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

Question Paper Code: 51232

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2016

Third Semester

Computer Science and Engineering

15UCS302 - DATA STRUCTURES

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

1. The depth of complete binary tree is given by

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

2. Tree structure diagram in which pointers of data are stored at leaf nodes of diagram is classified as

   (a) b tree (b) b+ tree (c) b2 tree (d) B* tree

3. Assuming a heap is complete, how many levels deep is a heap containing N nodes guaranteed to be?

   (a) *log(N)* (b) *Nlog(n)* (c) *log(1/N)* (d) $log(N^2)$

4. A technique for direct search is

   (a) Binary Search (b) Linear Search (c) Tree Search (d) Hashing

5. Graph *G* is _____ if for any pair *u, v* of nodes in *G* there is a path from *u* to *v* or path from *v* to *u*.

   (a) Laterally connected (b) Widely Connected
   (c) Unliterally connected (d) Literally connected

PART - B (5 x 3 = 15 Marks)

6. Define path and depth of a tree.

7. Define red black tree.

8. Define game tree.

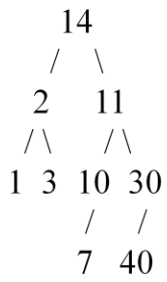
9. What is Rehashing?

10. What are the kinds of graphs?

PART - C (5 x 16 = 80 Marks)

11. (a) (i) Explain the tree traversals. Give all the essential aspects. (10)

(ii) Here is a small binary tree:



Write the order of the nodes visited in: *A.* An in-order traversal *B.* A pre-order traversal *C.* A post-order traversal. (6)

Or

(b) Explain threaded binary tree in detail. (16)

12. (a) Explain in detail about AVL TREES. (16)

Or

(b) Explain about the basic operations of binary search tree in detail. (16)

13. (a) Explain insertion and deletion operations in heap. (16)

Or

(b) (i) Explain Huffman tree in detail. (8)

(ii) Explain decision trees in detail. (8)

14. (a) Explain the various hashing techniques in detail. (16)

Or

(b) Explain rehashing, extendible hashing and its applications in detail. (16)

15. (a) Explain in detail the Dijkstra’s single source shortest path problem with example. (16)

Or

(b) (i) Obtain minimum spanning tree by Kruskal's algorithm. (10)

(ii) Explain topological sort with an example. (6)

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