VASAVI COLLEGE OF ENGINEERING *(Autonomous)*, **HYDERABAD**
B.E. I Year I - Semester (Supplementary) Examinations, July/Aug - 2015

Programming in C and Problem Solving

Time: **3** hours   Max. Marks: **70**

*Note: Answer **ALL** questions in **Part-A** and any **FIVE** questions from **Part-B***

Part-A (10 X 2=20 Marks)

1. How many bits are required for binary representation of the octal number 377654 and the hexadecimal number 377654   [2]

2. Write output of the expression $(9 / ((4.5 - 4) * 6))$ and the expression $9 / 4.5 - 4 * 6$ [2]

3. Write the syntax of **for** loop with an example.   [2]

4. What is the output of the following code segment?   [2]
    main( ) { int i=3, j=0; j= i++; printf("%d , %d", i, j); }

5. Write a C function to test whether all elements of a 10 by 10 two dimensional integer array are identical.   [2]

6. Define recursive function.   [2]

7. Write the output of the following code segment
    main( ) { char str[ ] = "welcome"; str[3] = '0'; str[4] = 0; printf("%s", str); }   [2]

8. Give an example to show how to dereference a pointer.   [2]

9. How to define a union within a structure in C. Give an example.   [2]

10. Write a C function that takes name of a file as parameter and test whether the file is empty.   [2]

Part-B (Marks: 50)

11. a. Explain the various steps involved in creating and running programs.   [5]

    b. Draw the flowchart for developing a program that takes as input an integer n between 0 and 30 and return the nth power of 2.   [5]

12. a. What do you mean by a structured program? What are the advantages of having structured programs?   [5]
    b. Write a C program that takes as input 10 integers and print their arithmetic mean.   [5]

13. a. Explain selection sort procedure.   [5]
    b. Write a recursive C function that computes the value of the function f(n) where n is a positive integer given as parameter and f(n) defined as $f(n) = f(n-1) + f(n-2)$ with $f(1) = 3$ and $f(0) = 2$.   [5]

14. a. Define pointer. Explain how pointers help in inter-function communication.   [5]

    b. Write a C function that reads a string having maximum length 20 by reading one character at a time and then print the string in the reverse manner.   [5]

15.   a. Define file. Write short notes on standard library character input output functions.   **[5]**

     b Write a C program that represents a collection of two dimensional points as   an   array   of structures where the structure contains two floating point fields x and y   indicating the X and Y coordinates of a point. Read the point values from input. You can assume the array size to be 100.

                                                                    [5]

16.   a. Write short notes on storage classes in C.   **[4]**
     b. Write a C program to read an integer array and a number between 1 and 100 and check if the number is present in the array . (Array can be assumed to have size 50).   **[6]**

17.   a. Explain how type conversion is performed in C.   **[5]**

     b. Write a C function to read two strings as input each of maximum length 20 and check   whether both strings are same.   **[5]**

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