

# Introduction to Computer Networks

## Final Examination

June 18, 2002

1. State advantages of using the distance vector routing and link state routing protocols. (10%)
2. Explain why a longest prefix matching is needed in a typical router. (10%)
3. Why are different inter-AS and intra-AS routing protocols used in the Internet. (10%)
4. Explain why 1-persistent CSMA is used in Ethernet. (10%) Why is there the LCFS (Last Come First Serve) phenomenon in the CSMA/CD protocol? (10%)
5. Assume fixed  $N$  and  $p$  for problem 17 on page 476-477 of the textbook. Determine the efficiency of the CSMA/CD-like protocol. (15%)
6. State the Hidden Station Problem in wireless environment. (10%) Show by example that exchanging RTS/CTS messages between communicating mobile stations can solve it. (10%)
7. State two advantages of the public-key cryptography over secret-key cryptography? (10%)
8. What is the purpose of a nonce in an authentication protocol? (10%)
9. Consider the adaptive playout strategy in the Internet phone implementation described in Section 6.3 of the textbook. How can two successive packets received at the destination have timestamps that differ by more than 20 msec when the two packets belong to the same talkspurt? (7%) How can the receiver use sequence numbers to determine whether a packet is the first packet in a talkspurt? Be specific. (8%)