Network Review

Question Set 1: 4.1 – Protocols and Addresses

1. In a networking context, what is a protocol?
   A protocol is a communication language for computer.
2. What is the major protocol used on the Internet?
   TCI/IP
3. At what OSI/ISO layer does IP operate?
   Layer 3, the Network Layer

From Protocols and Addresses part 2 of 3...

1. What three pieces of information do you need to configure TCP/IP?
   The IP address, the subnet mask, and the default gateway
2. Is the IP address a single address?
   No, it is a combination of network and host IDs
3. When was classfull addressing last used?
   1993
4. What are the three major classes of addresses?
   Classes A, B, and C

Protocols and Addresses part 3 of 3…

1. What is DNS? What does it do?
   A Domain Name System turns a human readable name into an IP address.
2. What is DHCP? What does it do?
   Dynamic Host Configuration Protocol automatically configures TCP/IP.
3. Which proprietary Microsoft protocol was used in early versions of Microsoft Windows?
   NetBEUI
4. Which protocol is used to resolve a fully qualified domain name to an IP address?
   DNS

Question Set 2: 4.1 – Common Ports

1. In a TCP/IP context, what is a port?
   A port is a node that devices connect to when communicating with the device.
2. What is a non-ephemeral port?
   A non-ephemeral port whose number is permanent.
3. What is meant by the term "well known" port?
   A port whose number everyone knows
4. Compare and contrast TCP and UDP ports.
   TCP is a connection-oriented protocol. When a file or message is sent it will get delivered unless connections fails. If connection lost, the server will request the lost part. There is no corruption while transferring message.

UDP is a connectionless protocol. It's like dropping a postcard in the mailbox. When you a send a data or message, you don't know if it'll get there, it could get lost on the way. There may be corruption while transferring a message.

Common Ports Part Two

1. What port does the DNS service utilize?
   UDP/53
2. What port does the HTTPS protocol utilize?
   TCP/443
3. What is the protocol SMTP and what port does it use?
   The protocol SMTP is Simple Mail Transfer Protocol. It uses TCP/25.

Question Set 3: 4.1 – Network Technologies

1. How does Professor Messer define a network?
   It is a way to connect devices.
2. What is a network Topology? And who makes Network Topology Standards?
   A topology is a network type. The IEEE makes the standards.
3. What is the most popular form of consumer networking?
   Ethernet
4. What is the term that describes a network that can communicate in both directions at the same time?
   Full-duplex
5. What differentiates a LAN from a WAN?
   A LAN is confined to a small area, and a WAN can span large geographical areas.

Question Set 4: 4.1 – IPv4 and IPv6

1. What is the most widely used protocol in the world?
   IPv4
2. Compare and contrast the lengths of IPV4 and IPV6.
   IPv4 is a connectionless protocol for use a packet-switched networks. It operates on a best effort delivery model, in that it does not guarantee delivery, nor does it assure proper sequencing or avoidance of duplicate delivery. Also addresses were exhausted on February 3, 2011. Internet Protocol Version 6 address size was increased to 128 bits, providing a vastly increased address space that also allows improved route aggregation across the Internet and offers large subnetwork allocations.
3. Is this a valid IPv4 address: "192.1.325.12"?
   No, the third octet exceeds the maximum value of 255
4. Is this a valid IPv6 address: "a::b::c"?
   No, double colons are allowed only once per address.

Question Set 5: 4.2 – Network Cabling and Connectors

1. What is the alliance of trade associations that makes network cabling standards?

Electronic Industries Alliance, EIA

2. What is the Commercial Building Telecommunications Cabling Standard that we use for cabling?
   ANSI/TIA/EIA-568
3. What is the most common physical type of cabling?
   Twisted pair
4. What category of copper cable support 100 Mbits Ethernet?
   Cat5
5. What category of copper cable supports 10 Gbits Ethernet through 55 meteres?
   Cat6

Part 2

1. What is plenum rated cable?
   Plenum-rated cable does not burn as quickly as regular cable
2. What type of cable did Ethernet originally use? Hint, same type of cable as used in cable TV.
   Coaxial
3. What is the type of cable that is most suited for sending signals a long distance?
   Fiber Optic cable
4. If you were connecting machines within a data center, what type of fiber would you be most likely to use?
   Multi-mode optical fiber
5. If you were connecting two remote buildings, what type of fiber would you be most likely to use?
   Single-mode optical fiber
6. What type of jack would you use for Ethernet?
   Ethernet uses an RJ-45 jack
7. What type of jack would a phone use?
   Phone use an RJ-11 jack.

Question Set 6: 4.3 – Network Types

1. What high speed type of network runs over telephone lines?
   DSL
2. What type of high speed network runs over coax cable?
   Cable
3. Of the popular types of home high speed networks utilizes non-terrestrial networks that typically have a high latency?
   Satellite utilizes non-terrestrial networks

Part2

1. What was Bluetooth originally designed to replace?
   Slow wired networks

2. What type of network would Bluetooth create?
   Personal Area Networks (PANs)

Question Set 7: 4.3 – Wireless Networking

1. What is the IEEE family of standards for wireless networking?
   802. 11
2. How do the different members of the 802.11 family differ?
   They differ in speed, channels, distances, and frequencies.
3. Which 802.11 standard utilizes MIMO?
   802.11n utilizes multiple-input multiple-output.
4. Which 802.11 standard represents an improvement, and backwards compatibility, with 802.11b?
   802.11n

Part 2

1. What was the original encryption utilized by 802.11?
   Wired Equivalent Privacy (WEP)
2. When were WEP cryptographic vulnerabilities identified?
   2001
3. What type of encryption was created to improve on WEP but utilize the same hardware?
   Wife Protected Access (WPA)
4. What type of wireless encryption is based on the Advanced Encryption Standard (AES)?
   WPA2 is based on the AES

Part 3

1. In wireless networking, what is an SSID?
   The Service Set Identifier is the name of a wireless network.
2. Disabling SSID broadcast is an important security configuration.
   It can be helpful but doesn't actually secure anything.
3. What is the general security term used to describe the disabling of SSID broadcast?
   Security through obscurity
4. Can MAC addresses be spoofed?
   Yes
5. What wireless networking standard supports speeds up to 600 megabits per second?
   802.11n