(Please write your Exam Roll No.)   Exam Roll No. ...0582140201.3

END TERM EXAMINATION

SECOND SEMESTER [BCA] MAY-JUNE 2014

Paper Code: BCA-108	Subject: Data Structure Using C (2011 Onward)

Time : 3 Hours	Maximum Marks: 75

Note: Attempt any five question, including Q.no.1 which is compulsory. Select one question from each Unit.

Q1 (a) What do you mean by data structure? Explain the difference between linear and non-linear data structures.
(b) Explain the sparse matrix & its representation.
(c) Prove that in a complete binary tree of height h, total no. of modes are $2^{h+1}-1$.
(d) What is an AVL tree? Why is it useful is searching?
(e) Explain binary search with suitable example.   **(5x5=25)**

Unit-I

Q2 (a) Write a c program that takes an input expression in infix notation and convert it into postfix notation.   **(8)**
(b) Give an algorithm for insertion of an element in circular queue.   **(4.5)**

OR

Q3 (a) Write a c function that reverse a string and finds its length.   **(6)**
(b) Implement an stack using linked list.   **(6.5)**

Unit-II

Q4 (a) Write a c function that takes a linear linked list as its input and display it in the reverse order.   **(6)**
(b) Write a c function that concatenates two linear linked list.   **(6.5)**

OR

Q5 Define binary search tree. Write algorithms for pre-order, post-order & in-order traversal of a binary tree.   **(12.5)**

Unit-III

Q6 (a) Define the time complexity & search a mode in a binary search tree. Whether your time complexity is ratio for left or light skew & binary search tree? Justify.   **(6)**
(b) Explain the insertion of a mode in B-tree.   **(6.5)**

OR

Q7 What do you mean by binary search tree based indexing? How is it different from multilevel indexing?   **(12.5)**

Unit-IV

Q8 Explain selection sort and merge sort with suitable example. Show various stages.   **(12.5)**

OR

Q9 (a) How linear search is used to find an element?   **(6)**
(b) Explain the concept of collision in hashing and its remedies.   **(6.5)**

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