

Name \_\_\_\_\_

**CS4514 B06  
Computer Networks  
Final Exam  
December 14, 2006**

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

**Trivia Question (1 extra credit point)**

0a. What is the name of the penguin in "Happy Feet" who is a terrible singer?

**OR**

0b. Name the two co-chairs of the Iraq Study Group?

(5 pts) 1. Explain the difference between **ALOHA** and **Slotted ALOHA**. Why does **Slotted ALOHA** provide better performance than **ALOHA**?

(4 pts) 2a. Define **Ethernet**.

(2 pts) 2b. Discuss how long it takes and the importance of **seizing** the Ethernet channel.

(4 pts) 3. Define **relative propagation time** in a LAN and explain how it impacts LAN performance.

(5 pts) 4. Compare and contrast **802.11a** and **802.11b**.

(5 pts) 5a. Explain the role of an **Access Point (AP)** in an **Infrastructure WLAN**.

(4 pts) 5b. Explain the difference between **MAC layer retries** and **IP packet losses** experienced by an AP on IEEE 802.11 wireless networks.

(5 pts) 5c. Discuss how **1-persistent physical carrier sensing** works with CSMA/CA on a WLAN.

(4 pts) 6. Discuss the role of the **beacon frame** in **PCF**.

(5 pts) 7a. **“Performance Analysis of the Intertwined Effects between Network Layers for 802.11g Transmissions”** reconfirms the IEEE802.11 performance anomaly. Explain this anomaly. What does this paper conclude about the impact of this anomaly on infrastructure WLAN performance?

(5 pts) 7b. Briefly discuss the performance methodology used by the authors of **"Characterization of 802.11 Wireless Networks in the Home"**.

(6 pts) 8. Explain the basic operation of a **Gigabit Ethernet buffered distributor**.  
How does it handle the issue of **relative propagation time**?

(4 pts) 9. List potential problems that make the management of **token rings** difficult.

(7 pts) 10a. Explain **in detail** how **FDDI** works.

(7 pts) 10b. How is **SONET** different from **FDDI**?

(4 pts) 11. Explain the difference between a **bridge** and a **repeater**. How does a bridge provide better performance.

(7 pts) 12a. Explain the use of **VPI** and **VCI** in **ATM cell-switching**. Include a discussion of what happens to these identifiers as they pass through an ATM switch.

(2 pts) 12b. Discuss how the design of the ATM architecture deals with **Quality of Service** issues associated with a variety of Internet traffic types.

(8 pts) 13. Explain **in detail** how **Link State Routing** works.

(4 pts) 14a. Explain how **AIMD** works in **TCP congestion windows**.

(3 pts) 14b. Explain how **Fast Retransmit** improves TCP performance.