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Question Paper Code: 41232

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

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)

- Which of the following data structure is linear data structure?
(a) trees (b) graphs (c) arrays (d) none of above
- Which of the following can't be used as top of stack while initialize an empty stack?
(a) 0 (b) 1 (c) 0 and 1 (d) -1
- If a node having two children deleted from binary search tree it is replaced by its
(a) Preorder predecessor (b) Inorder predecessor
(c) Inorder successor (d) None of these
- 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
- 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. An AVL tree is a BST, except that for every node in the tree, the height of left & right subtree can differ by almost _____
- (a) 0 (b) -1 (c) 2 (d) 1
7. If h is any hashing function and is used to hash n keys in to a table of size m , where $n \leq m$, 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. Rehashing can be used in
- (a) Linear probing (b) Quadratic probing
(c) Separate chaining (d) All of the above
9. In a graph if $e = [u,v]$, then u & v are called
- (a) end point of e (b) adjacent nodes
(c) neighbors (d) all the above
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. Define an ADT.
12. What is the use of threaded binary tree?
13. List out the two properties of heap.
14. List the abstract operations in the set.
15. Define connected components of a graph .write its uses.

PART - C (5 x 16 = 80 Marks)

16. (a) Discuss the operations of doubly linked list with suitable diagrams. (16)
- Or
- (b) Infer Queue. How is Circular Queue implemented? Give example. (16)
17. (a) Write the pseudo code for the tree traversal and explain it with an example. (16)

Or

(b) Show a routine to insert an element into an BST tree and display the result of inserting the following keys 3, 1, 4, 5, 9, 2, 6, 8, 7, 10. (16)

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

Or

(b) Design a B-Tree of order 5 for the following set of numbers 1, 12, 8, 2, 25, 5, 14, 28, 17, 7, 52, 16, 48, 68, 3, 26, 29, 53, 55, 45. (16)

19. (a) Express Smart Union algorithms in detail. (16)

Or

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

20. (a) Identify the necessity for graph traversal. Perform the Depth first and Breadth first traversals, print the list of nodes in the order it is visited and compare these algorithms. (16)

Or

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