C14–CM–305/C14–IT–**305**

4235

BOARD DIPLOMA EXAMINATION, (C–14)
MARCH/APRIL—2016
DCME—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 data structure and classify it. 1+2

2. Explain linear data structures.

3. List the advantages of linked lists.

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

5. Define the operations of stack.

6. What is the principle of queue? Give an example. 2+1

7. Define binary tree with example.

8. Explain about in order traversal of a binary tree.

**9.** Write the principle of merge sort.

10. State the need of searching.

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. Formulate an algorithm for a linked list that will change the INFO field of the *k*th node to the value given by *Y*.

12. Design an algorithm to split a circular double-linked list into two circular double-linked lists.

13. Writ a C program to convert infix to postfix expression.

14. What is queue? Write a C program to implement queue using arrays.   2+8

15. Write a C program to create and display a tree.

16. Explain various tree traversal operations for the given example and write the outputs :
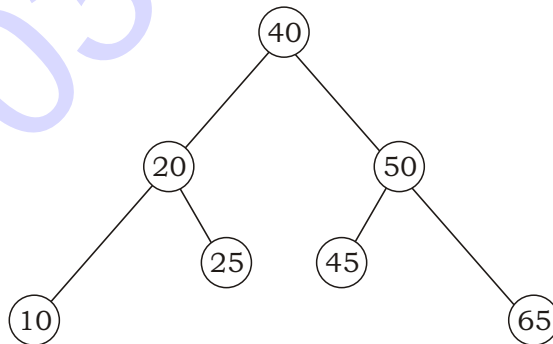
17. Write a C program to implement merge sort method.

18. *(a)* Write a C program to implement insertion sort method.   5

     (b) Write a C program to implement binary search method.   5

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