CPS 472/572: Final Exam **Name:**____________________________________

Instructor: Dr. Clark April 26, 1996

This test is closed book and closed notes. You may use a calculator. Answer the questions in the space provided. When answering questions, please state any and all assumptions you are making. For questions involving calculation, indicate your final answer by circling it.

Part 1 (18 points)

A protocol is a form of agreement. What are the three things that must be agreed upon when designing a protocol?

Part 2 (24 points)

We discussed three different devices that can be used for interconnecting LAN segments. For each device, answer the following: 1) What is the name of the device? 2) What does the device do? 3) At what OSI layer does it operate? 4) What are some advantages to using this device rather than one of the other two?

Part 3 (24 points)

List and briefly describe three types of presentation processing that may be performed by a presentation layer service.

Part 4 (18 points)

What is the Address Resolution Protocol (ARP)? Describe the operation of ARP in an Ethernet network?

Part 5 (32 points)

List the steps involved in an address query in the Domain Name System (DNS). Assume that the requested address is available at the local server.

Part 6 (36 points)

1. How does TCP recover when an acknowledgement message is lost?

2. What is the significance of the Network Virtual Terminal (NVT) portion of the TELNET application protocol? How does the NVT make it easier to implement TELNET on a new system?

3. Which transport layer protocol is used by the Simple Network Management Protocol (SNMP)? Why is this transport protocol used?

Part 7 (48 points)

The following diagram depicts a subset of the Internet. The client host is in one Internet domain and is attempting to transfer a file from a remote system in another Internet domain.

List and describe 6 different protocols that may be used in order to support this file transfer. In your description for each protocol, explain exactly how the protocol will be used, where it will be used, and what service(s) it will provide.