



C09-IT-305

3303

BOARD DIPLOMA EXAMINATION, (C-09)

MARCH/APRIL—2013

DIT—THIRD SEMESTER EXAMINATION

DATA STRUCTURES THROUGH C

Time : 3 hours]

[Total Marks : 80

PART—A

3×10=30

Instructions : (1) Answer **all** questions.

(2) Each question carries **three** marks.

(3) Answers should be brief and straight to the point and shall not exceed *five* simple sentences.

1. Define abstract data type and give examples.
2. What are time complexity and space complexity?
3. What is dummy header?
4. List the applications of stack.
5. What is a single-linked circular list?
6. Differentiate between arrays and linked list.

7. List the operations on binary tree.
8. What are the various tree traversal techniques?
9. Write an algorithm for bubble sort.
10. What is linear search?

PART—B

10×5=50

Instructions : (1) Answer *any five* questions.

(2) Each question carries **ten** marks.

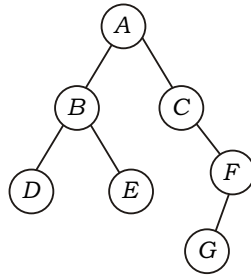
(3) Answers should be comprehensive and criterion for valuation is the content but not the length of the answer.

11. Write the algorithm and C program for searching and replacing an element in the linked list.
12. Explain how to perform insertion and deletion operations in a double-linked list.
13. What is a queue? Write a C program to implement queue using arrays.
14. (a) Explain the operation of stack and queue. 5
(b) Convert the given infix expression to postfix expression : 5
 $a b / c (d / e)$
15. Explain how to construct a tree for the given inorder and preorder traversals :

Inorder : D B E A C F

Preorder : A B D E C F

- 16.** Write preorder, postorder and inorder traversals for the following tree :



- 17.** (a) Write a C program for selection sort. 5
(b) Explain the working of quicksort and write algorithm. 5
- 18.** (a) Write the example for merge sort and explain. 5
(b) Write an algorithm for binary search. 5
