

Midterm #2 -- open book section
19 November, 1992

The entire exam is to be turned in at 10:40AM. Work the closed book section first and turn it in before you consult your books and notes to work on the open book section. For the closed book section, write your answers either on the exam itself (if you can write really small) or on your own paper.

There are two more questions on the other side of this page!

Problem 1. (10 points)

The BSD routines for network programming are accept, bind, connect, listen, recvfrom, and sendto, socket. Which routines are used to

- create a datagram socket
- create a stream (virtual circuit) socket
- associate a port number with a socket
- receive a datagram
- send a datagram

Problem 2. (15 points)

Flow control mechanisms are used at both levels 2 [data link] and 3 [network] of X.25. Are both necessary or is it redundant? Explain.

This is problem 13-1 on page 506 of the textbook.

Problem 3. (15 points)

Consider 3-stage crossbar switch system with 18 input and 18 output lines. It is non-blocking. For an optimal design, what is the total number of crosspoints required?

How many array are needed for each stage and how many input and output lines are there per stage?

How many simultaneous calls can this 3-stage switch carry?

How many crosspoints would be required for a 1-stage non-blocking crossbar switch?

Problem 4. (15 points)

The computer science department wants to install a computer in Robinson 217, where you are taking this exam. The department has a 10Base2 (thinwire) Ethernet that starts on the 0'th floor, climbs up to the 2'nd floor, runs through five offices on the 2nd floor, and ends next door in 221. There are two ways we could do this.

- (1), Extend the thinwire Ethernet into 217 by running coax cable from 221 and 217.
- (2), Purchase a twisted pair Ethernet (10BaseT) hub and run twisted pair from the hub, mostly likely located in 221A, to 217.

Discuss, in a couple of paragraphs, the advantages and disadvantages of the two alternatives and then give us a recommendation. By the way, a twisted pair Ethernet hub costs \$200, a twisted pair transceiver costs \$40, and a thinwire Ethernet transceiver costs \$50.