

	d)	Given a Singly linked List with head pointing to the first node , What does the following code do <pre> int what (struct node *head) { If (head==NULL) return 0; else if (head->data % 2) return(head->data + what(head->next) else return(what(head->next)); } </pre>	4
3	a)	Given a threaded binary tree where the NULL left and right pointers of a node are made to point to the inorder predecessor and successor respectively, write a iterative function to traverse the tree in inorder.	6
	b)	Write an iterative function to search for a key in a binary tree (Not a binary search tree). Use Stack or a Queue, do not write functions of stack or queue.	8
	c)	In a Min heap, the data value of the parent is lesser than its children. Create a Min Heap using top down approach for the following numbers in sequence: 9, 3, 7, 4, 5, 6, 1, 2 Recreate the min heap after removing the smallest element.	6
4	a)	Create an AVL Tree for the following keys: EAT APPLE, DOG, BAT, COT and CAT.	4
	b)	A complete graph is a simple undirected graph in which every pair of distinct vertices is connected by a unique edge. Given an undirected graph represented as adjacency matrix, write a function to check if it is complete graph.	4
	c)	What does it mean for a directed graph to be strongly connected or weakly connected? Write a function using DFS to check if a directed graph represented as adjacency list is strongly connected. You need to also write the DFS function.	6
	d)	Create a B Tree of order 3 by inserting the following elements in the sequence: 1, 5, 4, 2, 3, 7, 9, 8. Recreate the tree after deleting 4.	6

5	a)	Write a function to search for a key in a Trie. Assume the following structure of a Trie node. The function should return 1 if key is found else return 0 <pre> struct trienode { struct trienode *child[255]; int endofword; } int search(struct trienode * root, char *key) // returns 1 if key found else return 0 </pre>	6
	b)	List any four applications of Trie.	4
	c)	Define Hashing? How collision resolution is handled using separate chaining and Linear Probing.	4
	d)	Show the contents of the hash table that results when you insert items with keys P R O B I N G in that order into an empty table N=5. Use separate chaining to resolve collision. Use hash function $h(K) = K * (K+3) \bmod 5$. For example $h(C) = 3 * (3+3) \bmod 5 = 3$. Where C is the third letter in the alphabet $h(Z) = 26 * (26+3) \bmod 5 = 4$.	6