KLET–150

M.Sc. (Lateral Entry)(Ist Semester) Examination Jan., 2023

COMPUTER SCIENCE

Paper – FS-COMP-MCSLE-CC-101

(Data Structure)

Time : 3 Hours] [*Maximum Marks : 40*

The question paper contains three Sections.

Section–A (Marks : 1 × 10 = 10)

Note :– Answer all *ten* questions (Answer limit **50** words). Each question carries **1** mark.

Section–B (Marks : 3 × 5 = 15)

Note :– Answer any *five* questions by selecting at least *one* question from each Unit (Answer limit **200** words). Each question carries **3** marks.
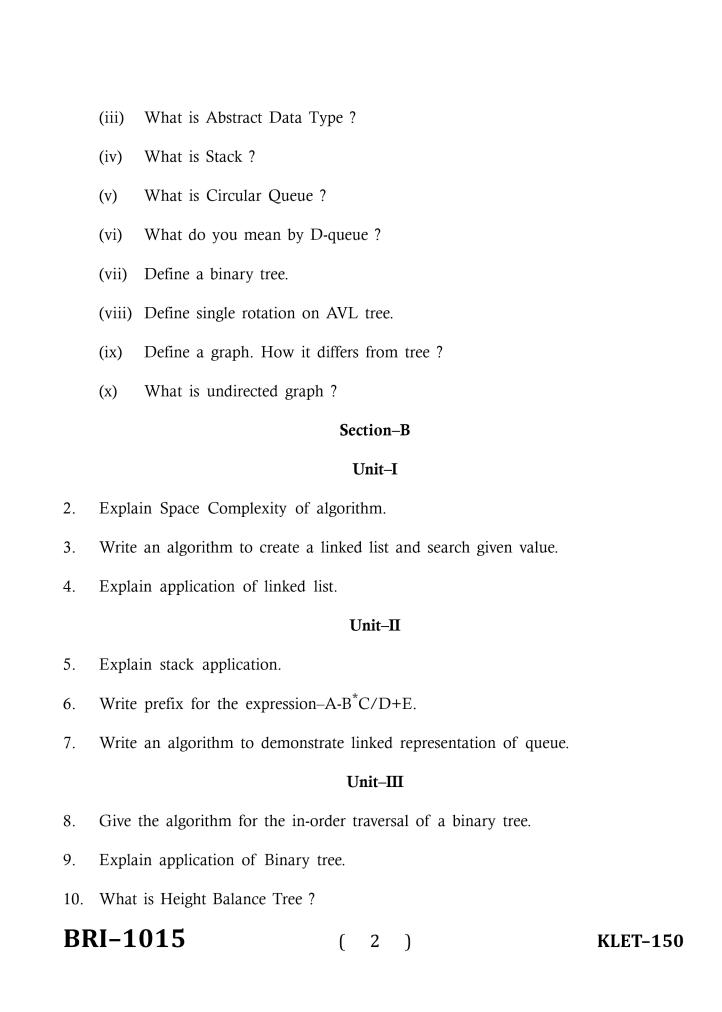
Section–C (Marks : 5 × 3 = 15)

Note :– Answer any *three* questions by selecting *one* question from each Unit (Answer limit **500** words). Each question carries **5** marks.

Section–A

1. (i) Why is linked list used for polynomial arithmetic ?

    (ii) How is linked list represented in memory ?

(iii)   What is Abstract Data Type ?

(iv)   What is Stack ?

(v)   What is Circular Queue ?

(vi)   What do you mean by D-queue ?

(vii)   Define a binary tree.

(viii)   Define single rotation on AVL tree.

(ix)   Define a graph. How it differs from tree ?

(x)   What is undirected graph ?

Section–B

Unit–I

2.   Explain Space Complexity of algorithm.

3.   Write an algorithm to create a linked list and search given value.

4.   Explain application of linked list.

Unit–II

5.   Explain stack application.

6.   Write prefix for the expression–A-B*C/D+E.

7.   Write an algorithm to demonstrate linked representation of queue.

Unit–III

8.   Give the algorithm for the in-order traversal of a binary tree.

9.   Explain application of Binary tree.

10.   What is Height Balance Tree ?

Section–C

Unit–I

11. Write algorithms to insert into and delete elements from a doubly linked list.

12. List out the advantages of using a linked list over others.

Unit–II

13. What is recursion ? Give the application of recursion.

14. What are the various queue operations ? Explain.

Unit–III

15. Construct the binary tree given the following traversals :

    Pre-order : A B D G H C E I F

    In-order : G D H B A E I C F

16. Explain DFS and BFS with suitable example.