Roll No. | | | | | | | | | | |

B.E / B.Tech (Part Time) DEGREE END SEMESTER EXAMINATIONS, APRIL / MAY 2014

INFORMATION TECHNOLOGY

Semester I

PTCS8103 Programming and Data Structures I

(Regulation 2013)

Time: 3 Hours | Answer ALL Questions | Max. Marks 100

PART-A (10 x 2 = 20 Marks)

1. Name and describe the four basic types of constants in C.
2. Differentiate between continue and break statements.
3. What is a self-referential structure? Give an example.
4. What does fseek() and ftell() function do?
5. What are linear and non-linear data structures?
6. What are Double ended Queues?
7. Define depth and height of a tree.
8. What is meant by Hashing?
9. Discuss the efficiency in terms of the number of comparisons in bubble sort.
10. Sort 170, 45, 75, 90, 802, 24, 2, 66 using Radix Sort.

Part – B (5 x 16 = 80 marks)

11.i Explain Pass by Value and Pass by Reference with an example. When to use Pass by Value and When to use Pass by Reference? (10)

ii. What are static variables? Where all it can be declared? (6)

12. a) Write a C program to define a structure for a hotel that has members – name, address, grade, no. of rooms. And room charges. Write a function to print the names of a hotel in a particular grade. Also write a function to print the names of hotels which have room charges less than the specified value. (16)

(OR)

b) Write a C program to add that uses an array of function pointers, subtract, multiply or divide 2 given numbers. (16)

13. a) Write an ADT to implement a stack using an array. (16)

(OR)

b) Write functions to insert a node and to remove a node from a singly linked list. (16)

14. a) Write functions to insert and delete a node from a binary search tree. (16)

(OR)

b)i How do collisions happen during hashing? Explain the different collision resolving techniques. (10)

ii) Given input: 5, 29, 20, 0, 27 ,18 and a hash function "h(k) = k%9" show the resulting hash table for open addressing. (6)

15. a)i) Write a C program to do the Merge Sort. (10)

a)ii) Sort the following elements using Selection sort
10, 5, 7, 2, 1, 3, 6, 4, 9, 8 (6)

(OR)

b) i) Write a C program for doing a Quick sort. (10)

b)ii) Sort the following elements using Insertion Sort
10, 5, 7, 2, 1, 3, 6, 4, 9, 8 (6)