

(Please write your Roll No immediately)

Roll No _____

Second -Term Examination

**B.Tech [Third Semester]
Paper Code: ETCS-211**

**Nov., 2008
Subject: Data Structure**

Time: 1 hr 30min

Max. Marks:30

Note: Attempt Q. No. 1 and any two more. All questions carry equal marks.

Q1 (a) Define the following terms:-

(i) Directed Graph

(ii) Connected Graph

(2)

(b) Consider the following specification of a graph G.

$$V(G) = \{1, 2, 3, 4, 5\}$$

$$E(G) = \{(1, 2), (1, 3), (3, 3), (3, 4), (4, 1), (4, 5), (5, 2)\}$$

Draw its adjacency matrix.

(2)

(c) Write the function for Bubble sort.

(2)

(d) Explain Right-Threaded Binary tree.

(2)

(e) What are the advantages of height balanced binary trees over others?

(2)

Q2 (a) Write a program in c/c++ or algorithm for Quick Sort.

(3)

(b) Write a program in c/c++ or algorithm for Selection Sort.

(3)

(c) Insert the keys, in the order shown to build an AVL tree:-

55, 60, 65, 25, 20, 40, 30, 45, 35

(4)

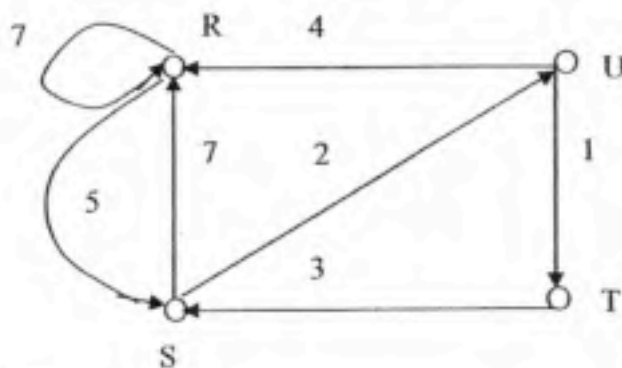
Q3 (a) Write a program in c/c++ or algorithm for depth first search for traversal of a graph?

(3)

(b) Explain minimum spanning tree with example.

(3)

(c) Find all pairs shortest path for the following graph using Warshall's algorithm. (4)



Q4 (a) Trace the steps of heap sort for the following data:

26, 5, 77, 1, 61, 59, 15, 48, 19

(3)

(b) Write a program in c/c++ or algorithm to delete a node with value x from a binary search tree.

(3)

(c) Find shortest path for the following graph using Dijkstra's single shortest source algorithm taking 'v₀' as starting node.

(4)

