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c09-CM-305

3231

BOARD DIPLOMA EXAMINATION, (C-09)

OCT/NOV—2014

DCM—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. What are the non-linear data structures?

2. Define data types, data structures and ADT.

3. List the operations possible on a linked list.

4. Write a C self-referential structure for a node of a double-linked list.

5. What is the role of a top pointer in stack operations?

6. What are dequeue and circular queue?

7. Is it possible to construct a tree for given pre- and post-order traversals? Write your comments.

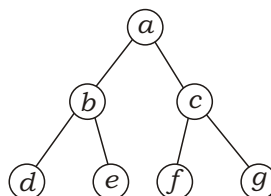
- * 8. Write the operations on a binary tree.
9. Where is the sorting used in Computer Science?
10. Write how binary search works.

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.

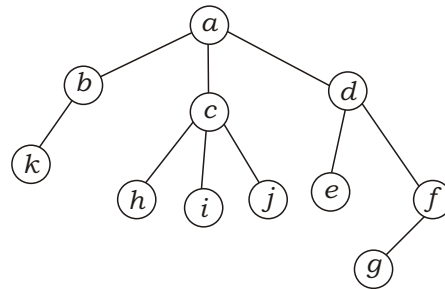
11. Explain how to create a singly linked list.
12. (a) What are the advantages of doubly linked lists over singly linked list?
 (b) Write how the insertions and deletions are performed on a doubly linked list.
13. (a) Write how to convert an infix expression into postfix.
 (b) Evaluate the postfix $123 * 4$ -expression.
14. (a) Write about the operations on a queue.
 (b) Write about the sparse matrix.
15. (a) Write how to represent a tree using linked lists.
 (b) Draw the in-order traversal of the following tree :



16. (a) Write how to construct the tree for the given in-order and post-order traversals of a binary tree.

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(b) Convert the following tree into a binary tree :



17. (a) Write an algorithm for bubble sorting.

(b) Explain how the complexity is calculated for the bubble sort.

18. (a) Write about the selection sorting.

(b) Write how the binary search is different from linear search.

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