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Reg. No. : .....

Name : .....

Combined First and Second Semester B.Tech. Degree Examination, October 2014
(2013 Scheme)
13.109 : FOUNDATIONS OF COMPUTING AND PROGRAMMING IN C (FR)

Time : 3 Hours Max. Marks : 100

PART – A

Answer **all** questions. **Each** question carries **2** marks.

1. "In the case of Von Neumann architecture, both the program and the data are stored in RAM". What is the disadvantage of this ?
2. Find the decimal equivalent of the BCD number 1001 0101 0010 0111.
3. What is debugging ? Give the name of a debugger.
4. Mention any 4 objectives of Operating System.
5. Write an algorithm to count the negative numbers in the given set of n numbers.
6. Arrange the following operators in the increasing order of precedence (priority)

   + / >= &&
7. Write the syntax of for loop.
8. Mention the advantage of Binary search over Linear search.
9. Discuss call-by-reference.
10. What are the data types of the two arguments of the main function of a C program ?

P.T.O.

PART – B

Answer **any one full** question from **each** Module. **Each** question carries **20** marks.

Module – I

11. a) Compare primary and secondary storages in terms of speed of access, cost per byte, power requirements and the technology used. 4

    b) With a block diagram explain the functional units of a computer. 10

    c) Find the result.

    i) $(1010\ 1101)_2 - (1100\ 1101)_2$ using 2's complement

    ii) $(1101\ 1101)_2 \times (1000\ 1000)_2$

    iii) $(1110\ 1100)_2 \div (1000\ 0000)_2$ 6

OR

12. a) Find the normalized results.

    i) 0.1100 1010 E 0000 1001 + 0.1010 1111 E 0000 0011 2

    ii) 0.1001 1000 E 0001 0000 – 0.1111 0011 E 0000 1111 2

    iii) 0.1010 1000 E 0000 1100 × 0.1110 0000 E 0001 0000 4

    b) Describe ASCII and EBCDIC codes. 6

    c) Change the base :

    i) $(253.75)_{10}$ to Binary

    ii) $(101101.11)_2$ to Hexadecimal

    iii) $(737.421)_8$ to Decimal. 6

Module – II

13. a) Compare Assembly Language, Machine Language and High level language. 6

    b) Discuss how modular programming is amenable to top down design strategy. 4

    c) Draw the flowchart to find the sum of positive numbers and the sum of negative numbers in the given set of n numbers. Then add these sums to find the grand total. 10

OR

14. a) Discuss the purpose of the various symbols and shapes used in flow charts. 5

    b) Write an algorithm to generate the first n Fibonacci numbers. 10

    c) Differentiate between compiler and Interpreter. 5

Module – III

15. a) Write a C program to find X = Y + kZ where X, Y and Z are n × n matrices and K is an integer. 10

    b) What is the difference between using < > and " " for including a header file ? 2

    c) Write a C program to search for an element in the given array. Display the position (s) and the number of occurrence of the element. 8

OR

16. a) Write a C program to read a string and check whether it is a palindrome or not. 10

    b) Illustrate the difference between structure and union. 10

Module – IV

17. a) Write functions for Push and Pop operations. Assume a global integer array 'stack' and a global integer variable 'top'. 6

    b) Write a C program that reads two strings, dynamically allocate memory and store the concatenation of these strings. Display the resultant string. 10

    c) Write a recursive function with an integer parameter n, to return the factorial of n. 4

OR

18. a) Illustrate the use of –> operator. Mention an alternate combination of operators that serve the same purpose. 4

    b) Explain the different storage classes in C. 8

    c) Write a C program that reads the contents of a file and writes the same to a new file. 8
