

I B. Tech II Semester Regular Examinations, June, 2015
Data Structures
(Common to EEE, ECE, CSE, BME and IT)

Time: 3 hours

Max Marks: 70

PART – A

Answer ALL questions. All questions carry equal marks.

10 * 2 Marks = 20 Marks

- 1). a Convert the following Infix expression into Prefix expression? $x+b-y+d*e/a$ [2]
- b Define Data Structure. [2]
- c What are the applications of Queue? [2]
- d A Linear Queue is initialized with rear = 0 and front = -1. After performing some Enqueue and Dequeue operations rear value is 3 and front value is 0. How many elements are present in the Queue? [2]
- e Give the representation of a node in a Double Linked List using Structures. [2]
- f What are the disadvantages of Arrays? [2]
- g Represent the following Binary Tree using Arrays. [2]

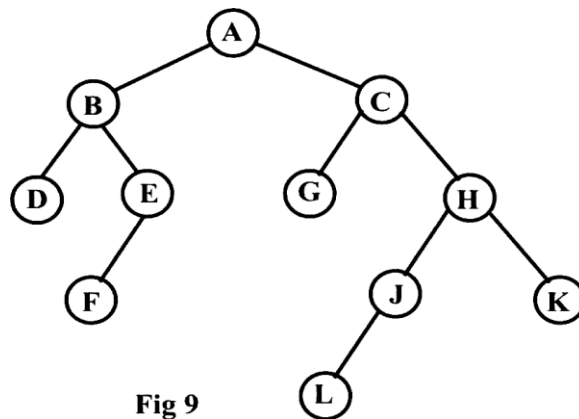


Fig 9

- h Write Postorder and Preorder for the Tree in the question no. 1(g). [2]
- i What is the prerequisite of Binary Search? [2]
- j Define Heap. [2]

PART – B

Answer any FIVE questions
All questions carry equal marks

5 * 10 Marks = 50 Marks

2. a) Write an algorithm to convert Infix expression into Postfix. [10]
b) Define Recursion? With examples explain about Tail and Non-tail Recursion.
3. a) Write functions to insert and delete an element in a Circular Queue. [10]
b) What is the full condition for Circular Queue? Explain.
4. a) Explain Stack using Linked List. [10]
b) Compare Single Linked List with Double Linked List.
5. a) Can we have a Binary Tree whose Inorder and Preorder are same? If possible give an example. [10]
b) Create a Binary Search Tree whose preorder traversal is 38,14,8,23,18,56,45,82,70.
6. a) Discuss about Average Case Complexity of Quick Sort. [10]
b) Explain Radix Sorting with an example. Discuss its Time Complexity.
7. a) Give the applications of Stack. [10]
b) Explain about Priority Queues.
8. a) Write pass wise outputs to sort the following elements using Selection Sort. [10]
6, 8, 1, 3, 9, 4, 2, 7, 9.
b) Write Recursive Algorithm to Traverse a Binary Tree in Postorder.
