Reg. No. : | | | | | | | | | | |

Question Paper Code: 53082

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2017

Third Semester

Information Technology

15UIT302 - DATA STRUCTURES AND ALGORITHMS

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

1. Two main measures for the efficiency of an algorithm are

   (a) Processor & memory (b) Complexity & capacity
   (c) Time & space (d) Data & space

2. The depth of a complete binary tree is given by

   (a) Dn = n log2n (b) Dn = n log2n+1 (c) Dn = log2n (d) Dn = log2n+1

3. The in order traversal of tree will yield a sorted listing of elements of tree in

   (a) Binary trees (b) Binary search trees (c) Heaps (d) None of these

4. When inorder traversing a tree resulted E A C K F H D B G; the preorder traversal would return.

   (a) FAEKCDBHG (b) FAEKCDHGB
   (c) EAFKHDCBG (d) FEAKDCHBG

5. In a graph if e=[u, v], Then u and v are called

   (a) endpoints of e (b) adjacent nodes
   (c) neighbors (d) all the above

PART - B (5 x 3 = 15 Marks)

6. What is abstract data type?

7. Define a stack.

8. There are 8, 15, 13, 14 nodes were there in 4 different trees. Which of them could have formed a full binary tree.

9. What is hashing? Why is it necessary to hash?

10. Define graph.

PART - C (5 x 16 = 80 Marks)

11. (a) Explain the linked list implementation of list ADT in detail. (16)

Or

(b) Define Stack? Explain its operations with example. (16)

12. (a) What is a Binary tree? Explain Binary tree traversals in C. (16)

Or

(b) Explain Representing lists as Binary tree? Write algorithm for finding K th element and deleting an element. (16)

13. (a) Discuss about AVL tree in detail with the LL, LR, RL, RR case with example. (16)

Or

(b) Explain B-tree representation in detail. (16)

14. (a) Discuss in detail about hashing with example. (16)

Or

(b) Explain smart union algorithm in detail. (16)

15. (a) Illustrate shortest path algorithm with example. (16)

Or

(b) Discuss about Kruskal's and prim's algorithm. (16)
