

F.Y.B.C.A, SEM II, END SEMESTER EXAMINATION, APRIL 2017
DATA STRUCTURES , BCA-201

Duration: 2 Hours

Total Marks: 50

- Instructions: 1) All Questions are Compulsory.
2) Figures to the right indicate Full Marks.

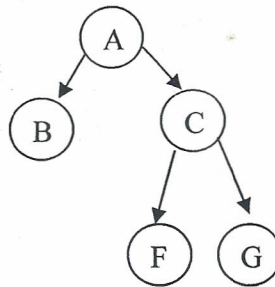
Q.1 A) Define the following in 1-2 Lines.

(5 mks)

- | | |
|--|---------------------|
| a) List linear & Nonlinear Data Structures | b) Adjacency matrix |
| c) Circular Linked List. | d) Cycle in graph. |
| e) Queue Data Structure. | |

Q.1 B) For given Tree Structure.

(5 mks)



- Name the type of Binary tree shown in the above fig. and Justify.
- Represent tree using Linked List.
- Name the traversal method which gives output as : A , B, C, F, G.
- If a path is added from Node B to Node F , is it a tree? Justify.
- Why Nodes B, G and F called leaf nodes in the above diagram.

Q2) Answer the following.

- a) What is an Expression Tree. Draw the expression tree for the given expression.

(2 mks)

$$A + (B + C) / (D - F) - H$$

- b) Write algorithm for performing Push and Pop operations of STACK using Linked List.

(3mks)

- c) Define Minimum Heap Tree. Construct a Minimum heap Tree for the given data set.

35, 15 , 96, 8, 20, 10, 12, 1, 9

(5 mks)

Q3) Answer the following.

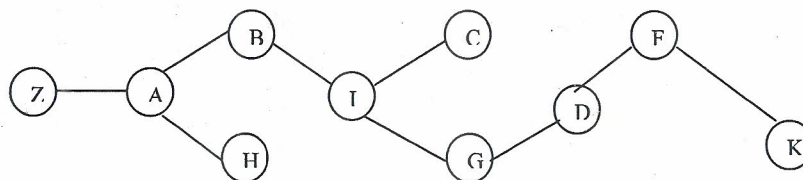
- a) What is Circular Queue ? How it overcomes the problem of Simple queues? (2 mks)
- b) Write the algorithm to perform Binary Search. (3 mks)
- c) For given data set explain how Bubble sort can be applied with diagram. (5 mks)
Data set : 45 , 8 , 9 , 12 , 34 , 56 , 3

Q4) Answer the following.

- a) What is the difference between Doubly Linked List & Singly Linked List ? (2 mks)
- b) What is an Array? Explain how Tree DS can be represented using arrays with the help of an example. (3 mks)
- c) What is Binary Search Tree . For the given set of data construct Binary Search Tree.
2 , 34 , 6 , 18 , 100 , 5 , 56
Give the Inorder traversal of the constructed tree. (5 mks)

Q5) Answer the following.

- i) Explain the different types of Graphs with diagram. (2 mks)
- ii) Write algorithm to insert data in to an array at given location in the array. (3 mks)
- iii) What is a Spanning Tree?
Draw DFS and BFS Spanning trees for the graph given below. (5 mks)



***** ALL THE BEST *****