



C16-CM-304/C16-IT-304

6230

BOARD DIPLOMA EXAMINATION, (C-16)
MARCH/APRIL—2018
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 them.

2. Define abstract data type.

3. What is a singly-circular linked list?

4. Evaluate the given postfix expression 842/+9+.

5. What is a priority queue?

6. List the applications of stack.

- * 7. Define the following :
- (a) Root
 - (b) Depth of tree
 - (c) Degree of node
8. List the applications of trees.
9. What is sorting? State the need of sorting.
10. Compare between linear and binary search techniques.

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 insert and delete elements in a singly-linked list.

12. Explain how to convert an infix expression to postfix form with an example.

13. Write a C program for insertion and deletion operations in a queue.

* 14. Explain in detail about operations in a doubly-linked list.

15. (a) Explain how to convert a general tree into binary tree with an example. 5

(b) Explain an algorithm to create a binary tree. 5

- * **16.** Explain the linear representation and linked list representation of a binary tree.
- 17.** (a) Write a C program to implement merge sort on two sorted lists. 5
- (b) Write an algorithm for linear search. 5
- 18.** Write an algorithm for bubble sort and derive its time complexity.
