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Margao, Goa

FYBCA, SEM II, SPECIAL SUPPLEMENTARY EXAMINATION, MAY/JUNE 2015
DATASTRUCTURES
BCA-201

Duration: 2 hours

Total Marks: 50

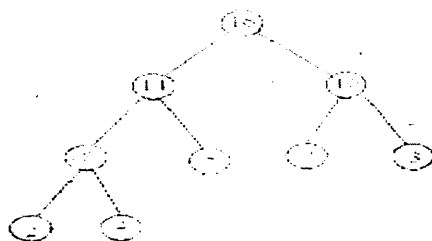
Instruction : 1) All Questions are Compulsory
2) Figures to right indicate marks

Q1 A) Answer in one or two lines. (5mks)

- a) What is a queue ?
- b) When is an algorithm recursive ?
- c) Give differences between Bubble Sort & Selection Sort.
- d) What is sorting?
- e) Name the sorting technique using Tree data structure.

B) For the Given Tree Structure below answer the following. (5mks)

- a) At what level is Node 14.
- b) What type of Binary tree is it. Justify your answer.
- c) What is Right Subtree. Name the nodes of Right Subtree.
- d) Represent the Tree using Array representation.
- e) Define Depth of tree. What is depth of given tree.



Q2) Answer the following.

A) Differentiate between Linear Search & Binary Search (2 mks)

B) Why Queue using Linked List are preferred over Queue using Arrays Data structure. Give Reasons. (3 mks)

C) Write Algorithm for Linear Search. For given input explain how Linear Search Technique will be implemented to search value 9.

Input Data : 33, 5, 90, 123, 21, 134 (5 mks)

Q3) Answer the following.

A) Draw an Expression Tree for the given expression

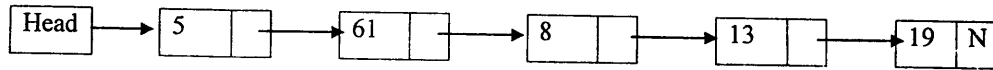
$(B - C) * (D / F) / G$ (2 mks)

B) Write the algorithm for the Linked List

- i) Delete Node AT Front
- ii) Add Node At End (3mks)

- C) Consider the linked list given below and show how to do the following operations one after the other. Take resultant list of the previous operation as input to the next operation.

- Add a node at head with key value 50
- Insert node with key 59 after node with key 8
- Insert node with key 63 at end
- Delete node with key 19
- Delete node with key 50



N indicates NULL.

(5 mks)

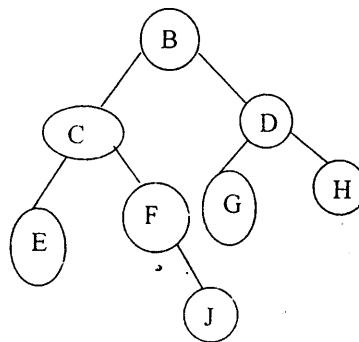
Q4) Answer the following

A) Define Min Heap Tree. (2mks)

B) Construct Max heap tree for given inputs
20, 4, 33, 12, 78, 60, 41, 90 (3mks)

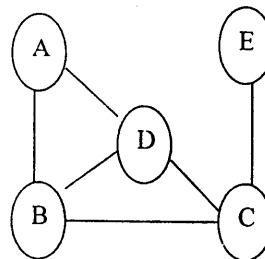
B) For the Given TREE Structure give the following Tree traversal outputs .

i) In-order Traversal ii) Pre-order Traversal (5 mks)



Q5) Answer the following.

A) Give the BFS traversal for the following Graph shown below. (2 mks).



B). For above given Graph

a) Give adjacency Matrix. b) Adjacency List (3mks)

C) Explain the terms with diagrams wherever required. (5mks)

- Unweighted graph
- Depth First Search Traversal
- Binary Search Tree
- Circular Linked List
- Spanning tree of a graph