TED (15) – 4133

(REVISION — 2015)

Reg. No. ....

Signature ....

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)

[88]   [P.T.O.

Marks

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