

GUJARAT TECHNOLOGICAL UNIVERSITY
BE – SEMESTER III– • EXAMINATION – SUMMER 2015

Subject Code:130702

Date:09/06/2015

Subject Name: Data and File structure

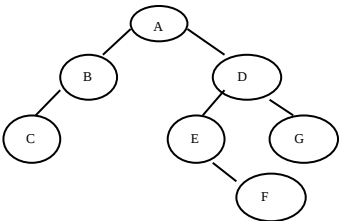
Time: 02.30pm-05.00pm

Total Marks: 70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1 (a)** **07**
- (i) Write algorithm to sum values in vector V and find out the execution time required. **04**
- (ii) Explain the equation that finds out the address of the element of the one dimensional array. Assume necessary data. **03**
- (b)** **07**
- (i) Convert the following Polish(prefix) expression to Reverse Polish(suffix) notation **04**
- a. ++abc
- b. +a+bc
- c. +a*bc
- d. *a+bc
- (ii) Does a time sharing computer use a queue or stack? Explain. **03**
- Q.2 (a)** Write an algorithm for inserting a node and deleting a node in doubly linked linear list. **07**
- (b)** Write steps of procedure to insert an element to the top of the stack and remove top element from a stack. **07**
- OR**
- (b)** What is the advantage of Polish expression over infix notation? Write an algorithm to convert an infix expression into reverse Polish expression. **07**
- Q.3 (a)** **07**
- (i) Write a recursive algorithm to find factorial. **04**
- (ii) Which type of allocation is called linked allocation? Define singly linked linear list. **03**
- (b)** **07**
- (i) Explain the threaded storage representation for binary trees. **04**
- (ii) Define the inorder, postorder and preorder traversal for the following tree. **03**



OR

- Q.3 (a)** **07**
- (i) What are the advantages of circular lists over singly linked list? **04**
- (ii) Explain – Why doubly linked lists are much more efficient with respect to deletions than singly linked lists? **03**

- (b)

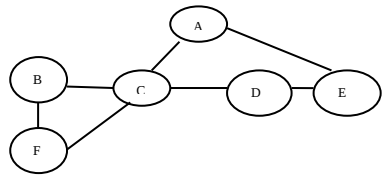
(i) Define adjacency matrix. When two digraphs are considered to be equivalent?

07

(ii) Explain the breadth first search and depth first search tree traversal on the following graph.

04

03



- Q.4

(a) Write an algorithm for inserting and deleting an element from queue.

07

(b)

(i) Define 2-3 tree. Describe the characteristic of 2-3 tree.

07

(ii) Write the characteristics of AVL tree.

04

03
- OR
- Q.4

(a) What is a circular queue? Write an algorithm for inserting and deleting an element from a circular queue.

07

(b)

(i) Explain the structure of sequential file.

07

(ii) Explain the structure of indexed sequential files.

04

03

Q.5

(a) What is collision? Explain two broad classes of collision resolution techniques.

07

(b) Explain the binary search method. Write an algorithm for performing a binary search.

07

OR

Q.5

(a) What is hashing? Explain hashing functions.

07

(b) Explain the multi key file organization and access methods.

07

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