Reg. No. : | | | | | | | | | | |

Question Paper Code: 33202

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2019

Third Semester

Computer Science and Engineering

01UCS302 - DATA STRUCTURES

(Regulation 2013)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions.

PART A - (10 x 2 = 20 Marks)

1. Write any two applications of queue.
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. What is a heap? Give an example.
7. Write down the time complexity of Hash search.
8. What are path compression?
9. Define topological sorting.
10. What are Euler circuits?

PART - B (5 x 16 = 80 Marks)

11. (a) Write the routine for insertion and deletion of singly linked list. (16)

Or

(b) What do you mean by doubly linked list? Write an algorithm for inserting and deleting an element from doubly linked list. Illustrate with example. (16)

12. (a) In a binary tree,

(i) how do you compute the number of leaf nodes

(ii) how do you swap the left and right children of every node? Explain the algorithms with an example. (16)

Or

(b) (i) Describe in detail about insertion routine of BST. (8)

(ii) Explain the algorithm for expression tree and construct the expression tree for the expression ab + cde + * *. (8)

13. (a) Write a procedure to implement single and double rotations while inserting nodes in an AVL tree with example. (16)

Or

(b) Explain with examples how a key value can be inserted and deleted in a B-Tree. (16)

14. (a) What is collision in Hash Table? Explain the collision resolution strategies with suitable example (16)

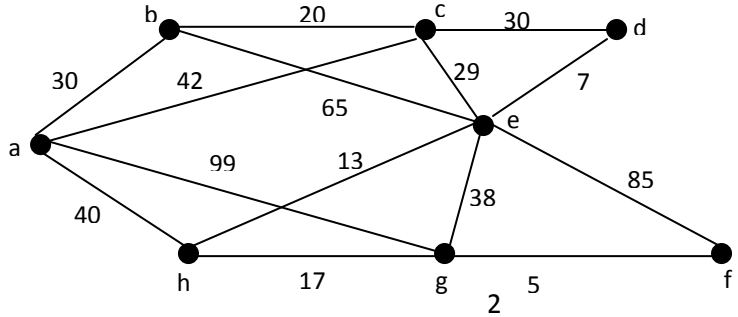
Or

(b) Explain the smart union algorithm with example. (16)

15. (a) Explain with an example for breadth first and depth first search traversal of a graph. (16)

Or

(b) Write an algorithm to find the shortest path using Dijkstra's algorithm. Find the shortest path from 'a' to 'd' in the graph given below.



(16)