

PRINT LAST NAME: _____

Examination 2

CEN 4500C Computer Network Fundamentals

April 1, 1998

Instructions

1. This is a closed-book, 50-minute examination.
2. You may use one 8.5" by 11" sheet of notes for reference.
3. Answer any three (3) questions, and no more.
4. Each question is worth fifteen (15) points.
5. Start the answer to each question on a new page (i.e., do **not** put the answer to more than one question on the same page).
6. Show your work. No work, no credit.
7. Assemble your answers in numerical order of the questions when you submit them.
8. **Do not turn the page and start until the proctor tells you to start.**
9. **Leave a 1" square in the upper left corner for a staple.**
10. **Read and sign the following statement.** You may write this on your exam and sign it there if you wish to take the exam questions home with you today. Do not discuss this exam with anyone in this course who has not yet taken this exam.

On my honor, I have neither given nor received unauthorized aid on this examination, and I will not discuss the contents of this examination with any student who has not yet taken this examination.

Signed:

1. Consider traditional, public, circuit-switched networks.
 - (a) (5) Describe the elements of the network and their functions. Give a labeled diagram showing these.
 - (b) (5) What types of switches may be used in these networks? Name and describe the operation of at least two distinct types.
 - (c) (5) Describe and compare alternate routing and adaptive routing.

2.
 - (a) (6) Describe virtual circuit implementation (internal operation). Include descriptions of all relevant formats and functions and how they relate to each other. What are its strengths?
 - (b) (4) Describe datagram implementation (internal operation). Include descriptions of all relevant formats and functions and how they relate to each other. What are its strengths?
 - (c) (5) What is the oscillation problem in adaptive routing, why did it exist, and how did the ARPANET third generation routing method overcome this problem?

3.
 - (a) (9) Describe and compare contention-based methods, token-based methods, and reservation methods for access control in LANs. Include any strengths and weaknesses each may have.
 - (b) (6) How does Ethernet adapt to load conditions? Include low, medium and high loads. What does this mechanism attempt to achieve? How well does this mechanism work? What are its limitations?

4.
 - (a) (10) What are the differences between IEEE 802.5 token ring and FDDI? What is the significance of these differences? What are the reasons for these changes?
 - (b) (5) Describe the operation of the token bus under failure, when one station in the logical ring fails.