

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/
MANAGEMENT/COMMERCIAL PRACTICE — OCTOBER, 2018**

DATA STRUCTURES

[Time : 3 hours]

(Maximum marks : 100)

PART — A

(Maximum marks : 10)

Marks

I Answer *all* questions in one or two sentences. Each question carries 2 marks.

1. Write concept of classes in C++.
2. Write the characteristics of Queue data structure.
3. Write short note on doubly linked list.
4. What is a complete binary tree ?
5. Define cycle in a graph.

(5×2 = 10)

PART — B

(Maximum marks : 30)

II Answer any *five* of the following questions. Each question carries 6 marks.

1. Explain De queues with an example.
2. Describe the procedure for insert and delete first element of a linked list.
3. Write the procedure for stack_empty() in linked implementation of stack.
4. Write an algorithm for pre order traverse of a binary tree. Give an example.
5. Explain Threaded binary tree with example.
6. Define Graph. Write a short note on Path of length k in a graph.
7. Write an algorithm for bubble sort on a list of elements.

(5×6 = 30)

PART — C

(Maximum marks : 60)

(Answer *one* full question from each unit. Each full question carries 15 marks.)

UNIT — I

- III (a) Explain about Queue ADT. 10
 (b) Explain priority queues with a diagram. 5

OR

- IV (a) Convert the expression to prefix and postfix form.
 (i) $(A+B)*C/(D-E)$ (ii) $((A-B) + (C*D)/E)/F$ 6
 (b) Write an algorithm for postfix evaluation using stack. 9

UNIT — II

- V (a) Explain the implementation of stack with linked list. 9
 (b) Explain the procedure for deleting a specific element from a doubly linked list. 6

OR

- VI (a) Explain the implementation of Queue with linked list. 9
 (b) Write short note on circular and doubly linked list. 6

UNIT — III

- VII Define binary trees and explain traversal algorithms with example. 15

OR

- VIII (a) Explain inorder traversal using BST with an example. 7
 (b) Explain Expression trees and draw expression tree for
 (i) $A+B*C+D$ (ii) $A*B+C-D$ 8

UNIT — IV

- IX Explain with example graph ADT and traversals. 15

OR

- X (a) Write binary search algorithm. 7
 (b) Write quick sort algorithm. 8
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