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C09–CM–305

3231

BOARD DIPLOMA EXAMINATION, (C–09)

OCT/NOV—2013

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

1. Define data structure and give an example.

2. What is an abstract data type?

3. List the operations that can be performed on queues.

4. Write how the PUSH is performed in a stack.

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

6. Define a priority queue.

7. What is a tree traversal? How many ways a tree can be traversed?

8. Is it possible to construct the tree from given pre-order and post-order traversals? Write your comments.

9. Write the principle of selection sort.

10. What is searching? List the types of searching method.

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. Write a program to represent a matrix as a sparse matrix in memory.

12. *(a)* Write how to sort elements in a singly linked list.

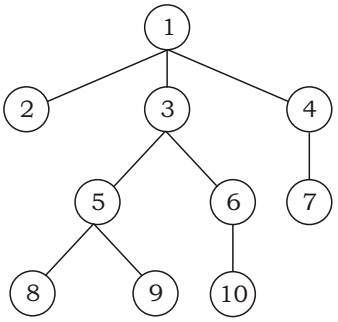
(b) Write about singly circular linked lists.

13. Write a program for insertion and deletion operations on a queue.

14. Explain how a doubly linked list is different from singly linked list.

15. Explain how a tree can be created and displayed with algorithm.

16. Convert the following tree into the equivalent binary tree :



17. Write the program to implement merge sort on two-sorted list.

18. *(a)* Sort the list 5, 8, 3, 7, 2, 9, 1 using the bubble sorting method.

(b) Write the algorithm for binary search.

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