Module 1 Quiz - Networking Today

1. During a routine inspection, a technician discovered that software that was installed on a computer was secretly collecting data about websites that were visited by users of the computer. Which type of threat is affecting this computer?
   Answer: Spyware
2. Which term refers to a network that provides secure access to the corporate offices by suppliers, customers, and collaborators?
   Answer: Extranet
3. A large corporation has modified its network to allow users to access network resources from their personal laptops and smartphones. Which networking trend does this describe?
   Answer: Bring your own device
4. What is an ISP?
   Answer: It is an organization that enables individuals and businesses to connect to the Internet.
5. In which scenario would the use of a WISP be recommended?
   Answer: A farm in a rural area without wired broadband access
6. What characteristic of a network enables it to quickly grow to support new users and applications without impacting the performance of the service being delivered to existing users?
   Answer: Scalability
7. A worker accidentally damages a fiber optic cable that connects two of the existing dormitories to the campus data center. Although the cable has been cut, students in the dormitories only experience a very short interruption of network services. What characteristic of the network is shown here?
   Answer: Fault tolerance
8. What are two characteristics of a scalable network?
   Answer 1: Grows in size without impacting existing users
   Answer 2: Suitable for modular devices that allow for expansion
9. Which device performs the function of determining the path that messages should take through internetworks?
   Answer: A router
10. Which two Internet connection options do not require that physical cables be run to the building?
    Answer 1: Cellular
    Answer 2: Satellite
11. What type of network must a home user access in order to do online shopping?
    Answer: The Internet
12. How does BYOD change the way in which businesses implement networks?
    Answer: BYOD provides flexibility in where and how users can access network resources.

13. An employee wants to access the network of the organization remotely, in the safest possible way. What network feature would allow an employee to gain secure remote access to a company network?
    Answer: VPN
14. What is the Internet?
    Answer: It provides connections through interconnected global networks.
15. What are two functions of end devices on a network?
    Answer 1: They originate the data that flows through the network.
    Answer 2: They are the interface between humans and the communication network.

Module 2 Quiz - Basic Switch and End Device Configuration

1. Which statement is true about the running configuration file in a Cisco IOS device?
   Answer: It affects the operation of the device immediately when modified.
2. Which two statements are true regarding the user EXEC mode?
   Answer 1: The device prompt for this mode ends with the '>' symbol.
   Answer 2: Only some aspects of the router configuration can be viewed.
3. Which type of access is secured on a Cisco router or switch with the enable secret command?
   Answer: Privileged EXEC
4. What is the default SVI on a Cisco switch?
   Answer: VLAN1
5. When a hostname is configured through the Cisco CLI, which three naming conventions are part of the guidelines?
   Answer 1: The hostname should be fewer than 64 characters in length.
   Answer 2: The hostname should contain no spaces.
   Answer 3: The hostname should begin with a letter.
6. What is the function of the shell in an OS?
   Answer: It interfaces between the users and the kernel.
7. A router with a valid operating system contains a configuration file stored in NVRAM. The configuration file has an enable secret password but no console password. When the router boots up, which mode will display?
   Answer: User EXEC mode
8. An administrator has just changed the IP address of an interface on an IOS device. What else must be done in order to apply those changes to the device?

Answer: Nothing must be done. Changes to the configuration on an IOS device take effect as soon as the command is typed correctly and the Enter key has been pressed.

9. Which memory location on a Cisco router or switch will lose all content when the device is restarted?
   Answer: RAM
10. Why would a technician enter the command copy startup-config running-config?
    Answer: To copy an existing configuration into RAM
11. Which functionality is provided by DHCP?
    Answer: Automatic assignment of an IP address to each host
12. Which two functions are provided to users by the context-sensitive help feature of the Cisco IOS CLI?
    Answer 1: Displaying a list of all available commands within the current mode
    Answer 2: Determining which option, keyword, or argument is available for the entered command
13. Which memory location on a Cisco router or switch stores the startup configuration file?
    Answer: NVRAM
14. To what subnet does the IP address 10.1.100.50 belong if a subnet mask of 255.255.0.0 is used?
    Answer: 10.1.0.0

Module 3 Quiz - Protocols and Models

1. Which three acronyms/initialisms represent standards organizations?
   Answer 1: IANA
   Answer 2: IEEE
   Answer 3: IETF
2. What type of communication will send a message to all devices on a local area network?
   Answer: Broadcast
3. In computer communication, what is the purpose of message encoding?
   Answer: To convert information to the appropriate form for transmission
4. Which message delivery option is used when all devices need to receive the same message simultaneously?
   Answer: Broadcast
5. What are two benefits of using a layered network model?
   Answer 1: It assists in protocol design.
   Answer 2: It prevents technology in one layer from affecting other layers.
6. What is the purpose of protocols in data communications?
   Answer: Providing the rules required for a specific type of communication to occur

7. Which logical address is used for delivery of data to a remote network?
   Answer: Destination IP address
8. What is the general term that is used to describe a piece of data at any layer of a networking model?
   Answer: Protocol data unit
9. Which two protocols function at the internet layer?
   Answer 1: ICMP
   Answer 2: IP
10. Which layer of the OSI model defines services to segment and reassemble data for individual communications between end devices?
    Answer: Transport
11. Which type of communication will send a message to a group of host destinations simultaneously?
    Answer: Multicast
12. What process is used to receive transmitted data and convert it into a readable message?
    Answer: Decoding
13. What is done to an IP packet before it is transmitted over the physical medium?
    Answer: It is encapsulated in a Layer 2 frame.
14. What process is used to place one message inside another message for transfer from the source to the destination?
    Answer: Encapsulation
15. A web client is sending a request for a webpage to a web server. From the perspective of the client, what is the correct order of the protocol stack that is used to prepare the request for transmission?
    Answer: HTTP, TCP, IP, Ethernet

Checkpoint Exam Module 1-3: Basic Network Connectivity and Communications Exam

1. **Which of the four network characteristics has been violated in this situation?**
   Answer: Security
2. **Match the requirements of a reliable network with the supporting network architecture.**
   Answer:

- A: Expand the network without degrading the service for existing users (Scalability)
- B: Protect the network from unauthorized access (Security)
- C: Provide redundant links and devices (Fault Tolerance)

3. **Which two actions would provide the minimum security requirements for this network? (Choose two.)**
   Answer 1: Implementing a firewall
   Answer 2: Installing antivirus software
4. **What is the purpose of using the Ctrl-Shift-6 key combination after issuing the ping command?**
   Answer: To interrupt the ping process
5. **What command is used to verify the condition of the switch interfaces, including the status of the interfaces and a configured IP address?**
   Answer: `show ip interface brief`
6. **What action can the technician take to discard the changes and work with the file in NVRAM?**
   Answer: Issue the `reload` command without saving the running configuration
7. **Which password is needed to access user EXEC mode if the administrator uses a console connection?**
   Answer: lineconin
8. **Which part of the syntax is represented by running-config in the show running-config command?**
   Answer: A keyword
9. **Which two host names follow the guidelines for naming conventions on Cisco IOS devices? (Choose two.)**
   Answer 1: SwBranch799
   Answer 2: RM-3-Switch-2A4
10. **What is the technician configuring?**
    Answer: SVI
11. **What command will prevent all unencrypted passwords from displaying in plain text in a configuration file?**
    Answer: `service password-encryption`
12. **Which interface allows remote management of a Layer 2 switch?**
    Answer: The switch virtual interface
13. **What function does pressing the Tab key have when entering a command in IOS?**
    Answer: It completes the remainder of a partially typed word in a command
14. **What are two characteristics of RAM on a Cisco device? (Choose two.)**
    Answer 1: The contents of RAM are lost during a power cycle
    Answer 2: The configuration that is actively running on the device is stored in RAM
15. **How is SSH different from Telnet?**
    Answer: SSH provides security to remote sessions by encrypting messages and using user authentication. Telnet is considered insecure and sends messages in plaintext.
16. **Which modes and interfaces can be protected with passwords? (Choose three.)**
    Answer 1: Console interface
    Answer 2: VTY interface
    Answer 3: Privileged EXEC mode
17. **At which layer of the OSI model would a logical address be added during encapsulation?**
    Answer: Network layer
18. **Which two statements correctly identify the addressing that ServerB will generate in the process? (Choose two.)**
    Answer 1: ServerB will generate a packet with the destination IP address of HostA
    Answer 2: ServerB will generate a frame with the destination MAC address of RouterB

19. **Which three application layer protocols are part of the TCP/IP protocol suite? (Choose three.)**
    Answer 1: FTP
    Answer 2: DNS
    Answer 3: DHCP
20. **Which PDU format is used when bits are received from the network medium by the NIC of a host?**
    Answer: Frame
21. **What is a characteristic of multicast messages?**
    Answer: They are sent to a select group of hosts.
22. **What process involves placing one PDU inside of another PDU?**
    Answer: Encapsulation
23. **Which statement is correct about network protocols?**
    Answer: They define how messages are exchanged between the source and the destination.
24. **What is the correct order of the protocol stack used to decode the received transmission?**
    Answer: Ethernet, IP, TCP, HTTP
25. **Which statement accurately describes a TCP/IP encapsulation process?**
    Answer: Segments are sent from the transport layer to the internet layer
26. **Which two OSI model layers have the same functionality as a single layer of the TCP/IP model? (Choose two.)**
    Answer 1: Data link
    Answer 2: Physical
27. **Which name is assigned to the transport layer PDU?**
    Answer: Segment
28. **What is the problem indicated by the CLI output in the exhibit?**
    Answer: The administrator must first enter privileged EXEC mode before issuing the command.
29. **Why would a Layer 2 switch need an IP address?**
    Answer: To enable the switch to be managed remotely
30. **Which device determines the path that messages should take through internetworks?**
    Answer: A router
31. **What is the IP address of the switch virtual interface (SVI) on Switch0?**
    Answer: 192.168.5.10
32. **What term describes a network used by people who work from home or a small remote office?**
    Answer: SOHO network
33. **At which OSI layer is a destination IP address added to a PDU during the encapsulation process?**
    Answer: Network layer

Module 4 Quiz - Physical Layer

1. **In which layer of the OSI model is the error categorized?**
    Answer: Physical layer

2. **What type of cable is used to connect a workstation serial port to a Cisco router console port?**
   Answer: Rollover
3. **Why are two strands of fiber used for a single fiber optic connection?**
   Answer: They allow for full-duplex connectivity.
4. **Which procedure is used to reduce the effect of crosstalk in copper cables?**
   Answer: Twisting opposing circuit wire pairs together
5. **What is one advantage of using fiber optic cabling rather than copper cabling?**
   Answer: It is able to carry signals much farther than copper cabling.
6. **Under which situation would a wireless connection be recommended?**
   Answer: The end-user device needs mobility when connecting to the network.
7. **Which type of UTP cable is used to connect a PC to a switch port?**
   Answer: Straight-through
8. **What is the definition of bandwidth?**
   Answer: The amount of data that can flow from one place to another in a given amount of time
9. **Which statement correctly describes frame encoding?**
   Answer: It converts bits into a predefined code in order to provide a predictable pattern to help distinguish data bits from control bits.
10. **What is a characteristic of UTP cabling?**
    Answer: Cancellation
11. **What is a possible cause of the wireless LAN signal distortion?**
    Answer: The microwave oven
12. **What is the purpose of the OSI physical layer?**
    Answer: Transmitting bits across the local media
13. **Which characteristic describes crosstalk?**
    Answer: The distortion of the transmitted messages from signals carried in adjacent wires
14. **What is indicated by the term throughput?**
    Answer: The measure of the bits transferred across the media over a given period of time
15. **Which standards organization oversees development of wireless LAN standards?**
    Answer: IEEE

Module 5 Quiz - Number Systems

1. **What is the binary representation for the decimal number 173?**
   Answer: 10101101
2. **Which address does the binary address 11101100 00010001 00001100 00001010 represent in dotted decimal format?**
   Answer: 236.17.12.10
3. **How many binary bits exist within an IPv6 address?**
   Answer: 128

4. **What is the binary equivalent of the decimal number 232?**
   Answer: 11101000
5. **Which two statements are correct about IPv4 and IPv6 addresses? (Choose two.)**
   Answer:

- IPv6 addresses are represented by hexadecimal numbers.
- IPv4 addresses are 32 bits in length.

6. **Which IPv4 address format was created for ease of use by people and is expressed as 201.192.1.14?**
   Answer: Dotted decimal
7. **What is the dotted decimal representation of the IPv4 address 11001011.00000000.01110001.11010011?**
   Answer: 203.0.113.211
8. **What is the decimal equivalent of the binary number 10010101?**
   Answer: 149
9. **What is the decimal equivalent of the hex number 0x3F?**
   Answer: 63
10. **What is the dotted decimal representation of the IPv4 address represented as the binary string 00001010.01100100.00010101.00000001?**
    Answer: 10.100.21.1
11. **What is the decimal equivalent of 0xC9?**
    Answer: 201
12. **Which is a valid hexadecimal number?**
    Answer: F
13. **What is the binary representation of 0xCA?**
    Answer: 11001010
14. **How many bits are in an IPv4 address?**
    Answer: 32

Module 6 Quiz - Data Link Layer

1. **What identifier is used at the data link layer to uniquely identify an Ethernet device?**
   Answer: MAC address
2. **What attribute of a NIC would place it at the data link layer of the OSI model?**
   Answer: MAC address
3. **Which two engineering organizations define open standards and protocols that apply to the data link layer? (Choose two.)**
   Answer:

- Institute of Electrical and Electronics Engineers (IEEE)
- International Telecommunication Union (ITU)

4. **What is true concerning physical and logical topologies?**
   Answer: Logical topologies refer to how a network transfers data between devices.
5. **What method is used to manage contention-based access on a wireless network?**
   Answer: CSMA/CA
6. **Which physical topology requires that every node is attached to every other node on the network?**
   Answer: Mesh
7. **Which statement describes the half-duplex mode of data transmission?**
   Answer: Data that is transmitted over the network flows in one direction at a time.
8. **Which is a function of the Logical Link Control (LLC) sublayer?**
   Answer: To identify which network layer protocol is being used
9. **Which data link layer media access control method does Ethernet use with legacy Ethernet hubs?**
   Answer: CSMA/CD
10. **What are the two sublayers of the OSI model data link layer? (Choose two.)**
    Answer:

- LLC
- MAC

11. **Which layer of the OSI model is responsible for specifying the encapsulation method used for specific types of media?**
    Answer: Data link
12. **What type of physical topology can be created by connecting all Ethernet cables to a central device?**
    Answer: Star
13. **What are two services performed by the data link layer of the OSI model? (Choose two.)**
    Answer:

- It accepts Layer 3 packets and encapsulates them into frames.
- It provides media access control and performs error detection.

14. **Although CSMA/CD is still a feature of Ethernet, why is it no longer necessary?**
    Answer: The use of full-duplex capable Layer 2 switches

Module 7 Quiz - Ethernet Switching

1. **Which two characteristics describe Ethernet technology? (Choose two.)**
   Answer:

- It is supported by IEEE 802.3 standards.
- It uses unique MAC addresses to ensure that data is sent to the appropriate destination.

2. **What statement describes a characteristic of MAC addresses?**
   Answer: They must be globally unique.
3. **What is the special value assigned to the first 24 bits of a multicast MAC address transporting an IPv4 packet?**
   Answer: 01-00-5E
4. **What will a host on an Ethernet network do if it receives a frame with a unicast destination MAC address that does not match its own MAC address?**
   Answer: It will discard the frame.
5. **Which network device makes forwarding decisions based on the destination MAC address that is contained in the frame?**
   Answer: Switch
6. **Which network device has the primary function to send data to a specific destination based on the information found in the MAC address table?**
   Answer: Switch
7. **Which function or operation is performed by the LLC sublayer?**
   Answer: It communicates with upper protocol layers.
8. **What happens to runt frames received by a Cisco Ethernet switch?**
   Answer: The frame is dropped.
9. **What addressing information is recorded by a switch to build its MAC address table?**
   Answer: The source Layer 2 address of incoming frames.
10. **What is auto-MDIX?**
    Answer: A feature that detects Ethernet cable type.
11. **What type of address is 01-00-5E-0A-00-02?**
    Answer: An address that reaches a specific group of hosts.
12. **Which statement is true about MAC addresses?**
    Answer: The first three bytes are used by the vendor-assigned OUI.
13. **What are the two sizes (minimum and expected maximum) of an Ethernet frame? (Choose two.)**
    Answer:

- 64 bytes
- 1518 bytes

14. **Which two functions or operations are performed by the MAC sublayer? (Choose two.)**
    Answer:

- It is responsible for Media Access Control.
- It adds a header and trailer to form an OSI Layer 2 PDU.

Checkpoint Exam Module 4-7: Ethernet Concepts Exam

1. **Which two devices commonly affect wireless networks? (Choose two.)**
   Answer:

- Cordless phones
- Microwaves

2. **Which three factors could influence the differences in throughput? (Choose three.)**
   Answer:

- The amount of traffic that is currently crossing the network
- The latency that is created by the number of network devices that the data is crossing
- The type of traffic that is crossing the network

3. **What is a primary role of the Physical layer in transmitting data on the network?**
   Answer: Create the signals that represent the bits in each frame onto the media.
4. **What type of cabling is shown in the graphic (four pairs of twisted color-coded wires)?**
   Answer: UTP (Unshielded Twisted Pair)
5. **What are two characteristics of fiber-optic cable? (Choose two.)**
   Answer:

- It is more expensive than UTP cabling is.
- It is not affected by EMI or RFI.

6. **Which three basic parts are common to all frame types supported by the data link layer? (Choose three.)**
   Answer:

- Header
- Data
- Trailer

7. **Which two fields or features does Ethernet examine to determine if a received frame is passed to the data link layer or discarded by the NIC? (Choose two.)**
   Answer:

- Minimum frame size
- Frame Check Sequence (FCS)

8. **Which two statements describe the services provided by the data link layer? (Choose two.)**
   Answer:

- It packages various Layer 3 PDUs into a frame format that is compatible with the network interface.
- It manages the access of frames to the network media.

9. **What is contained in the trailer of a data-link frame?**
   Answer: Error detection

10. **What three items are contained in an Ethernet header and trailer? (Choose three.)**
    Answer:

- Source MAC address
- Destination MAC address
- Error-checking information

11. **What is a characteristic of the LLC sublayer?**
    Answer: It places information in the frame allowing multiple Layer 3 protocols to use the same network interface and media.
12. **During the encapsulation process, what occurs at the data link layer for a PC connected to an Ethernet network?**
    Answer: The physical address is added.
13. **Which statement describes an extended star topology?**
    Answer: End devices connect to a central intermediate device, which in turn connects to other central intermediate devices.
14. **Which topology provides high availability and connects some, but not all, remote sites?**
    Answer: Partial mesh
15. **Which two actions are performed by a Cisco switch? (Choose two.)**
    Answer:

- Utilizing the MAC address table to forward frames via the destination MAC address
- Using the source MAC addresses of frames to build and maintain a MAC address table

16. **Which switching method uses the CRC value in a frame?**
    Answer: Store-and-forward
17. **When the store-and-forward method of switching is in use, what part of the Ethernet frame is used to perform an error check?**
    Answer: CRC in the trailer
18. **What is the auto-MDIX feature?**
    Answer: It enables a device to automatically configure an interface to use a straight-through or a crossover cable.
19. **What is one advantage of using the cut-through switching method instead of the store-and-forward switching method?**
    Answer: It has a lower latency appropriate for high-performance computing applications.
20. **Which switching method has the lowest level of latency?**
    Answer: Fast-forward
21. **Which two examples represent the cut-through switching method? (Choose two.)**
    Answer:

- Fragment-free switching
- Fast-forward switching

22. **What is the auto-MDIX feature on a switch?**
    Answer: The automatic configuration of an interface for a straight-through or crossover Ethernet cable connection.

23. **Which method of memory buffering would work best when switching incoming frames from a 1000BASE-T port to a 100Base-T network?**
    Answer: Shared memory buffering
24. **Which frame forwarding method receives the entire frame and performs a CRC check to detect errors before forwarding the frame?**
    Answer: Store-and-forward switching
25. **Which three statements are correct about the final result of connecting two modern switches using a straight-through cable? (Choose three.)**
    Answer:

- The auto-MDIX feature will configure the interfaces, eliminating the need for a crossover cable.
- The link between switches will work as full-duplex.
- The link between the switches will work at the fastest speed that is supported by both switches.

26. **What does the term "attenuation" mean in data communication?**
    Answer: Loss of signal strength as distance increases.
27. **What is wrong with the displayed termination (the untwisted length of each wire is too long)?**
    Answer: The untwisted length of each wire is too long.
28. **What makes fiber preferable to copper cabling for interconnecting buildings? (Choose three.)**
    Answer:

- Limited susceptibility to EMI/RFI
- Greater distances per cable run
- Greater bandwidth potential

29. **What OSI physical layer term describes the measure of usable data transferred over a given period of time?**
    Answer: Goodput
30. **Which two functions are performed at the LLC sublayer of the OSI data link layer? (Choose two.)**
    Answer:

- Adds Layer 2 control information to network protocol data
- Places information in the frame that identifies which network layer protocol is being used for the frame

31. **What action will occur if a switch receives a frame with the destination MAC address FF:FF:FF:FF:FF**

    ?
    Answer: The switch forwards it out all ports except the ingress port.

Module 8 Quiz - Network Layer

1. **Which command can be used on a Windows host to display the routing table?**
   Answer: `netstat -r`
2. **What information is added during encapsulation at OSI Layer 3?**
   Answer: Source and destination IP address
3. **How does the network layer use the MTU value?**
   Answer: The MTU is passed to the network layer by the data link layer.
4. **Which characteristic describes an IPv6 enhancement over IPv4?**
   Answer: The IPv6 header is simpler than the IPv4 header is, which improves packet handling.
5. **Which statement accurately describes a characteristic of IPv4?**
   Answer: IPv4 has a 32-bit address space.
6. **When a router receives a packet, what information must be examined in order for the packet to be forwarded to a remote destination?**
   Answer: Destination IP address
7. **A computer has to send a packet to a destination host in the same LAN. How will the packet be sent?**
   Answer: The packet will be sent directly to the destination host.
8. **Which IPv4 address can a host use to ping the loopback interface?**
   Answer: 127.0.0.1
9. **When a connectionless protocol is in use at a lower layer of the OSI model, how is missing data detected and retransmitted if necessary?**
   Answer: Upper-layer connection-oriented protocols keep track of the data received and can request retransmission from the upper-level protocols on the sending host.
10. **What was the reason for the creation and implementation of IPv6?**
    Answer: To relieve IPv4 address depletion
11. **Which information is used by routers to forward a data packet toward its destination?**
    Answer: Destination IP address
12. **Which field in an IPv4 packet header will typically stay the same during its transmission?**
    Answer: Destination Address
13. **Which field in an IPv6 packet is used by the router to determine if a packet has expired and should be dropped?**
    Answer: Hop Limit