
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CERT

Question Paper Code: 5003

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – DEC. 2018 / JAN. 2019
First Semester
Computer Science and Engineering
U15CS101 – FUNDAMENTALS OF COMPUTING AND C PROGRAMMING
(Common to Electrical and Electronics Engineering, Electronics and Communication
Engineering, Information Technology & Biotechnology)
(Regulation 2015)

Time : Three Hours   Maximum : 100 Marks

Answer ALL the questions

PART – A

(10 x 2 = 20 Marks)

1. Draw and name the symbols used in a flowchart.

2. Name the technology used in each Generation of Computers.

3. Evaluate $x = 5$ && $c!= 8$ || $! c$;   For $a = 10$, $b = 12$ and $c = 0$.

4. What are the modifiers available in C programming language?

5. What is the purpose of using Arrays in a program?

6. What is type conversion? Give an example of Explicit Type Conversion.

7. What functions are used for Dynamic Memory Allocation? Give their format.

8. What are the different storage classes in C? Name and briefly differentiate them.

9. Differentiate between Union and Structure with an example.

10. For the structure given below, how do you access the elements of the structure using a structure variable "s" and structure pointer "sp"
    Struct Node{ int ele;
                char c;
             };
    Struct Node s, *sp;

PART – B

11. a) Draw flowchart to find the largest among three different numbers entered by user.

(OR)

b) Explain in detail the five main components of a computer system.

12. a) Write a loop that will calculate the sum of every third integer, beginning with i=2 (i.e, calculate the sum 2+5+8+11+....) for all values of 'i' that are less than 100. Write the loop three different ways.

   i. Using while statement. (5)

   ii. Using do while statement. (4)

   iii. Using a for statement. (4)

(OR)

b) i. The variables count, price and city have the following values:
int count = 1275, float price = -235.74, char city = 'A'
Show the exact output that the following statements will produce:

   a. printf("%d %f", count, price); (1.5)

   b. printf("%2d\n%f", count, price); (1.5)

   c. printf("%d %f", price, count); (1.5)

   d. printf("%10dxxxx%5.2f", count, price); (1.5)

   e. printf("%d", city); (1.5)

  ii. Using precedence rules, evaluate following expressions, show step wise solution:

Assume ($x = 10, y = 2, z = 2$)

   a.   y += (x>0 && x<=10) ? ++x : x/y; (2)

   b.   2*x%5*4+15-y/z+2; (2)

   c.   unsigned int a = -1, b = 15; (1.5)
       printf("%d, ", a << 1);
       printf("%d\n", b >> 1);

13. a) Write a C Program to Delete the Specified Integer from an Array.

(OR)

b) Write a program that finds the difference in the lengths of two strings s1 & s2 entered by the user without_using the available library functions. The main function calls a user written function to calculate the length of the string.

14. a) i. What is the difference between call by value and call by reference? Explain with the help of a program. (5)

    ii. What are recursive functions? List out their merits and demerits. Write a recursive function to calculate the factorial of a number. (8)

(OR)

    b) i. Write a function to swap two numbers using pointers. The user enters the numbers and they are printed before and after swapping in the main function. (5)

    ii. What are recursive functions? List out their merits and demerits. Write a recursive function to print the terms of Fibonacci Series till n. (8)

15. a) Write a program to add, subtract and multiply two complex numbers using structures. Each operation must be performed in a separate function after passing the structures to the function. (A complex number is a number of the form a + bi, where a and b are real numbers and i is an indeterminate satisfying $i^2 = -1$. For example, 2 + 3i is a complex number.)

(OR)

    b) Using the following structure, write a program that calculates the average score and stores them in the Avg variable of the structure 'Student'. The program calculates this average for each student in a class of strength 10.

    (Proceed by defining an array of structures for the 10 students).

```
struct Student
    {
        int Roll;
        char Name[25];
        int Marks[3];        //Statement 1 : array of marks
        int Total;
        float Avg;
    };
```

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PART – C

(1 x 15 = 15 Marks)

16 a)   i.   Write a C program to count the occurrence of a Digit in a Number using a user defined function.   (7.5)

    ii.   Write a C program to remove consecutive repeated characters from string using C program.   (7.5)

(OR)

    b)   i.   Write a program that accepts two integer arrays and two integers (that denotes the actual size of the arrays) and reverses the elements of the integer arrays. It then merges the two arrays by dynamically assigning memory for the third array that is the equal to the combined size of the two arrays. It also prints the merged arrays. You must not use any other array inside the function for reversing.   (10)

    ii.   Write a C program to check whether number is positive, negative or zero until user doesn't want to exit.   (5)