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

Question Paper Code: 41322

B.E. / B.Tech. DEGREE EXAMINATION, NOVEMBER 2015

Third Semester

Computer Science and Engineering

14UCS302 - DATA STRUCTURES

(Regulation 2014)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. Which of the following data structure is linear data structure?

   (a) trees (b) graphs (c) arrays (d) none of above

2. A mathematical-model with a collection of operations defined on that model is called

   (a) data structure (b) abstract data type
   (c) primitive data type (d) algorithm

3. What is the postfix form of the following prefix expression -A/B*C$DE

   (a) ABCDE$*/- (b) A-BCDE$*/- (c) ABC$ED*/- (d) A-BCDE$*/

4. A Binary Search Tree is traversed in the following order recursively: Right, root, left The output sequence will be in

   (a) ascending order (b) descending order
   (c) bitomic sequence (d) no specific order

5. Leaves of which of the following trees are at the same level?

   (a) Binary Tree (b) B-tree
   (c) AVL-tree (d) Expression tree

6. If a heap node's subscript is 6, and it is a left child, then the subscript of its parent is

(a) 12 (b) 2 (c) 3 (d) 4

7. If h is any hashing function and is used to hash n keys in to a table of size m, where n<=m, the expected number of collisions involving a particular key x is

(a) less than 1 (b) less than n (c) less than m (d) less than n/2

8. A bucket is used in

(a) binary search trees (b) hashing (c) linked lists (d) stacks

9. The maximum degree of any vertex in a simple graph with n vertices is

(a) n–1 (b) n+1 (c) 2n–1 (d) n

10. A technique for direct search is

(a) binary search (b) linear search (c) tree search (d) hashing

PART - B (5 x 2 = 10 Marks)

11. State the difference between arrays and linked lists.

12. What is the use of threaded binary tree?

13. Define splay tree.

14. List the abstract operations in the set.

15. Define Biconnectivity.

PART - C (5 x 16 = 80 Marks)

16. (a) Discuss the operations of doubly linked list with suitable diagrams. (16)

Or

(b) Explain the array implementation of stack? (16)

17. (a) Write the pseudo code for the tree traversal and explain it with an example? (16)

Or

(b) Construct and explain an expression tree with an example. (16)

18. (a) Develop an algorithm to implement binary heap and validate with an example. (16)

Or

(b) Show the result of inserting 2, 1, 4, 5, 9, 3, 6 and 7 into on initially empty AVL tree. Explain the concepts of single and double rotation. (16)

19. (a) Write short notes on:

(i) Path compression

(ii) Rehashing. (16)

Or

(b) Illustrate the collision resolution strategies with an example. (16)

20. (a) Describe the process of depth first traversal and breadth with an example? (16)

Or

(b) Explain Euler circuit with suitable example? (16)

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