Sample Final Exam

1. Define *network*. What are some uses of a typical data network? Distinguish between LANs, MANs, and WANs.
2. Explain the terms *source*, *medium*, *sink*, and *protocol*.
3. Why are fully interconnected mesh networks rarely installed?
4. Why do ring networks often have two rings transmitting data in opposite directions?
5. What is the ISO's OSI reference model? Why is it important for you to learn about it?
6. What are the functions of the OSI physical link, data link, and network layers?
7. Briefly list and explain ten distinct steps that occur to get e-mail from your computer to someone else. Mention the purpose and roles of MX records, SMTP and POP3.
8. Define the terms *segmentation* and *reassembly* as they apply to communication. In TCP/IP, where does each occur?
9. List (in proper sequence; as they happen occur on the protocol stack) several *types* of addresses that are required as a message moves from the application layer on one computer to the application layer on another.
10. Explain the terms *modulation*, *carrier signal*, and *multiplexing*. For what and where each of these are used.
11. Explain the difference between *time domain* and *frequency domain*. How do we go from one to the other? Why do we go from one to the other?
12. Describe how a network router works. What are *routing tables*, give an example. Explain why is it important for any routing technique to have alternate routes available to send messages.
13. Describe the difference between TCP, UDP, and IP. Which ones are *synchronous*, and which ones are *asynchronous*? If you wanted to send a file, which one would you use? If you wanted to send live video, which one would you use, and why?
14. What is the purpose of DNS? Explain how domain names are resolved. Can a single computer have many domain names (what would be the purpose of that)? Many IP addresses (what would be the purpose of that)?
15. Describe how TCP works; how it manages to be reliable over an unreliable network. Explain the purpose of TCP/IP's sub-protocols such as: IP, ICMP, ARP, UDP, and TCP.
16. List all seven ISO's OSI layers, and their purpose.
17. What aspect of SSL prevents man-in-the-middle attacks? (What makes it impossible for your ISP to steal your credit card numbers as you're puchasing things online?)
18. Briefly explain the architectural difference between Napster, KaZaA, Freenet, and BitTorrent. What are strengths and weaknesses of each.
19. What is the purpose of nmap? How does it work? What are the limitations of nmap?
20. Explain what is meant by the term *tunnel*, as in "SSH Tunnel". Why is there a need for tunnels?