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**CS4514 B07
Computer Networks
Final Exam
December 13, 2007**

Question	Points	Score
0	1	
1	5	
2	8	
3	12	
4	3	
5	5	
6	13	
7	10	
8	6	
9	8	
10	3	
11	7	
12	4	
13	6	
14	10	
Total	100	

Trivia Question (1 extra credit point)

0. In what city did Al Gore recently accept a Nobel Peace Prize?

(5 pts) 1. Explain the difference between p-persistent and non-persistent CSMA.

(4 pts) 2a. Define Ethernet.

(4 pts) 2b. Draw a diagram and explain the impact of relative propagation time on Ethernet performance.

(8 pts) 3a. Explain the difference between an Ethernet hub and an Ethernet switch.

(4 pts) 3b. How does backward learning improve the performance of a bridge connecting Ethernet LAN segments?

(3pts) 4. How does the MII provide flexibility to the Fast Ethernet architecture?

(5 pts) 5. Briefly describe 100 Base FX.

(8 pts) 6a. Explain the RTS/CTS mechanism. How can RTS/CTS improve or worsen DCF performance?

(5 pts) 6b. Explain how PCF works.

(5 pts) 7a. According to "**Characterization of 802.11 Wireless Networks in the Home**", what is the single most important factor determining wireless communication quality? How did 802.11a and 802.11b compare with respect to loss rate in their experiments?

(5 pts) 7b. In "**Distributed Dynamic Channel Selection in Chaotic Wireless networks**" what metric was determined to be the best to measure current channel load? How is this metric used in their decentralized algorithm?

(3 pts) 8a. Explain the concept of frame bursting in Gigabit Ethernet.

(3 pts) 8b. How does this improve Gigabit Ethernet performance?

(8 pts) 9. List the difference between IEEE802.5 and FDDI.

(3 pts) 10. Why did the phone companies introduce SONET?

(3 pts) 11a. Why is cell reordering not permitted in ATMs?

(4pts) 11b. Explain the concepts of virtual paths and virtual channels in ATMs.

(4pts) 12. What are the problems with centralized routing?

(6 pts) 13. Explain how the OSPF concept of areas improves its performance in implementing link state routing.

(4 pts) 14a. What is the advertized window and how is it used by a TCP receiver?

(6 pts) 14b. Explain Fast Recovery. How does Fast Recovery improve TCP Reno performance over TCP Tahoe performance?