LAST MOMENT TUITIONS

Data Structures

DEC 17

Computer Engineering (Semester 3)

Total marks: 80
Total time: 3 Hours

INSTRUCTIONS
(1) Question 1 is compulsory.
*(2) Attempt any **three** from the remaining questions.*
(3) Draw neat diagrams wherever necessary.

1(a) Explain ADT. List the Linear and Non-linear data structures with example. (5 marks)
1(b) Explain B Tree and B+ Tree. (5 marks)
1(c) Write a program to implement Binary Search on sorted set of Integers. (10 marks)

2(a) Write a program to convert Infix expression into Postfix equations. (10 marks)
2(b) Explain Huffman Encoding with an example. (10 marks)

3(a) Write a program to implement Doubly Linked List. Perform the following operations.

- (i) Insert a node in the beginning
- (ii) Insert a node in the end
- (iii) Delete a node from the end
- (iv) Display the list (10 marks)

3(b) Explain Topological sorting with example. (10 marks)

4(a) Write a program to implement Quick sort. Show the steps to sort the given numbers: 25, 13, 7, 34, 56, 23, 13, 96, 14, 2 (10 marks)
4(b) Write a program to implement linear queue using array. (10 marks)

5(a) Write a program to implement STACK using linked list. What are the advantages of linked-list over array? (10 marks)
5(b) Write a program to implement Binary Search Tree (BST), show BST for the following input: 10, 5, 4, 12, 15, 11, 3 (10 marks)

Q6) Write short notes on (any two)

- (a) AVL Tree
- (b) Graph Traversal Techniques
- (c) Expression Trees
- (d) Application of Linked list - Polynomial Addition. (5 X 4 = 20 marks)