Code No: I4001/R16

M. Tech. I Semester Supplementary Examinations, February-2020
ADVANCED DATA STRUCTURES/ADVANCED DATA STRUCTURES AND ALGORITHM ANALYSIS

Common to Information Technology (40), Computer Science (05), Computer Science & Technology (59) and Computer Science & Engineering (58)

Time: 3 Hours   **Max. Marks: 60**

Answer any FIVE Questions
All Questions Carry Equal Marks

1.	a	Elaborate on advantages and disadvantages of Doubly Linked lists. Also write the code to count the number of nodes in the doubly linked list.	6M
	b	Write an algorithm to illustrate the concept of implementing Queues using Linked Lists.	6M
2.	a	Illustrate Bubble sort method on the following list of elements. Describe each and every step in the illustration process. 30, 16, 63, 6, 71, 9, 59,82, 27, 49	6M
	b	What is an expression tree? Construct the expression tree for the infix expression (9/((3 + 6-1) * 4)). Also trace out the postfix expression from the constructed expression tree.	6M
3.	a	Define Stack. Write the algorithm to illustrate the basic operations of stack.	6M
	b	What is collision in hashing. Explain how chaining and Double-hashing handles the collision in hashing with an example each.	6M
4.	a	Create a Binary Search Tree (BST) for the following elements 65, 21, 63, 98, 71, 64, 3, 58, 81, 29. Briefly describe each and every step.	6M
	b	What is Heap? Discuss on types of Heaps with an example each.	6M
5.	a	Construct an AVL tree for the following list of elements. 1. Jan, Dec, Nov, Sep, Mar, Feb, Jun, Oct, May, Jul, Apr, Aug 2. Red, Blue, Green, Orange, Yellow, Violet, Indigo	6M
	b	Explain deletion algorithm in Red-Black trees with an example.	6M
6.	a	Write an algorithm to perform search opeartion in B-Tree.	6M
	b	What is Priority Queue? How does it differ from an normal Queue. Also discuss on the implementation of priority queues using arrays.	6M
7.	a	Write an algorithm for Selection sort mechanism and illustrate the same with an example.	6M
	b	Explain Breadth First Search (BFS) in graphs with an example	6M
8.	a	Write an algorithm to find the height of an AVL tree.	6M
	b	Write a short note on the following graph terminologies. i. Complete Graph ii. Acyclic Graph iii. Out Degree	6M

*****