Reg. No. :

Question Paper Code: 43202

B.E. / B.Tech. DEGREE EXAMINATION, AUGUST 2021

Third Semester

Computer Science and Engineering

14UCS302 - DATA STRUCTURES

(Regulation 2014)

Duration: 1:45 hour   Maximum: 50 Marks

PART A - (10 x 2 = 20 Marks)

(Answer any ten of the following questions)

1. What is abstract data type? Give any two examples.

2. Mention the applications of stack.

3. What are the various tasks performed while traversing a binary tree?

4. What is meant by a thread in a threaded binary tree?

5. What is the need for balancing a tree?

6. Mention the applications of B-tree.

7. What is meant by primary clustering?

8. What is the need for path compression?

9. What is the significance of minimum spanning tree?

10. What is an articulation point in a graph?

11. Define the height balanced tree: "AVL".

12. What is rehashing.

13. Identify the different properties of an equivalence relation in a set.

14. Briefly illustrate the adjacent matrix representation with an example.

15. What is bi-connectivity? Give an example.

PART – B (3 x 10= 30 Marks)

(Answer any three of the following questions)

16.   Explain the Linked implementation of stack and queue. How will you represent a
       Polynomial using an array?   (10)

17.   List the different types of tree traversal. Develop an algorithm for traversing a
       Binary tree. Validate the algorithm with a suitable example.   (10)

18.   Briefly explain the single and double rotation of AVL tree with examples. (10)

19.   Given the following keys {4371, 1323, 6173, 4199, 4344, 9679, 1989} and a

       hash   function $h(X) = X$ (mod10), construct.
          (i)   separate chaining table
          (ii) an Open addressing hash table using linear probing
          (iii) an Open addressing hash table using quadratic probing
          (iv) an Open addressing hash table with second hash function
          $h2(X) = 7-(X \bmod 7)$.   (10)

20.   Explain Euler circuit with suitable example.   (10)