**Code: 13A05301** **R13**

B.Tech II Year I Semester (R13) Supplementary Examinations November/December 2016

**DATA STRUCTURES**

(Computer Science and Engineering)

Time: 3 hours Max. Marks: 70

**PART – A**

(Compulsory Question)

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1 Answer the following: (10 X 02 = 20 Marks)

(a) What is a Data Structure?
(b) Write about Abstract Data type.
(c) What is the best case and worst case time complexity of bubble sort and insertion sort?
(d) Write short notes on binary tree traversal.
(e) Define Graph abstract data type.
(f) List out different elementary graph operations.
(g) What is Binomial Heaps?
(h) List the applications of priority queues.
(i) Define B+ trees.
(j) Write about Optimal Binary Search trees.

**PART – B**

(Answer all five units, 5 X 10 = 50 Marks)

**UNIT – I**

2 Write a program for insertion and deletion operations in double linked lists.

**OR**

3 (a) Why Circular Queue is required? Explain.
(b) Write a function that removes all duplicate elements from linear linked list.

**UNIT – II**

4 State and explain the algorithm to perform Merge sort. Also analyze the time complexity of the algorithm.

**OR**

5 What is a binary Search Tree? What is the average depth of a binary search tree? How is it different from binary tree? Justify your answer.

**UNIT – III**

6 (a) Differentiate static and dynamic hashing in detail.
(b) Explain about skip list representation.

**OR**

7 (a) Explain how a hashing table can be represented.
(b) Describe linear list representation with an example.

**UNIT – IV**

8 Explain about single and double ended priority queues.

**OR**

9 What is heap? Describe about Fibonacci Heaps and pairing Heaps.

**UNIT – V**

10 (a) Define Red - Black trees. Write the procedure to insert an element in to Red – Black trees.
(b) Write short notes on height of B-trees.

**OR**

11 (a) Explain about Splay trees.
(b) Write an algorithm for performing deletion in AVL trees.



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