

CCNA 200-301 Official Cert Guide, Volume 1 (Odom)
Chapter 2 Fundamentals of Ethernet LANs

1) Which of the following algorithms is used to control network access and handle collisions on the shared Ethernet network?

- A) CSMA/CA
- B) DCAP
- C) CSMA/CD
- D) CLNP

Answer: C

Explanation: C) CSMA/CD, which stands for carrier sense multiple access with collision detection, is the name of the algorithm used.

Remediation Link: Chapter 2, Using Half Duplex with LAN Hubs

2) When a collision occurs on a shared Ethernet network, what is the first step in recovery for the two computers in question?

- A) Send a jamming signal.
- B) Resend the last frame right away.
- C) Wait for the other computer to finish.
- D) Do nothing until the line clears.

Answer: A

Explanation: A) When an Ethernet sender discovers that a collision has occurred, it will send a jamming signal indicating that a collision has been detected.

Remediation Link: Chapter 2, Using Half Duplex with LAN Hubs

3) What is the most common network cable connector used in Ethernet?

- A) RJ-10
- B) RJ-11
- C) RJ-45
- D) RJ-48

Answer: C

Explanation: C) The RJ-45 connector is the most common network connector used on Ethernet LAN networks.

Remediation Link: Chapter 2, Breaking Down a UTP Ethernet Link

4) What is the name of a LAN device that provides many physical ports into which Ethernet cables can be connected?

- A) Ethernet bridge
- B) Ethernet router
- C) Ethernet repeater
- D) Ethernet switch
- E) Ethernet concentrator

Answer: D

Explanation: D) On Ethernet networks, the most common device deployed is an Ethernet switch. This device is responsible for communications between the hosts that are connected to it (and to other connected switches); typically, these devices have anywhere from four to thousands of ports (RJ-45) available, depending on the environment.

Remediation Link: Chapter 2, Typical SOHO LANs

5) Which IEEE standard defines the use of radio waves to communicate between wireless LAN nodes?

- A) IEEE 802.3
- B) IEEE 802.2
- C) IEEE 802.16
- D) IEEE 802.5
- E) IEEE 802.11

Answer: E

Explanation: E) The IEEE 802.11 standard is used to define the use of radio waves for LAN communications. Many amendments to this standard are commonly seen on devices, including 802.11a, 802.11b, 802.11g, 802.11n, and 802.11ac (the fastest current draft).

Remediation Link: Chapter 2, Typical SOHO LANs

6) What is the longest copper cable length supported by the IEEE 802.3u FastEthernet standard?

- A) 100 meters
- B) 1 kilometer
- C) 100 feet
- D) 180 meters
- E) 180 feet

Answer: A

Explanation: A) The longest cable length supported when using a copper cable (that is, Category 5e, 6) is 100 meters. A fiber cable must be used for Ethernet cable runs that need to be longer than this.

Remediation Link: Chapter 2, The Variety of Ethernet Physical Layer Standards

7) What is the longest copper cable length supported by the IEEE 802.3an 10 Gigabit Ethernet standard?

- A) 100 meters
- B) 1 kilometer
- C) 100 feet
- D) 180 meters
- E) 180 feet

Answer: A

Explanation: A) The longest cable length supported when using a copper cable (that is, Category 6a, 7) is 100 meters; notice, however, that even though the copper maximum length is the same for all Ethernet standards, the standard of the cable must change (that is, Category 6a or 7 instead of Category 5e or 6). A fiber cable must be used for Ethernet cable runs that need to be longer than this.

Remediation Link: Chapter 2, The Variety of Ethernet Physical Layer Standards

8) What is the name of the data unit that is sent and received at the Ethernet data link layer?

- A) Segment
- B) Frame
- C) Bit
- D) Packet
- E) Section

Answer: B

Explanation: B) The name of the data unit used at the Ethernet data link layer is called an Ethernet Frame. A packet (or datagram) is the data unit typically used at the network layer, and a segment is the data unit used at the transport layer.

Remediation Link: Chapter 2, Consistent Behavior over All Links Using the Ethernet Data Link Layer

9) What term is used to describe a set of rules that are followed to ensure that devices can talk to each other and understand what each device is saying?

- A) Encryption scheme
- B) Data format
- C) Encoding scheme
- D) Language agreement
- E) Communications protocol

Answer: C

Explanation: C) The term *encoding scheme* is used to describe a set of rules that are followed so that devices can communicate with each other; without these rules, both devices could communicate but without understanding the information as it was received.

Remediation Link: Chapter 2, Transmitting Data Using Twisted Pairs

10) Why are the individual wires within a UTP cable twisted together?

- A) To reduce electrical shorts
- B) To reduce electrical opens
- C) To increase crosstalk
- D) To reduce crosstalk
- E) To increase electrical shorts

Answer: D

Explanation: D) The twisting wires in a UTP (copper) cable create an environment in which electromagnetic interference (EMI) is reduced, which results in a lower amount of crosstalk. The lower amount of crosstalk enabled by these twists ensures clearer communications between devices.

Remediation Link: Chapter 2, Transmitting Data Using Twisted Pairs

11) On a LAN RJ-45 connector, what name is given to the eight physical connections that make contact when connected?

- A) Threads
- B) Wires
- C) Strands
- D) Crimps
- E) Pins

Answer: E

Explanation: E) The eight physical connections (or locations) that connect between the RJ-45 connector and the LAN device are referred to as pins.

Remediation Link: Chapter 2, Breaking Down a UTP Ethernet Link

12) What is the name of the device in a PC (or server) that connects it to a LAN network?

- A) NIC
- B) DAC
- C) PCI port
- D) SATA port
- E) USB port

Answer: A

Explanation: A) A PC that connects to a network includes a network interface card (NIC), which enables it to connect to the LAN. Sometimes, the NIC is built in to the PC, and other times it is added via a USB, PCI, or other expansion port.

Remediation Link: Chapter 2, Breaking Down a UTP Ethernet Link

13) When connecting a wire to a host FastEthernet interface, which pins are used for communications?

- A) Pins 1 and 2 to receive
- B) Pins 1 and 2 to transmit
- C) Pins 3 and 6 to receive
- D) Pins 3 and 6 to transmit
- E) Pins 1 and 2 for receive
- F) Pins 7 and 8 for transmit

Answer: B, C

Explanation: B) On Ethernet and FastEthernet connections, pins 1 and 2 are used to transmit information.

C) On Ethernet and FastEthernet connections, pins 3 and 6 are used to receive information.

Remediation Link: Chapter 2, Straight-Through Cable Pinout

14) Assuming Auto-MDIX is not supported, which of these devices would require a straight-through cable when connecting to an Ethernet switch?

- A) Switch
- B) Hub
- C) Bridge
- D) Router
- E) Host (PC)

Answer: D, E

Explanation: D, E) The hub, bridge, and switch are all pinned the same, and routers and hosts are all pinned the same. Connections to devices that are pinned differently require a straight-through cable, and connections to devices that are pinned the same require a crossover cable; that includes router to switch (straight) and router to router (crossover).

Remediation Link: Chapter 2, Choosing the Right Cable Pinouts

15) Assuming Auto-MDIX is not supported, which of these devices would require a crossover cable when connecting to a router?

- A) Switch
- B) Hub
- C) Bridge
- D) Router
- E) Host (PC)

Answer: D, E

Explanation: D) The hub, bridge, and switch are all pinned the same, and routers and hosts are all pinned the same. Connections to devices that are pinned differently require a straight-through cable, and connections to devices that are pinned the same require a crossover cable; that is, router to switch (straight), router to router (crossover).

E) The hub, bridge, and switch are all pinned the same, and routers and hosts are all pinned the same. Connections to devices that are pinned differently require a straight-through cable, and connections to devices that are pinned the same require a crossover cable; that is, router to switch (straight), router to router (crossover).

Remediation Link: Chapter 2, Choosing the Right Cable Pinouts

16) Which field in the IEEE 802.3 Ethernet header provides a method for the receiving NIC to determine whether a frame experienced frame errors during transmission?

- A) FCS
- B) SFD
- C) CRC
- D) Hash
- E) Pad

Answer: A

Explanation: A) The frame check sequence (FCS) provides a method of detecting frame alteration from source to destination by utilizing a Checksum/Hash on the data at the source that can be verified at the destination.

Remediation Link: Chapter 2, Error Detection with FCS

17) An Ethernet address is also commonly referred to as a _____ address.

- A) CAM
- B) MAC
- C) IP
- D) Host
- E) Unicast

Answer: B

Explanation: B) An Ethernet address (Layer 2 address) is also referred to as a Media Access Control (MAC) address.

Remediation Link: Chapter 2, Ethernet Addressing

18) Which part of the Ethernet address is assigned to vendors to identify the equipment manufactured by them?

- A) First two bytes
- B) Last byte
- C) First three bytes
- D) Last three bytes
- E) Second and third bytes

Answer: C

Explanation: C) The first three bytes of a six-byte Ethernet address are used for the organizationally unique identifier (OUI) that is assigned to Ethernet product vendors.

Remediation Link: Chapter 2, Ethernet Addressing

19) Which part of a fiber optic cable is at the very center of the cable?

- A) Buffer
- B) Strengtheners
- C) Cladding
- D) Core
- E) Jacket

Answer: D

Explanation: D) The core is the inner most piece of a fiber optic cable and is found at the very

center.

Remediation Link: Chapter 2, Fiber Cabling Transmission Concepts

20) A light source for a fiber optic cable is known as which of the following?

- A) Optical transmitter
- B) Light transmitter
- C) Optical retina
- D) Cladding

Answer: A

Explanation: A) A light source, called an optical transmitter, shines a light into the core of fiber optic cabling.

Remediation Link: Chapter 2, Fiber Cabling Transmission Concepts

21) Which type of fiber optic cabling improves the maximum distances over UTP and uses a less expensive transmitter compared to its counterpart?

- A) Multimode
- B) Single-mode

Answer: A

Explanation: A) Multimode fiber improves the maximum distances over UTP and uses a less expensive transmitter type than single-mode fiber.

Remediation Link: Chapter 2, Fiber Cabling Transmission Concepts

22) Which of the following cable types has the furthest approximate max distance?

- A) UTP
- B) Multimode
- C) Single-mode

Answer: C

Explanation: C) Single-Mode fiber has the longest approximate max distance at 40 km compared to 500 m for multimode and 100 m for UTP cabling.

Remediation Link: Using Fiber with Ethernet

23) Which of the following cable types is the least expensive?

- A) UTP
- B) Multimode
- C) Single Mode
- D) They all cost approximately the same

Answer: UTP

Explanation: A) The cost of UTP cabling is lower than the cost of multimode and single mode cabling.

Remediation Link: Chapter 2, Using Fiber with Ethernet