**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 **80211.b.**

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

(4 pts) 4. Use **SNR** and **BNR** 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 **MANET**s?

(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**.