

Name _____

**CS4516 C10
Computer Networks
Final Exam
March 5, 2010**

Question	Points	Score
0	1	
1	6	
2	6	
3	6	
4	4	
5	6	
6	6	
7	5	
8	5	
9	4	
10	6	
11	3	
12	5	
13	20	
14	7	
15	6	
16	5	
Total	100	

Trivia Question (1 extra credit point)

0.a What is the name of the human who is the lead avatar in the movie 'Avatar'?

or

0.b Who lit the flame at the Vancouver Olympics?

(6 pts) 1. Explain how **CDMA** with two senders works.

(6 pts) 2. Compare the differences and the advantages and disadvantages between **802.11a** and **802.11b**.

(6 pts) 3. Discuss the role and uses for **beacon frames** in **802.11** protocols.

(4 pts) 4. Use **SNR** and **BER** to explain the basic strategy behind employing **dynamic rate adaptation** in 802.11 networks.

(4 pts) 5a. Explain the technique used by **GSM** to share the mobile-to-Base Station radio spectrum.

(2 pts) 5b. What was the basic design decision made in the **2.5G** cellular network architecture?

(6 pts) 6. Name **three** characteristics of home wireless communications that were demonstrated in the paper "**Characterization of 802.11 Wireless Networks in the Home**".

(5 pts) 7. How does **source routing** work? How does the **DSR cache** improve routing for **MANETs**?

(5 pts) 8. Explain the **802.11 performance anomaly**.

(4 pts) 9. List the steps in **Indirect Mobile Routing**.

(6 pts) 10. Explain the difference between **idle listening** and **overhearing** for **wireless sensor network** receivers. Why are both of these radio states problematic?

(3 pts) 11. What is a **convergecast** traffic pattern?

(5 pts) 12. Explain briefly the **T-MAC WSN** protocol.

(5 pts) 13a. What is the difference between a **module** and a **configuration** in **nesC**?

(5 pts) 13b. What is **wiring** in **TinyOS**? Why is it needed in **WSNs**?

(5 pts) 13c. Explain the concept of **split-phase** operations in **TinyOS**.

(3 pts) 13d. Why should you use **enum** for integer **declarations** in **nesC**?

(2 pts) 13e. Why is the message interface in **TinyOS** called **Active Messages**?

(7 pts) 14. Why was **SONET** created? What are the differences between an **FDDI ring** and a **SONET ring**?

(6 pts) 15. List the **four ATM design assumptions**. What purpose do **AALs** play in the **ATM** architecture?

(5 pts) 16. Give an example and explain a **direct DDoS attack**.