CS577/EE537 Spring 2002
Final Exam Questions

1a. What is the difference between the advertised window and the congestion window in TCP?
b. Explain the relationship between global synchronization with Drop Tail routers and the dynamics of the congestion window of a TCP Reno source.
c. Explain how RED works.
d. Discuss how well RED meets its original goals.

2a. Explain CSFQ?
b. What is CSFQ's advantage over FRED?
c. Would CSFQ work better with UDP or TCP? Why?
d. Discuss integrating CSFQ with MPLS.

3a. What are the repercussions of the conclusions in the "RED Tuning" paper?
b. Does Adaptive RED address any of the problems put forth by Christainsen et al?
c. Compare READ and Adaptive RED?
d. Discuss the changes in attitudes towards Sally Floyd's original suggested settings for the RED parameters.

4a. Characterize Web traffic in relation to FTP traffic?
b. Briefly describe three Web traffic performance issues.
c. Describe how RIO-PS works and how it addresses Web traffic performance issues.
d. Discuss limitations of the RIO-PS approach and suggest possible improvements.

5a. Explain the difference between relative and absolute service differentiation.
b. Briefly describe the three relative differentiation models.
c. Discuss the drawbacks of these schemes that are addressed in the proportional differentiation model?

6a. Explain the differences between IntServ and DiffServ.
b. Define the role of a Bandwidth Broker and explain how Bandwidth Broker concept fits into DiffServ.
c. Why is the Qbone Premium Service important to the overall Qbone architecture?
d. What issues must be dealt with by the Bandwidth Broker to make end-to-end interdomain resource reservations?

7 Given an on-demand video delivery system composed of distributed servers:
a. Briefly outline pre-storing and pre-caching in relation to a multicast delivery mechanism.
b. Explain how the normalized cost, C-hat , would change if local, inter-server bandwidth were to cost beta1 $/(min.channel). Provide both a general equation for all delivery mechanisms and a specific re-analysis of the communicating servers delivery mechanism.

8a. Discuss the advantages of Hierarchical Distance Vector Multicast Routing over Distance Vector Multicast Routing Protocol?
b. Explain the concept of "tunnels" in MBone.
c. Explain the process of routing between regions for the HDVMRP protocols.

9a. Discuss the issues faced when trying to integrate RSVP with QoS multicast routing.
b. Briefly define MQ, Multicast with QoS.
c. What functionality is needed to accomplish Tree Construction and Tree Pruning in MQ.

10a. Explain briefly how MPLS works and why is it important in modern internets.
b. Discuss the advantages of MPLS VPNs over conventional VPNs.
c. Explain the messaging sequence for setting an explicit path in CR-LDP and RSVP-TE.

11a. Explain the conditional max-min battery capacity routing algorithm (CMMBCR)?
b. What is "promiscuous mode" and how does it work in the Dynamic Source Routing (DSR) protocol?
c. What benefit is gained from using it and what other mechanisms in DSR also provide this benefit?

12a. What are the advantage and disadvantage of ISM band?
b. Discuss how managing a wireless network is different from managing a wired network?
c. In Phase Two of the Wireless Andrew implementation, how did the implementors determine the significance of interference sources for the wireless network?

13a. Explain triangle routing when mobile nodes are added to a network.
b. What is the purpose of a Binding Update in Mobile IPv6?
c. What functions are performed by a correspondent node in Mobile IPv6?

14a. What are the two different modes and two different protocols used in IPsec?
b. Which is preferred encryption before authentication or encryption after authentication. Why?
c. List the problems that can occur when IPsec handles ICMP messages.

15a. What are the advantages and disadvantages of traditional firewalls compared to distributed firewalls?
b. Explain the advantages of using Keynote in implementing a distributed firewall.
c. What is the role of the policy daemon in the proposed distributed firewall system.

16a. Briefly describe the following forms of cryptography, and give a common use for each one: hash function, block-cipher, and public-key.
b. Explain the difference between a Kerberos ticket and a Kerberos authenticator.

17a. What is collaborative web caching?
b. Describe the difference between latency-sensitive hashing (LSH) with geographically clustered hashing (GCH)and geographically distributed hashing (GDH).
c. Why is load balancing important in latency-sensitive hashing?

18a. Why was UDP initially used instead of TCP in SNMP?
b. Under what circumstance might TCP be a better choice for implementing SNMP?
b. List the properties of the TLS Handshake Protocol.
c. Discuss the causes of overhead due to TLS Security.