



C09-IT-305

3303

BOARD DIPLOMA EXAMINATION, (C-09)

MARCH/APRIL—2014

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 linear data structure and give an example.

2. What are the different data types?

3. Define a stack.

4. What is a sparse matrix?

5. Write how an element is searched in a singly-linked list.

6. What is an infix expression? Give an example.

7. How is a binary tree represented using linked list?

8. List the applications of trees.

9. Write the time complexities for (a) selection sort, (b) insertion sort and (c) bubble sort.

10. What is searching?

PART—B

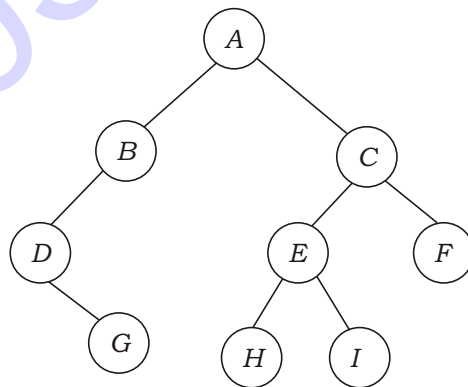
10×5=50

- Instructions :** (1) Answer *any five* questions.
(2) Each question carries **ten** marks.
(3) Answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.

11. (a) Write about a singly-linked list.
(b) Write how the insertions and deletions are performed on a singly-linked list.
12. Write a program for implementing queue operations using linked lists.
13. Write how a doubly-linked list is different from a singly-linked list.
14. Write a program for implementing a circular queue using arrays.
15. Explain how to construct a tree for the given in-order and pre-order traversals output :

In-order : D G B A H E I C F
Pre-order : A B D G C E H I F

16. Explain various tree traversal operations for the given example and write the outputs :



17. Write the algorithm and program for bubble sort.
18. (a) Write the algorithm for selection sort.
(b) Explain the principle of binary search with example.
