

Reg. No. :

--	--	--	--	--	--	--	--	--	--	--

Question Paper Code: 31022

B.E. / B.Tech. DEGREE EXAMINATION, OCTOBER 2014.

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. What is abstract data type? Give any two examples.
2. Mention the applications of stack.
3. Draw an expression tree for $a * (b + c) + ((d + e * f) * g)$.
4. What is a threaded binary tree?
5. What is the purpose of splay tree?
6. Draw a minheap for the following numbers. 12, 42, 25, 63, 9.
7. What is meant by primary clustering?
8. Define an equivalence relation.
9. When a graph is said to be bipartite?
10. What is topological sort?

PART - B (5 x 16 = 80 Marks)

11. (a) Write an algorithm to merge two sorted linked lists into a single sorted list. (16)

Or

(b) Define Queue ADT. How is circular queue implemented? Give 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) Explain the process of finding the minimum and maximum elements of binary search tree. (8)

(ii) Explain the tree traversals with algorithms and examples. (8)

13. (a) Briefly explain the single rotation and double rotation of AVL tree with examples. (16)

Or

(b) Explain the binary heap operations with examples. (16)

14. (a) Explain the concept of open addressing and rehashing? What is separate chaining? Illustrate the concept with suitable examples. (16)

Or

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

15. (a) Write short notes on:

(i) Breadth First Traversal (8)

(ii) Euler circuits and applications. (8)

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)

