

**COE 444 - Internetwork Design and Management
Fall 2003 (Term 031)**

Homework 10

Date: Sunday, December 7, 2003

Q1. Consider the terminal assignment problem defined in the following table showing the cost matrix:

	A	B	C
a	3	6	5
b	5	7	2
c	1	3	4
d	2	8	5
e	7	1	9
f	10	2	3

The problem consists of 3 concentrators A, B, C, and 6 terminals, a, b, c, d, e, and f.

Assume that each terminal has a weight of 1 and each concentrator has a capacity of 2.

Use the *Augmenting Path Algorithm* to find an optimal solution to this terminal assignment problem.

Q2. Assume that you are faced with the following situation. A company has 6 divisions, each serviced by a 10 Mbps Ethernet workgroup switch, labelled S_1 to S_6 . The company has acquired three backbone switches B_1 , B_2 , and B_3 , each with four interfaces. Two of these interfaces are 10 Mbps Ethernet interfaces, and the two others are 100 Mbps Fast Ethernet interfaces.

Assume that the cost of connecting each of the workgroup switches to each of the backbone switches is as specified in the following cost matrix:

	B₁	B₂	B₃
S₁	6	3	8
S₂	2	9	4
S₃	3	1	4
S₄	2	5	9
S₅	1	6	3
S₆	2	7	9

Find a minimum cost feasible assignment of the workgroup switches to the Backbone switches, and give the cost of such an optimum assignment.

You must show all the steps.