

Instructor: Dr. Clark

March 1, 2005

CS 3251
Spring 2005 - Midterm Exam

Problem	Possible	Score
1	20	
2	15	
3	16	
4	17	
5	16	
6	16	
Total	100	

This test is closed book and closed notes. Answer the questions in the space provided. When answering questions, please state any and all assumptions you are making.

Part 1: Protocol Layering (20 points)

List, in order, the five protocol layers we discussed. For each layer, provide the following 4 things: 1) Name of the layer, 2) Service(s) provided by this layer to the upper layer, 3) A specific standard protocol that fits in this layer. 4) Where (on which devices) this layer is implemented.

Part 2: IP (15 points)

1. (5 pts) Why does IPv4 do fragmentation and reassembly?

2. (5 pts) Where is fragment reassembly done in IP and why?

3. (5 pts) How is fragmentation handled in IPv6 and why?

Part 4: Routing (17 points)

1. (6 pts) How do link state routing protocols build a network map without already knowing the network?

2. (6 pts) What is the *count to infinity* problem and how is it handled/avoided?

3. (5 pts) What is meant by the term *domain based routing*?

Part 6: Mobility and Addressing (16 points)

1. **(8 pts)** I'm sitting at home with my laptop connected to the Internet. With basic IPv4, why is it not possible to use my Georgia Tech IP address from my office while I am connected from home? Describe in detail what would happen if I did.

2. **(8 pts)** What is CIDR? Explain what it means, what problem it solves and how.