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Reg. No. : .....

Name : .....

Combined First and Second Semester B.Tech. Degree Examination, December 2015

(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. Convert the decimal number $(135.77)_{10}$ into its binary equivalent representation.
2. Differentiate between primary storage devices and secondary storage devices.
3. What are the functions of an operating system ?
4. What are the advantages of top down design approach ?
5. Write an algorithm to find the sum of squares of N numbers.
6. Give the syntax of "do ... while" loop. How is it different from "while" loop ?
7. What are pre-processor directives ?
8. Differentiate between "malloc" and "calloc" functions in C.
9. What is the use of external storage class ?
10. Give the general format for opening and closing a file. **(10×2=20 Marks)**

P.T.O.

PART – B

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

Module – I

11. a) Explain the Von Neumann concept of a computer with a neat diagram. **10**

b) Convert $(110011001)_2$ into its equivalent hexadecimal and octal representations. **5**

c) Write about any 2 methods to represent characters in computers. **5**

OR

12. a) Add $(-12)_{10}$ and $(-5)_{10}$ using binary signed magnitude representation. **5**

b) Convert the hexadecimal number $(49BE2)_{16}$ into its equivalent binary and octal representations. **7**

c) What is the single precision representation of $(639.6875)_{10}$? **8**

Module – II

13. a) Write short notes on the various types of programming languages. **8**

b) Write an algorithm to generate and print the sum of the first N Fibonacci numbers. **12**

OR

14. a) Draw the flowchart to print the prime factors of a number. **10**

b) What is the need for documentation of programs ? **5**

c) Differentiate system software and application software. **5**

Module – III

15. a) Write a C program to perform selection sort in an array of N elements. **12**

    b) Differentiate between structure and union with suitable examples. **8**

OR

16. a) Explain the various types of operators in C. **8**

    b) Write a C program to multiply 2 matrices. **12**

Module – IV

17. a) Write a program to find the GCD of 2 numbers using recursion. Explain the working of the program for finding the GCD of 48 and 18. **12**

    b) Explain how 'static' class is used in C with an example program. **8**

OR

18. a) Write a C program to count the number of words in a string using functions. **10**

    b) Write a C program to print the sum of squares of N numbers using pointers. Use "malloc" function to dynamically allocate array size. **10**

(4×20=80 Marks)