Name _____

CS513 / ECE506
Spring 2006
Computer Networks
Final Exam
May 2, 2005

Question	Points	Score
0	1	
1	6	
2	6	
3	6	
4	6	
5	7	
6	8	
7	8	
8	4	
9	10	
10	14	
11	6	
12	6	
13	12	
14	6	
15	6	
16	8	
17	6	
18	14	
19	6	
20	5	
Total	150	

Trivia Question (1 extra credit point)

0a. Name the American President who did not go to college.

OR

0b. Name the city that will host the 2012 Summer Olympics.

(6 pts) 1. Define a **MANET**. Why are **MANETs** more complicated to manage than wireless infrastructure networks?

(6 pts) 2. Compare and contrast **802.11a** and **802.11b**.

(6 pts) 3. Explain the concept of **virtual channel sensing** in **CSMA/CA**.

(6 pts) 4. Discuss how **PCF** works.

(4 pts) 5a. In "***Performance Analysis of the Intertwined Effects between Network Layers for 802.11g Transmissions***", what is the performance impact of a TCP download to a bad client on a TCP download to a good client.

(3 pts) 5b. In the paper *"**Characterization of 802.11 Wireless Networks in the Home**"*, what did the authors conclude about the relationship between distance and wireless link quality.

(8 pts) 6. Explain **in detail** how **FDDI** works?

(8 pts) 7. Explain how **100 BASE T4** manages to send data at **100 Mbps.**

(4 pts) 8. **8B/10B** encoding in **Gigabit Ethernet** keeps an **RD** (Running Disparity) positive or negative tally on each codeword. Why is this important and how does it impact the choice of codeword that is sent?

(10 pts) 9. List three advantages of using **SONET** over **FDDI**. Explain the interaction between **SONET** and **ATM switches**.

(4 pts) 10a. What are the advantages of using **cell-switching** in ATM switches?

(10 pts) 10b. 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.

(6 pts) 11.   Discuss how the design of the ATM architecture deals with **Quality of Service** issues a variety of traffic types.

(6 pts) 12. Briefly discuss the design of the **CS** and **SAR** sublayers for **AAL5**.

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

(6 pts) 14. Briefly discuss the role of the five levels of **LSAs** in **OSPF**.

(6 pts) 15. Discuss the role of **BGP** among Internet routing algorithms.

(8 pts) 16. What is the basic goal of **CIDR**? Explain how it handles **Class C addresses** to accomplish this goal.

(6 pts) 17. Explain the difference between the **Advertised Window** and the **Congestion Window** as **TCP congestion control** mechanisms.

(4 pts) 18a. Define **congestion control**.

(5 pts) 18b. Explain how a **Drop Tail router** works.

(5 pts) 18c. Explain the problem that is introduced when multiple **TCP flows** pass through a **Drop Tail router**.

(6 pts) 19. Explain the **AIMD** concept in **TCP**.

(5 pts) 20. Explain how **Fast Retransmit** works in **TCP**. How does it improve TCP performance?