214444

Seat No.	

S.E. (information Technology) (Semester – I) Examination, 2014
FUNDAMENTALS OF DATA STRUCTURES
(2012 Course)

Time : 2 Hours Max. Marks : 50

Instructions : *1) Answer **four** questions.*
*2) **Neat** diagrams must be drawn **wherever** necessary.*
*3) Figures to the **right** side indicate **full** marks.*
*4) Use of calculator is **allowed**.*
*5) Assume suitable data if **necessary**.*

1. a) Explain entry controlled loop structures in C. 4
   b) Write pseudo C/C++ algorithm to concatenate two strings using pointers without using library functions. 4
   c) Explain any four bitwise operators in C with example. 4

OR

2. a) Explain use of pointer to array of structure with suitable example. 4
   b) Explain different storage classes in C. 6
   c) Write use of void data type. 2

3. a) Explain Big-oh, omega and theta notation with example. 6
   b) Sort the following list in ascending order using bubble sort. Show all passes. Analyze time complexity. 6
   9, 7, –2, 4, 5, 3, –6, 2, 1, 8

OR

4. a) Write different types of data structures. Give one example of each type. 6
   b) Sort the following list using merge sort 4
   38, 27, 43, 3, 9, 82, 11, 10
   c) Compare linear and binary search. 2

5. a) What is recursion ? Explain role of stack in recursion. Write recursive function to add digits of a given positive integer. 6
   b) Write a C/C++ function to add two sparse matrices. Analyse its time complexity. 6
   c) Write address calculation for elements of one dimensional array. 2

OR

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6. a) Write pseudo C/C++ algorithm to find transpose of sparse matrix using fast transpose algorithm. 6
   b) Explain row and column major storage representation of two dimensional array. 6
   c) Write a non-recursive algorithm to find factorial of a positive number. 2

7. a) Write a C/C++ program to create singly inked list of integers and display it forward. 6
   b) Write node structure and represent following list using generalized linked list. 4
   (A, B, (C, D, E), F, (G, H, (I, J), K), L)
   c) Write advantages of linked memory organization. 2

OR

8. a) Write pseudo C/C++ algorithm to add two sorted polynomials represented by SLL. 6
   b) What is generalized list ? Give node structure to represent multivariable polynomial using GLL. 4
   c) Write advantages of circular singly linked list over a linear linked list. 2
