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

END TERM EXAMINATION

SECOND SEMESTER [BCA] MAY 2018

Paper Code: BCA 108	*Subject: Data Structure Using C*
Time : 3 Hours	*Maximum Marks :75*

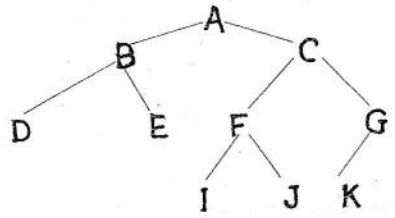
Note: Attempt any five questions including Q. NO.1 which is compulsory. Select atleast one question from each unit.

Q1. a) Define data structures. In how many ways can you categorized data structures? Explain each of them.

b) Perform selection sort on the following values
6, 55, 11, 10, 18

c) Convert the following infix expression into postfix expression.
(A*B-C/D)+H

d) Write the postorder traversal of the following tree.



e) Explain the difference between a circular linked list and a singly linked list. **(5x5=25)**

Unit-I

Q2. a) Write a short note on different operations that can be performed on data structures. **(4.5)**

b) Evaluate the following postfix expression using stacks. **(8)**
320, 10, *, 10, 60, 100, +, *, /

Q3. a) Explain why circular queue is better than linear queue? Give examples. **(4.5)**

b) Discuss D-queues and priority queues. What are the applications of stacks, queues, D-queues and priority queues? **(8)**

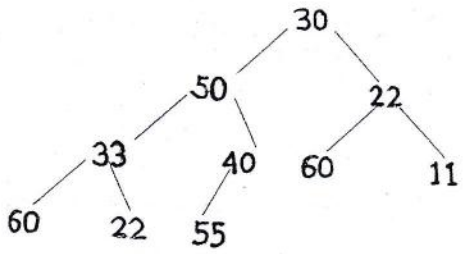
Unit-II

Q4. a) Write a function to insert a node at the beginning of single linked list. **(4.5)**

b) Write a function to delete a note from the end of double linked list. **(8)**

Q5. a) A binary tree T has 09 nodes. The inorder & preorder traversals of T yield the following sequences of nodes. **(4.5)**
Inorder: D G B A H E I C F
Preorder: A B D G C E H I F.
Draw the tree T

b) Consider the following binary tree T with with N=10 nodes. What is the inorder traversal of the tree? **(8)**



P.T.O.

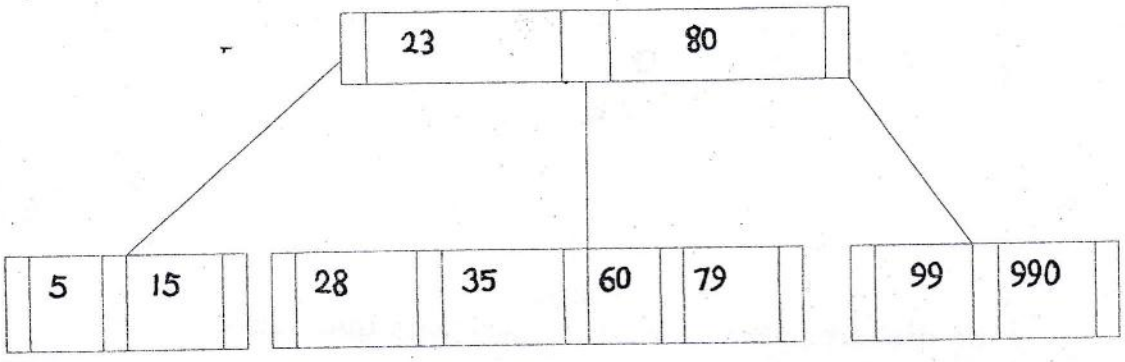
Unit-III

Q6. a) Construct B-tree of order 3 by inserting the following keys in the order shown. 18, 19, 6, 10, 40, 45, 5, 8. **(4.5)**

b) Construct Binary Search Tree of the following keys in the order shown.
1, 2, 3, 15, 8, 25, 7, 9 **(8)**

Q7. a) Construct an AVL search tree of the following values: **(4.5)**
11, 20, 23, 5, 3, 7, 9, 6

b) Insert the following values in the order of their occurrence 32, 34 in the given B tree of order 5. **(8)**



Unit-IV

Q8. a) Define hashing. Why do we use hashing? Discuss any two hashing methods with example. **(4.5)**

b) Which searching technique is best and under what conditions? Justify your answer with the help of an example. **(8)**

Q9. a) Explain merge sort with example. **(4.5)**

b) Which sorting technique is better and why? Explain with an example. **(8)**

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