Code: 13A05301 R13

B.Tech II Year I Semester (R13) Supplementary Examinations June 2015

DATA STRUCTURES

(Computer Science & 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 an Abstract Data Type (ADT)? Explain.

(b) Write the postfix and prefix notations for the following expression: $A/B * C - D * E + F/G$.

(c) What is the advantage of quick sort? Mention its worst case time complexity.

(d) List the applications of binary tree.

(e) Define graph with an example.

(f) What is hashing?

(g) Define Min Heap.

(h) List the operations of priority queue.

(i) What do you mean by optimal binary search trees?

(j) Mention the purpose of m-way search trees.

PART - B

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

UNIT - I

2 Write the program for the linked list implementation of stack ADT and explain.

OR

3 Implement circular queue using arrays.

UNIT - II

4 Illustrate the working of merge sort with an example. Calculate the time complexity in worst and best cases.

OR

5 With examples, explain the two methods of binary tree implementation.

UNIT - III

6 Explain the two graph traversals techniques.

OR

7 With examples, explain the operations on binary search trees.

UNIT - IV

8 Explain the following

(i) Leftist trees.

(ii) Fibonacci heaps

OR

9 Explain the various representation of graph with example in detail.

UNIT - V

10 What is an AVL tree? Explain various rotations of AVL trees maintaining balance factor while insertion and deletion takes place.

OR

11 Explain insertion and deletion operations in B^+ trees with suitable examples.

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