KUMARAGURU
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Register Number: …….

B.E DEGREE EXAMINATIONS: MAY 2015

(Regulation 2013)

Third Semester

COMPUTER SCIENCE AND ENGINEERING

U13CST301:Data Structures And Algorithms

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. The queue displine is
   a) LIFO b) FIFO
   c) LIFI d) FILI
2. …….. datastructure is used to convert infix to postfix
3. Minimum and maximum number of nodes in a binary tree is
   a) 2^h-1 to 2^{h+1}-1 b) 2^h-1 to 2^{h+1}
   c) 2^{h-1} to 2^{h+1}-1 d) 2^h to 2^{h+1}-1
4. ……..order traversal in binary search tree gives ascending order
5. Choose the datastructure in which all the data are at the leaf
   a) 2-3 tree b) B^+tree
   c) B^-tree d) All the above
6. ……..hashing is open addressing.
7. Choose the traversal that is used to find minimum spanning tree and all pair shortest path tree
   a) BFS b) DFS
   c) Preorder d) postorder
8. Let G(V,E) be an undirected graph.Let V={v_1,v_2,…v_n} q=|E| then sum of degree of all the vertex=……
9. Choose the sorting algorithm which has worst case time complexity of O(N log N)
   a) Merge sort b) Quick sort
   c) Selection sort d) Shell sort
10. Best case complexity of insertion sort ……..

PART B (10 x 2 = 20 Marks)

(Not more than 40 words)

11. Define ADT.
12. Find the equivalent Polish and reverse Polish notations for the expression a*(b+c).
13. Build the recursive code to find the minimum element in binary search tree.
14. How will you represent general tree using Linked list?
15. What is meant by secondary clustering?
16. Compare Linear and binary search.
17. How graphs are represented using adjacency matrix and adjacency List?
18. How will you compute connected components in a graph?
19. Give an example for binary tree, binary search tree, AVL tree and Maximum Heap tree.
20. Build the algorithm for insertion sort

PART C (5 x 14 = 70 Marks)

(Not more than 400 words)

Q.No. 21 is Compulsory

21. Explain the coding for insertion, deletion, find an item and display operations in singly Linked List.

22. a) Discuss the recursive code for inorder, postorder and preorder traversal in a binary tree with an example.

(OR)

b) i) Describe the coding for insertion and deletion in binary search tree. (10)

ii) List the advantage of Threaded binary tree. (4)

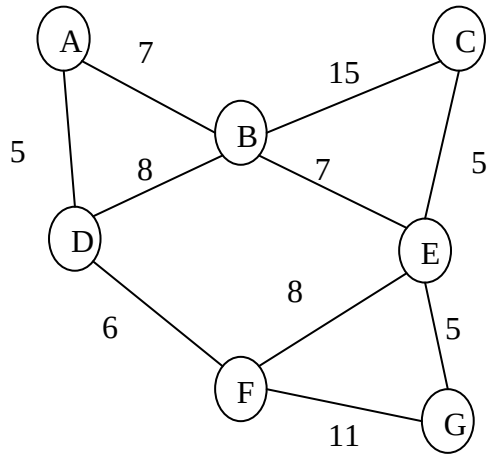
23. a) Draw the AVL tree in sequence for the keys 1,2,3,4,5,6,7,8,9,10,11,12

(OR)

b) i) What are the advantages and disadvantages of B+ trees compared to B- Trees (4)

ii) Discuss in detail about open addressing (10)

24. a) Define spanning tree and minimum spanning tree (MST).Find the MST for the following graph using Prim's and Kruskal's algorithm.



(OR)

b) Discuss in detail about Dijikistra's Shortest path algorithm for weighted graph

25. a) Explain about the quick sort algorithm in detail

(OR)

b) Apply the merge sort for the following numbers to sort it in ascending order 2,6,3,1,4,31,23,8,11,19,21,37,14,57,28,45.

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