(Please write your Exam Roll No.) *Exam Roll No. .....*

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.

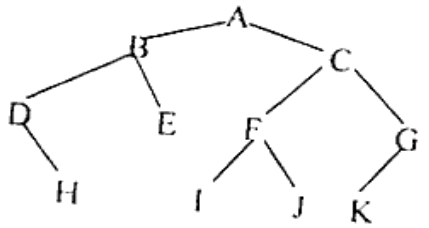
Q1 (a) Add and subtract the following two sparse matrices. **(5)**

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

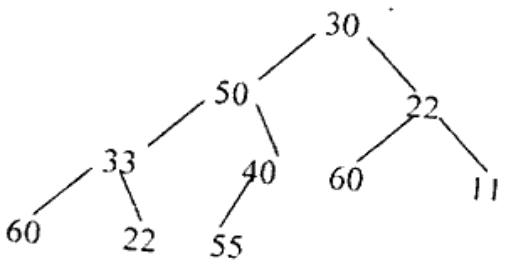
Q4 (a) Write a function to insert a node at the end of single linked list. **(6)**

(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

P.T.O.

(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

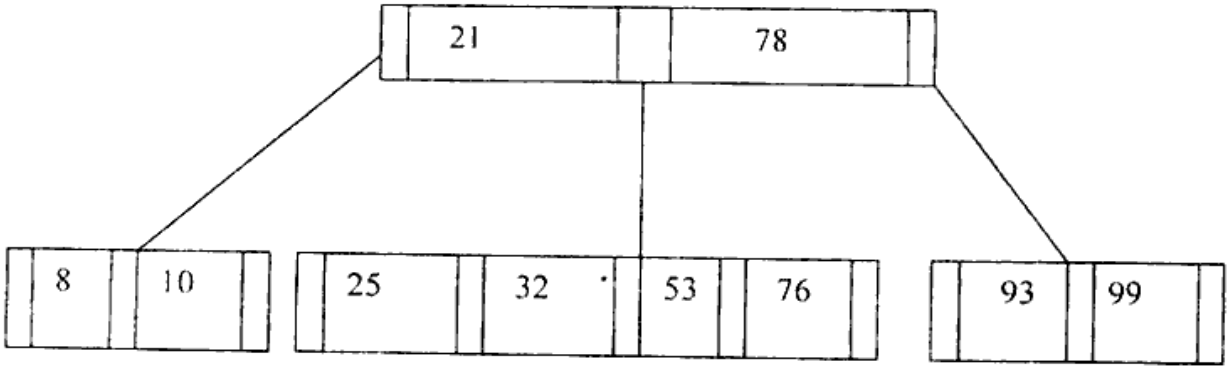
(b) Construct Binary Search Tree of the following keys in the order shown **(6)**

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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