

SAMPLE MID- TERM EXAMINATION

GENERAL PROCEDURES

1. This examination is open book
2. Read each problem completely before starting to answer it. Note the point values assigned to each problem and budget your time accordingly.
3. Your answers should be brief but complete. It is more advantageous to answer all the questions, briefly outlining their points, than to answer only one or two in great detail.
4. Think. Organize Do not spend too much time on any one question.
5. Write all answers in this exam booklet. Scratch work is not to be graded, clearly rule it out. If you do not have room to answer a question in the space provided, clearly write "continued on opposite page" and the back of the preceding page clearly indicating question and part number.
6. Write your name on every page. Check page numbers to ensure that your exam is complete.
7. You will have 80 minutes to complete the examination.

Question

1.	30 points	_____	Strategic Connectivity
2.	40 points	_____	Physical Connectivity
3.	30 points	_____	Network Performance
	100 points	_____	TOTAL

Question 3 (Network Performance)

This question is based on Homework 2 Question 3 (HW2Q3).

- a) In the solution you learned that the actual utilization of the Ethernet was under 500K bps.
- i) Assuming that a 500K bps Ethernet existed and was cheaper than the standard 10M Ethernet, what would be the impact of switching to the 500K bps version?
 - ii) Would your answer change much if there were 20 PC's sharing the Ethernet instead of just the two PC's?
- b) Let us now assume that the two PC's are 10 miles apart.
- i) Ignoring any problems with laying the cable, what are at least two reasons why an Ethernet CSMA/CD approach is not desirable for such lengths.
 - ii) If you assume that this Ethernet is only used for file transfers between these two PC's, what normal problems with such a long Ethernet CSMA/CD approach can be made to go away (or would not be significant)? Explain briefly.
- c) In the solutions to HW2Q3, the idea of sending one ACK for every three packets was suggested. This is in the spirit of "frame relay" or "fast packet" wide-area-network systems. In fact, such systems the ACK might only be sent after all the packets have been received --- in the HW2Q3 case, there would be only one ACK after about 550 packets. In the literature, it is usually explained that the "fast packet" approach was motivated by the transition from copper-based analog transmission to fiber-based digital transmission. What two properties of fiber-based digital do you think are important in motivating the "fast packet" protocol?