Combined First and Second Semester B.Tech. Degree Examination, March 2018
(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. Write the differences between static RAM and dynamic RAM.

2. Write the binary equivalent of the following numbers :
   a) \((101)_{10}\)
   b) \((503)_{8}\).

3. What is meant by modular programming?

4. Write an algorithm for checking whether a number is odd or even.

5. Write a conditional expression in C for finding the largest of 3 numbers.

6. Point out the differences between structure and union.

7. Write the syntax of switch statement in C.

8. What are the differences between the following declarations :
   \[
   \text{int } *a[3]; \quad \text{int } (*a)[3];
   \]

9. Write a recursive function in C for finding \(n!\).

10. What is meant by dynamic memory allocation?
PART – B

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

Module – I

11. a) Draw the block diagram of a digital computer and explain the function of each unit. 12

b) Explain the different ways of representing negative numbers in a computer. 8

OR

12. a) Perform the following operations:
   i) \((1010)_2 \times (1001)_2\)
   ii) \((100001)_2 \div (110)_2\)
   iii) \((8)_{10} - (12)_{10}\) using 2's complement.
   iv) \((9)_{10} - (13)_{10}\) using 1's complement.
   v) \((A12B)_{16} - (12A5)_{16}\). 10

b) Write the characteristics of the following memories:
   RAM, ROM, PROM, EPROM, EEPROM. 10

Module – II

13. a) Write the main features of:
   i) High Level Language. 10
   ii) Assembly Language.
   iii) Machine Language.

b) Draw a flow chart for finding the smallest and largest of a set of N numbers. 10

OR

14. a) Define operating system. What are its goals and functions? 6

b) Write an algorithm for finding the roots of a quadratic equation. 10

c) Point out the differences between compiler and interpreter. 4
Module – III

15. a) Explain about different operators in C language with their priority and associativity. 10
    b) Write a C program for multiplying m x n matrix with a n x p matrix. 10

    OR

16. a) Write a program for displaying the binary equivalent of a positive decimal number. 10
    b) You are given a list of numbers arranged in ascending order. Write a C program to check whether a particular number is present in the list using binary search. 10

Module – IV

17. a) Write a function for finding the sum of the major diagonal elements of a square matrix passed to it. Write the main program also. 10
    b) Using command line argument, write a C program for finding the sum of digits of an input number. 10

    OR

18. a) Write a C program for implementing a stack using array. 10
    b) Write a C program for converting all the lower case letters in a text file to upper case and store it in another file. 10