

Additional Exercises

Chapter 1 – Introduction to Networking

1. What is an Internet service provider? (Section 1.1)
2. *An internet* is often confused with *the* _____, but an internet is not necessarily part of the _____. (Section 1.1)
3. What is an extranet? (Section 1.1)
4. In a client/server network relationship, the _____ stores data that is used by the users of the organizational LAN. (Section 1.1)
5. List three examples of a shared network resource. (Section 1.1)
6. What is a network protocol? (Section 1.1)
7. What is the name of the ARPA subgroup that was set up to focus on research pertaining to anything that related to computing? (Section 1.2)
8. What are the four locations that made up the original ARPANET? (Section 1.2)
9. The Nations Science Foundation Network (NSFNET) was developed originally to allow researchers access to five supercomputers. Where were these supercomputers located? (Section 1.2)

Address Resolution Protocol (ARP)
Remote Copy Protocol (RCP)
TCP/IP print server
Web server
Line Printer Daemon (LPD)
tracert
Remote Shell (RSH)
e-mail server
nslookup
Line Printer Daemon (LPD)
Trivial File Transfer Protocol (TFTP)
ping
File Transfer Protocol server
Telnet
netstat
route
DNS

Chapter 2 – LANs, WANs, and MANs

22. A LAN may consist of computers, printers, storage devices, and other shared devices or services available to a group of users within a _____ geographical area. (Section 2.1)
23. What does the term *sneakernet* refer to? (Section 2.1)
24. What are the three main IEEE standards that are primarily associated with traditional LANs? (Section 2.1)
25. The Media Access Control sublayer provides _____ and _____ control. (Section 2.1)
26. What was the name of the company that introduced Token Ring technology? When was it introduced, and what was the operating speed? (Section 2.1)
27. What are the two notable differences between the IBM and IEEE 802.5 specifications for Token Ring? (Section 2.1)
28. True or false: Both IEEE 802.3 and Ethernet are CSMA/CD network standards that are fully compatible with each other. (Section 2.1)

29. Fill out the missing information in the following two tables.
(Section 2.1)

DB9 Pin Assignment

Signal	Pin
	1
Receive –	
Transmit +	
	5

RJ-45 Pin Assignment

Signal	Pin	Wire Color
		White with orange stripe
Receive –	5	
Transmit +		White with blue stripe
	3	

30. IBM Token Ring used cabling of different types to be used in different environments. Connect the appropriate type with its description below.
(Section 2.1)

Type 2 _____

Type 5 _____

Type 6 _____

Type 8 _____

Type 9 _____

- A. This type consists of two parallel pairs. The wires in this cable are untwisted and have a maximum length of 50 meters. The primary purpose of this wire is to be used in installations requiring the cable to run under carpeting
- B. This type consists of multimode fiber optic cable used to extend the token ring network and used to interconnect optical repeaters.
- C. This type consists of two shielded twisted pairs. It is considered a low cost short distance cable with a maximum length of 45 meters and is often used for MAU-to-MAU interconnection.
- D. This type is a lower cost alternative to Type 1 cable with a maximum length of 65 meters. It consists of two pairs of shielded twisted pairs.

- E. This type consists of two shielded twisted pairs as can be found in Type 1 cable and four unshielded twisted pairs as can be found in Type 3 cable.
31. Although this protocol is closely related to Token Ring, it is not officially considered as part of the Token Ring family. Name this protocol. (Section 2.1)
 32. Define the following bus network terms (Section 2.1):
 - Collision detection
 - Heartbeat
 - Jabber
 - Monitor
 33. A star topology is implemented with the use of _____ and UTP cables terminated with _____ plugs. (Section 2.1)
 34. Fill in the blanks in the following table (Section 2.1)

Pin	Ethernet	IEEE 802.3
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		

35. What are the two types of duplex? What are the differences? (Section 2.1)

36. Fault _____ is built into the dual-ring FDDI network.
(Section 2.2)
37. What is POTS? What is it used for? (Section 2.3)
38. What type of a node is required in order for two LANs to be able to communicate using the ISDN protocol? (Section 2.3)
39. Explain the two most commonly used ISDN services. (Section 2.3)
40. A full T1 line provides _____ channels each with _____ Kbps of bandwidth. (Section 2.3)

Chapter 3 – Network Hardware and Transmission Media

41. Fill in the blanks in the following table. Explain how you converted each one. (Section 3.1)

decimal	binary
0	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

42. What is RAM? (Section 3.1)
43. The type of RAM that is used by most PCs today is called _____.(Section 3.1)
44. Define the following: (Section 3.1)
 - Read-only memory (ROM)
 - Programmable read-only memory (PROM)

- Erasable programmable read-only memory (EPROM)
 - Electrically erasable programmable read-only memory (EEPROM)
45. What is the difference between a PDU and an SDU? (Section 3.1)
 46. In order for communication to take place between nodes, one end of the connection must be a _____ and the other a _____. (Section 3.1)
 47. What are the four IP address network classes? Explain each one. (Section 3.1)
 48. The main types of network cables are _____, _____, _____.(Section 3.2)
 49. What are the four primary colors of cabling used in twisted pair?
 50. True or false: Twisted pair cabling is used in Ethernet and Token Ring networks. (Section 3.2)
 51. What are the types of twisted pair cabling? What are the differences in the types? (Section 3.2)
 52. What are the two types of fiber optic cabling? Explain each. (Section 3.2)
 53. The _____ is a hardware card that allows a PC to participate in passing and receiving data on a network. (Section 3.3)
 54. A network _____ is a node that is able to multiplex signals and then transmit them over a single transmission medium. (Section 3.3)
 55. What is the name for the node type that is similar to an Ethernet hub, but is used in Token Ring networks? (Section 3.3)
 56. What is the name of the Layer 2 device that supports and performs the same basic function of joining network segments within the LAN? (Section 3.3)
 57. What is the name of the node that operates at Layer 3 of the OSI reference model? (Section 3.3)
 58. A _____ is a node that allows the wire speed technologies that are used by Layer 2 and the tools that are needed to route packets at Layer 3. (Section 3.3)
 59. Layer _____ switches have the ability to control the flow of data by implementing what is known as _____, which provides for packet queuing into classes of service to ensure that data with a higher priority is attended to before data with a lower priority. (Section 3.3)
 60. Name at least three types of network servers that are used in a LAN. (Section 3.3)

Chapter 4 – Operating Systems and Networking Software

61. The portion of a computer that receives data and instructions and manipulates and acts on the received data in a controlled manner is known as what? (Section 4.1)
62. True or false: Data can never be stored on magnetic media because the magnet will erase all data. (Section 4.1)
63. The address space of a node can be determined by taking the number 2 and raising it to the power of the number of address bits that are generated by the CPU. That being said, calculate the following (the first one is done for you: (Section 4.1)
16 address bits = 2^{16} (65,536)
20 address bits = _____
24 address bits = _____
32 address bits = _____
64. Hard drives are usually mounted within a computer's case but today with USB ports many drives are sold as _____ drives communicating between the drive and computer over the USB port. (Section 4.1)
65. On personal computers input/output connections are in the form of ports dedicated to either _____ or _____ data communications. (Section 4.1)
66. What is the most basic form of an operating system? (Section 4.1)
67. In the world today, there are two main GUI-based operating systems that are in use by most people. What are they? (Section 4.1)
68. As the need for PC connectivity rose, the most common design of network operating systems was the _____ - _____ implementation. (Section 4.2)
69. True or false: One of the early network operating systems, Microsoft Networking, utilized an IPX/SPX protocol stack to provide communications over its network. (Section 4.2)
70. True or false: The problem with TCP/IP networks is that a workstation can only have a single session running at a time with any server on the network. (Section 4.2)
71. What is peer-to-peer networking? (Section 4.2)
72. True or false: To perform peer-to-peer networking, some sort of application program is required. (Section 4.2)

73. List the NetBIOS primitives that are associated with the session service and what each of them does. (Section 4.2)
74. For each of the following statements, give the corresponding operating system name. (Section 4.3)
 - A. The operating system that was first developed by AT&T Bell Labs as a multiuser operating system. _____
 - B. This operating system was designed more for the desktop environment even though it will run on larger computers. _____
 - C. Newer versions of this operating system come with configuration utility programs that assist with the network settings and configuration. _____
 - D. This operating system has many similarities and commonalities to Unix. _____
 - E. Can be configured with a text editor. _____
 - F. This operating system was initially designed to handle many users connected simultaneously and all sitting in front of a character-based terminal. _____
 - G. Sun initially developed this operating system for their Sun SPARC workstations. _____
 - H. This operating system is a flat file operating system; most of the configuration files are in readable text. _____
 - I. This operating system provides strong networking tools to allow it to be interconnected not only to the local LAN but the Internet. _____

Chapter 5 – The TCP/IP Protocol Suite

75. Developers of networking protocols adhere to a _____ approach. (Section 5.1)
76. Name the layers of the TCP/IP reference model and list what the responsibility is of each layer. (Section 5.1)
77. What is the name of the protocol that allows for e-mail communications and at which layer does it operate? (Section 5.1)
78. True or false: Secure Shell is an application layer protocol. (Section 5.2)
79. _____ names are names that are assigned to URLs on the Internet. (Section 5.2)

80. Make sure that you have a connection to the Internet, then use the ping command to find the IP address for the following domains. Write down your results. (Section 5.2)

www.cnn.com _____

www.yahoo.com _____

www.wiley.com _____

www.google.com _____

www.richardbramante.com _____

81. What does the acronym gTLD stand for? (Section 5.2)

82. What type of organization or business would use the following TLDs? (Section 5.2)

■ .biz

■ .com

■ .edu

■ .gov

■ .jobs

■ .mil

■ .net

■ .org

83. What is the name of the protocol that runs between nodes for the purpose of sharing management information pertaining to the managed system? (Section 5.2)

84. What are the three message types that can be sent from the SNMP manager to the SNMP agents? (Section 5.2)

85. A _____ is a database that contains manageable objects and variables of these objects pertaining to a network node, for the purpose of node management within a network. (Section 5.2)

86. The formal language used by SNMP is _____(Section 5.2)

87. What is an object identifier (OID)? (Section 5.2)

88. Name some of the improvements that were introduced by SNMPv2. (Section 5.2)

89. Which version of the SNMP protocol is considered the official one? (Section 5.2)

90. What is the name of the protocol that provides the capability for users to access an FTP server and transfer files to and from the server? (Section 5.2)

91. Fill out the correct FTP command in the following table. (Section 5.2)

Command	Function
	Sets the file transfer mode to ASCII.
	Sets the file transfer mode to binary.
	Changes to another directory.
	Terminates a connection.
	Removes a file.
	Places a copy of a file on the remote node onto a specified directory on the local node.
	Used to monitor the file transfer process. For every 1028 bytes received, a # will be placed on the screen.
	Gets a list of available FTP commands.
	Gets information about commands.
	Lists the names of the files in the current directory.
	Used to copy more than one file from the remote node to the local node.
	Makes a new directory.
	Used to copy more than one file from the local node to the remote node.
	Used to copy a file from the local node to the remote node.
	Used to determine the directory path to the current directory.
	Terminates the FTP session.
	Renames a file or directory.
	Removes a directory and any subdirectories, if applicable.
92.	True or false: There is no difference between the TFTP and FTP protocols. They have different names because they were developed by different companies, but they are exactly the same in function. (Section 5.2)
93.	Using the SMTP protocol, an SMTP client has a total of five message types that are sent to an SMTP server. Following is a list of these message types. Define the purpose of each one. (Section 5.2)
	■ HELO
	■ MAIL
	■ RCPT

- DATA
 - QUIT
94. Developed originally by Sun Microsystems, this protocol allows end users access to files that are stored remotely as if the files were local to the end users workstation. What is the name of this protocol? (Section 5.2)
95. What are the three modes of operation used by Telnet clients and servers? (Section 5.2)
96. SSH utilizes _____ which is used to provide cryptographic keys to authenticate remote nodes and users. (Section 5.2)
97. What are the two most popular Transport layer protocols? (Section 5.2)
98. Name at least three Application layer protocols that use TCP. (Section 5.2)
99. Name at least three Application layer protocols that use UDP. (Section 5.2)
100. Name at least five Internet layer protocols. (Section 5.2)
101. What is the name of the protocol that allows for operating system access for diskless nodes? (Section 5.3)
102. Define the following. (Section 5.3)
- Routing protocol
 - Routed protocol
 - Gateway
 - Interior Gateway Protocol (IGP)
 - Exterior Gateway Protocol (EGP)
 - Static routing
 - Dynamic routing

Chapter 6 – Ethernet Concepts

103. What is the speed of the following Ethernet types? (Section 6.1)
- 10BASE-T
 - Fast Ethernet
 - Gigabyte Ethernet
104. Ethernet nodes using UTP cabling fall into one of two component types. What are those? (Section 6.1)

105. What is a straight-through cable? (Section 6.2)
106. True or false: A straight-through cable can be wired with either the T568A or T568B wiring scheme as long as both ends of the cable are wired exactly the same using the same wiring pin-out. (Section 6.2)
107. A _____ Ethernet cable must have one plug wired with the T568A wiring scheme and the other plug wired following the T568B wiring pin-out. (Section 6.2)
108. What is the major difference between the OSI reference model and the IEEE 802.3 model? (Section 6.3)
109. What is a frame check sequence? (Section 6.4)
110. Define the following. (Section 6.4)
- Carrier sense
 - Multiple access
 - Collision detection
111. Fill in the missing information in the following table. (Section 6.4)

Half-Duplex Operational Limitations

Parameters	10 Mbps	100 Mbps	1000 Mbps
Minimum frame size			
Maximum collision diameter with UTP cable			100 meters
Maximum collision diameter with repeaters	2500 meters	205 meters	200 meters
Maximum number of repeaters in network path			

112. What is frame bursting, and when was it introduced? (Section 6.4)
113. _____ transmission is the capability of a network node to transmit and receive simultaneously. (Section 6.4)
114. _____ are nodes that are actually considered part of the Physical layer since they are not decision-making devices. They basically provide the interconnectivity on the physical level for network nodes. (Section 6.4)
115. _____ is the capability of a network interface to negotiate the communication parameters to be used between it and the port it is connected to. (Section 6.4)

116. True or false: Network administrators don't have to worry about traffic patterns on the network. (Section 6.5)
117. What does the acronym VLAN stand for? (Section 6.5)

Chapter 7 – Not to Be Forgotten

118. What is the name of the LAN protocol that was once popular in the majority of active LANs and is now used as an embedded standard to serve networks that control technologies such as automation services, transportation, robotics, gaming, and other similar network types? (Section 7.1)
119. _____ technology is, for the most part, the predecessor to what we all know as Ethernet. (Section 7.1)
120. What is the name of the corporation that developed Token Ring technology? (Section 7.1)
121. True or false: Unshielded twisted pair (UTP) cables became the preferred medium used by Token Ring technologies. This is because it was less bulky than shielded twisted pair (STP) cables and was also less expensive than STP. (Section 7.1)
122. What is the name of the first technology that could operate at 100 Mbps? (Section 7.1)
123. What advantages are there in using optical fiber as the primary transmission medium within a network? (Section 7.1)
124. _____ is the FDDI protocol over twisted-pair medium instead of fiber. (Section 7.1)
125. Define the following FDDI node types. (Section 7.1)
 - Single attachment station (SAS)
 - Single attached concentrator (SAC)
 - Dual attachment station (DAS)
 - Dual attached concentrator (DAC)
126. The Digital Equipment Company (Digital) developed and released the first version of the _____ protocol in the mid-1970s. (Section 7.2)
127. What are the levels of the XNS model and what layer does each level correspond to on the OSI layered model? (Section 7.2)
128. The _____ protocol is one that is normally found within networks that have nodes that are running the Novell NetWare operating system. (Section 7.2)

129. In order to support multiple protocol datagrams, there are three main components that are used by PPP. What are they? (Section 7.2)
130. The Link Access Procedure, Balanced (LAPB) is the _____ link level protocol that ensures reliable, error-free packet framing and data communication management. (Section 7.2)
131. Match the ATM adaptation layer type to its appropriate function. (Section 7.2)
- AAL1 _____
- AAL2 _____
- AAL3 _____
- AAL4 _____
- AAL5 _____
- A. This AAL type supports both connectionless and connection-oriented data transmission. This AAL type is used to transmit non-SMDS packets.
- B. This AAL type supports VBR transmissions.
- C. This AAL type supports CBR transmissions.
- D. This AAL type supports both connectionless and connection-oriented data transmission. This AAL type is used to transmit switched multimegabit data services (SMDS) packets.
132. AppleTalk is a protocol suite that was developed by the Apple computer company. AppleTalk was developed specifically to be integrated with new _____ computers to allow for resource sharing on a network. (Section 7.2)
133. There are two services used in ISDN to determine bandwidth availability for an end network. These are _____ and _____. (Section 7.2)

Chapter 8 – The Upper Layers

134. The upper layers of the OSI reference model are utilized by _____ to send and receive data over a network. (Section 8.1)
135. True or false: One of the great things about mail servers is that they do not have to perform any authentication, as such authentication is only performed by a RADIUS server. (Section 8.1)

- 136. The _____ field is an 8-bit field that indicates how many seconds a packet can live on the Internet. (Section 8.2)
- 137. DMZ is the acronym for what? (Section 8.2)
- 138. FTP and SMTP are upper-layer protocols that reside within which layer of the TCP/IP model? (Section 8.2)
- 139. The following table contains some common Application layer protocols. Complete the missing parts of the table. (Section 8.2)

Mnemonic	PORT(s)	Description
DHCP		Dynamic Host Configuration Protocol provides the means for network clients to obtain an IP address, default gateway IP address and Domain Name System server addresses.
FTP		
HTTP	80	
		Simple Network Management Protocol is used to manage and monitor network devices over the local network and Internet.
Telnet		

- 140. True or false: Port numbers range from 0 to 65,535, but for the most part the first 1024 (0 to 1023 decimal or 0x03FF hexadecimal) are considered to be the well-known ports. (Section 8.2)
- 141. Explain `traceroute`. (Section 8.2)
- 142. _____ is a dynamic routing protocol used to move packets from network segment to network segment. (Section 8.2)
- 143. True or false: Port 0 is normally reserved, but its use is allowed as a valid source port in transmissions where the transmitting network node does not require a response from the receiving network node. (Section 8.2)

Chapter 9 – The Transport Layer

- 144. What is the standard that defines the recommended services that are provided by the OSI Transport layer while working with the Network layer to serve the needs of protocols that are used at the Session layer? (Section 9.1)

145. What is the standard that sets the recommendations to be followed by nodes (entities) within a network that are utilizing the services of the OSI Transport layer? (Section 9.1)
146. There are two types of transport service. What are they? (Section 9.1)
147. What are the two data units that operate at the Transport layer? (Section 9.1)
148. Match the correct transport service class with its class function. (Section 9.1)
- Class 0 _____
- Class 1 _____
- Class 2 _____
- Class 3 _____
- Class 4 _____
- A. Error recovery and multiplexing class
- B. Multiplexing class
- C. Simple class
- D. Error detection and recovery class
- E. Basic error recovery class
149. The purpose of the Transport layer is to provide end-to-end delivery of data from one _____ to another. (Section 9.2)
150. Explain how a three-way handshake works. (Section 9.2)
151. True or false: The term *connectionless* can be misleading as connectionless protocols require a connection before they can transmit data. (Section 9.2)
152. TCP is a _____ protocol, whereas UDP is a _____ protocol. (Section 9.3)
153. In a connection-oriented environment, _____ control and _____ control are two mechanisms that are used to maintain control over the transmission of data. (Section 9.4)

Chapter 10 – The Network Layer

154. SMTP mail servers will deliver e-mail to the _____ server servicing a particular domain. (Section 10.1)
155. <http://www.mydomainname.com> is an example of a _____. (Section 10.1)

156. True or false: Unlike IP addresses, domain names do not have to be unique. (Section 10.1)
157. What protocol is primarily a method of moving packets of data across networks consisting of various mediums, seamlessly delivering these packets solely based on destination address? (Section 10.2)
158. What version of IP allows for 4,294,967,296 unique addresses? (Section 10.2)
159. What would the binary number look like for the IP address 192.168.15.85? (Section 10.2)
160. The real thrust of moving to _____ is the larger address space that it provides with 128 bits dedicated to address space. (Section 10.2)
161. What is the name of the protocol that provides a means of messaging when a sent datagram is not able to be received by a destination node? (Section 10.2)
162. The _____ command is used to trace the path from the sending network node to the receiving network node on a network hop-to-hop basis. (Section 10.2)
163. What is the name of the protocol that makes use of authentication and encryption to establish a secure connection between end point network nodes? (Section 10.2)

Chapter 11 – The Data Link Layer

164. In this chapter, we discussed certain expectations that each LAN should meet. We called them the highs and the lows. What are each of these? Define them. (Section 11.1)
165. A collision causes datagrams to be _____, but it doesn't necessarily mean that the data can't be recovered in some way. (Section 11.2)
166. In a token bus configuration, there is a central node called a _____ or a _____. This device is similar to an Ethernet hub, but it has a computer chip that provides the logical ring that the end nodes are concerned with. (Section 11.2)
167. Define the following. (Section 11.2)
 - Carrier Sense Multiple Access (CSMA)
 - Carrier Sense Multiple Access with Collision Avoidance (CSMA/CA)
 - Carrier Sense Multiple Access with Collision Detection (CSMA/CD)

168. A _____ in CSMA/CD is a message to all other nodes that a collision has occurred and that they should stop transmitting. (Section 11.2)
169. Match the LLC type with the correct answer. (Section 11.3)
- LLC Type 1 (LLC-1) _____
- LLC Type 2 (LLC-2) _____
- LLC Type 3 (LLC-3) _____
- A. This LLC type is used for connectionless services.
- B. This LLC type is used for connection-oriented services.
- C. This LLC type is used for acknowledgments in conjunction with connectionless services.
170. Define the following. (Section 11.3)
- Destination service access point (DSAP)
 - Source service access point (SSAP)
 - Control
171. The _____ is a protocol that is used in conjunction with LLC-1 for the purpose of upward multiplexing to more upper layer protocols than what is available with the standard LLC 8 bit SAP fields. (Section 11.3)
172. True or false: The LLC sublayer is responsible for interfacing between the MAC sublayer and the Physical layer. (Section 11.3)
173. The IEEE 802 _____ address is a 48-bit address that is used to identify the network adaptor for a particular node or interface in the network. (Section 11.3)
174. What is the name for the portion of a frame that contains the source and destination MAC addresses for interfaces that are involved in a communication stream? (Section 11.4)
175. True or false: Multicasting is the act of sending a message to multiple nodes. (Section 11.4)
176. What is the function of the following well-known MAC addresses? (Section 11.4)
- 01:80:C2:00:00:00
 - 09:00:4E:00:00:02
 - CF:00:00:00:00:00
 - 09:00:2B:00:00:0F
177. Frames are either _____ or _____ PDU's (Section 11.4)

178. _____ is a function that is used to detect common errors that may occur during data transmission. (Section 11.4)
179. Ethernet uses what are known as _____ frames for flow control within Ethernet LANs. (Section 11.4)
180. Explain the following. (Section 11.5)
 - Source route bridging
 - Transparent bridging
181. True or false: A bridge is a device that operates much like a repeater or a hub, but it makes data forwarding decisions that bridge traffic from one network segment to another. (Section 11.5)
182. True or false: When a bridge receives a frame that is destined for a multicast address, the bridge will forward the frame to all of the ports, including the port on which it is received. (Section 11.5)

Chapter 12 – Design Methodologies

183. Which of the following is *not* a type of organizational LAN? (Section 12.1)
 - Hospital LANs
 - Banking and financial corporate LANs
 - Manufacturing LANs
 - Retail LANs
 - The Internet
184. What are examples of external considerations that need to be made when designing a network? (Section 12.1)
185. Developing a project _____ is important in the early phases of network design. (Section 12.2)
186. The _____ design models are the most commonly used in most high-speed LANs today. (Section 12.3)
187. In a hierarchical design model, there are three layers. What are they? (Section 12.3)
188. What are three WAN protocols that can be used to connect a LAN to remote sites? (Section 12.3)
189. The _____ layer is the middleman between the access layer and the core. (Section 12.3)

190. The _____ layer is the backbone of the LAN and often provides connectivity to WANs as well as Internet services. (Section 12.3)
191. Explain some of the benefits of using a hierarchical model. (Section 12.3)
192. Specify the maximum allowed in each level of the 5-4-3-2-1 design model. (Section 12.4)
- _____ is the number of *segments* allowed in total.
 - _____ is the number of *repeaters* used to join the segments together.
 - _____ is the maximum number of segments in total that have nodes that are *active*.
 - _____ is the maximum number of segments in total that are *not active*.
 - _____ is the number of *collision domains*.
193. The _____ topology is the most often used topology in LANs. (Section 12.5)
194. What are the advantages to the bus topology? (Section 12.5)
195. What are the disadvantages to the bus topology? (Section 12.5)
196. What are the advantages to the star topology? (Section 12.5)
197. What are the disadvantages of a star topology? (Section 12.5)
198. What are the advantages of a ring topology? (Section 12.5)
199. What are the disadvantages of a ring topology? (Section 12.5)
200. The _____ topology is used for Token Ring and FDDI LANs. (Section 12.5)
201. The _____ used within a LAN is either a hub or an MAU that allows the combination of data transmissions for a group of nodes. (Section 12.5)
202. The _____, or _____, is a LAN node that operates at Layer 2 of the OSI reference model. (Section 12.5)
203. What is the name of the traditional network node that operates at Layer 3 of the OSI reference model? (Section 12.5)
204. Why is a Layer 3 switch preferred over a traditional router in high-speed LANS? (Section 12.5)
205. List five terms that are used to define a switch that operates at Layers 4-7 of the OSI model. (Section 12.5)

206. Explain what each type of switch does. (Section 12.5)
 - Cut-through
 - Store and forward
207. Which of the following is a false statement? (Section 12.5)
 - A configuration error within the LAN.
 - Introduction of a duplicate route.
 - A loop only occurs when there is no redundancy built into the network.
 - Introducing an additional node into the LAN.
208. What is the name of the public standard protocol that was developed to control loops in a catenet? (Section 12.5)
209. What are the possible port states used by STP? (Section 12.5)
210. The standard that covers link aggregation is _____, the Link Aggregation Control Protocol (LACP). (Section 12.5)
211. What are some benefits of link aggregation? (Section 12.5)
212. What are some disadvantages of link aggregation? (Section 12.5)
213. What are some benefits of creating VLANs within your LAN? (Section 12.5)
214. What are the four types of VLANs? (Section 12.5)
215. What are the two types of network management nodes and what function does each type perform? (Section 12.5)

Chapter 13 – Implementation

216. True or false: Good network planning begins with a top-down approach. (Section 13.1)
217. There is a natural dividing line as far as planning goes; one involves a _____ network infrastructure and the other a totally new design. (Section 13.1)
218. In the chapter, we discussed some fixed costs that you should consider when planning the network. What are these? (Section 13.1)
219. In the chapter, we discussed some recurring costs that you should consider when planning the network. What are these? (Section 13.1)
220. Which is the best answer to the following statement? (Section 13.1)

Many companies these days lump _____ under the IT (information technology) umbrella.

- A. Computer operations and network operations.
 - B. Telecommunication services
 - C. Computer operations, network operations, and all other telecommunications
 - D. All data communication services
221. What is a false floor? (Section 13.1)
222. What is a DMZ? (Section 13.1)
223. The VPN remote users have a VPN _____ on their PCs which is configured to access the company's VPN access gateway router. (Section 13.1)
224. True or false: The distribution from the network operations area to each floor is accomplished by using redundant STP cabling to provide a high-speed path for the network traffic coming from each floor. (Section 13.1)
225. List the items that should be included in the final documentation of a network. (Section 13.1)
226. _____ refers to the structural components within a facility in support of the network architecture. (Section 13.2)

Chapter 14 – Network Security

227. What does WEP stand for? (Section 14.1)
228. In a networking environment, what is the area that should be restricted and controlled access at all times? (Section 14.1)
229. True or false: The security practices used in a home LAN are sufficient for all large corporate LANs. (Section 14.1)
230. A _____ is placed in the path in front of the Intranet web server to analyze the network traffic that is being directed towards it. (Section 14.1)
231. True or false: Depending upon the size of the network, constantly monitoring every node of a network can be overwhelming. (Section 14.1)
232. True or false: It is bad practice to document the network from a security perspective. (Section 14.1)
233. Name three methods of authentication. (Section 14.2)
234. True or false: The process of network authentication can be simple as a user ID and password. (Section 14.2)

- 235. What are the four most commonly used elements in an LDAP? (Section 14.2)
- 236. When a RADIUS client passes a user's authentication credentials to the RADIUS server, the server will respond with one of three responses. What are these responses and what does each mean? (Section 14.2)
- 237. The use of _____ came into use as a security method used to ensure the entities on opposite ends of a communication channel are who they claim to be. (Section 14.2)
- 238. _____ is a suite of protocols used for securing Internet communications. (Section 14.2)

Chapter 15 – Network Management

- 239. True or false: To have a successful help desk implementation, there is a need for someone to pick up the telephone. (Section 15.1)
- 240. In a large organization, there are usually groups of dedicated individuals who support certain aspects of the network. What are they? (Section 15.1)
- 241. True or false: Monitoring network performance for larger networks is a manual, time-consuming process. (Section 15.1)
- 242. In any organization, the security group would have a broad range of activities that deal with all aspects of network _____ (Section 15.2)
- 243. The _____ support group is responsible for the distribution of network services over the network. (Section 15.2)
- 244. What is the logistics group responsible for? (Section 15.2)
- 245. What are three activities that are considered network maintenance? (Section 15.3)
- 246. The SNMP _____ is software that communicates with a network management station (NMS) to answer queries from the station. (Section 15.5)
- 247. Each element has its own unique _____, which provides information on the object or is an object that will take a variable setting to configure the unit. (Section 15.5)
- 248. True or false: Packet capture nodes and programs can return some statistical information if you are investigating

traffic patterns or performance issues on a network segment.
(Section 15.5)

249. SNMP uses a _____ setting to group a number of devices to be monitored within the _____. (Section 15.5)

Chapter 16 – Troubleshooting

250. Name at least five of the common LAN issues that we mentioned in the chapter. (Section 16.1)
251. When you are notified of a network issue, what are some of the first questions you should start considering? (Section 16.1)
252. The _____ approach beats the _____ approach. (Section 16.2)
253. Which of the following is a good proactive step you can take to help keep the network from going down and to recover quickly when it does? _____ (Section 16.2)
- Shared knowledge
 - Proper tools
 - Ensure the proper individuals are trained appropriately
 - Hardware spares
 - All of the above
254. The ping is an ICMP echo request/reply that determines whether a node is _____, the _____ time for the process to complete, any _____ percentages, and a statistical _____ for a given remote node. (Section 16.3)
255. True or false: By default, the ping command will send four ICMP requests and will expect four replies. (Section 16.3)
256. The _____ utility by default displays both incoming and outgoing network connections. (Section 16.3)
257. Network cable testers are devices that are used to check the integrity of the _____ in the LAN. (Section 16.3)
258. Name a few things that you should investigate when troubleshooting a node that is having problems. (Section 16.3)
259. What are the steps in the logical, eight-step troubleshooting model that we discussed in the chapter? (Section 16.4)

260. As redundant as it may seem, what are the layers of the OSI reference model, and what is performed at each layer? (Section 16.4)
261. What are some common Layer 1 issues that can occur in a network? (Section 16.5)
262. What are some things that you should look for in each of the following layers? (Section 16.5)
 - Layer 4
 - Layer 5
 - Layer 6
 - Layer 7
263. What are three of the symptoms that indicate a duplex mismatch? (Section 16.7)
264. A failure in spanning tree usually creates a _____ within the area that the spanning tree group covers. (Section 16.7)
265. What are three common ways to find out you have a loop within the LAN? (Section 16.7)