

END TERM EXAMINATION

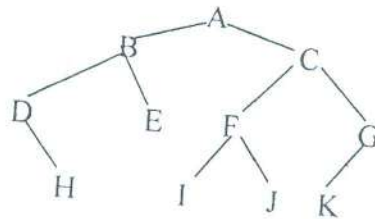
SECOND SEMESTER [BCA] MAY-JUNE 2017

Paper Code: BCA-108	Subject: Data Structure using C
Time: 3 Hours	Maximum Marks: 75
Note: Attempt any five questions including Q no.1 which is compulsory. Select one question from each unit.	

- Q1 (a) Add and subtract the following two sparse matrices. (5)
- ```

0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 2 0 0 0
2 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 9 0 0 0 0 0 0

```
- (b) Perform insertion sort on the following values. (5)  
6, 55, 11, 10, 18
- (c) Convert the following infix expression into postfix expression. (5)  
 $(A+B-C*D)/H$
- (d) Write the preorder traversal of the following tree. (5)



- (e) Write a Recursive function to count number of nodes in Tree. (5)

### UNIT-I

- Q2 (a) Classify primitive and non-primitive data structures. Discuss the operations performed on data structures. (6)
- (b) Evaluate the following postfix expression using stacks (6.5)  
320, 10, \*, 10, 60, 100, \*, /
- Q3 (a) Explain why circular queue is better than linear queue? (6)
- (b) Discuss D-queues and priority queues. What are the applications of stacks and queues? (6.5)

### UNIT-II

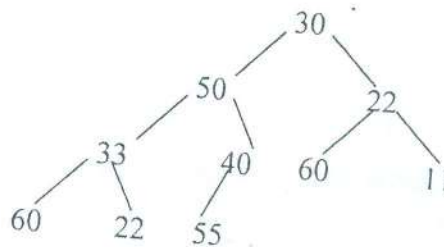
- Q4 (a) Write a function to insert a node at the end of single linked list. (6)
- (b) Write a function to delete a node from beginning of double linked list. (6.5)
- Q5 (a) A binary tree T has 09 nodes. The inorder and preorder traversals of T yield the following sequences of nodes. (6)  
Inorder: D G B A H E I C F  
Preorder: A B D G C E H I F  
Draw the tree T

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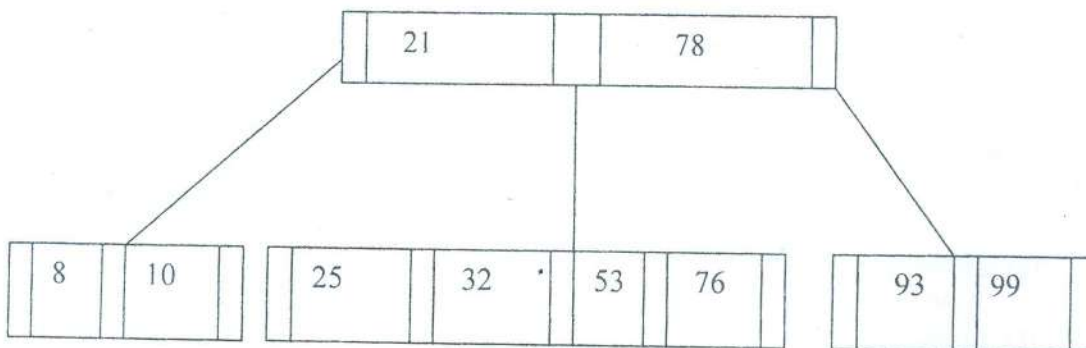
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- (b) Consider the following binary tree T with N=10 nodes. What is the inorder traversal of the tree? **(6.5)**



**UNIT-III**

- Q6 (a) Construct B-tree of order 3 by inserting the following keys in the order shown. **(6.5)**  
18 19, 6, 10, 40
- (b) Construct Binary Search Tree of the following keys in the order shown **(6)**  
1, 2, 3, 15, 8, 25, 7, 9, 10, 13
- Q7 (a) Construct an AVL search tree of the following values **(6)**  
11, 20, 23, 5, 3
- (b) Insert the following values in the order of their occurrence 30, 31 in the given B tree of order 5. **(6.5)**



**UNIT-IV**

- Q8 (a) Define hashing. Why do we use hashing? Discuss any two hashing methods with example. **(6.5)**
- (b) Which searching technique is best and under what conditions? Justify your answer with the help of an example. **(6)**
- Q9 (a) Compare Selection sort and Merge sort. **(6)**
- (b) Which sorting technique is better and why? Explain with an example. **(6.5)**

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