2.3.5 Practice Questions

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Score: 100%   Passing Score: 80%

✓ **Correct**

You need to connect several network devices together using twisted pair Ethernet cables. Assuming Auto-MDIX is *not* enabled on these devices, drag the appropriate type of cabling on the left to each connection type on the right.

Workstation to switch

✓ Straight-through Ethernet cable

Router to switch

✓ Straight-through Ethernet cable

Switch to switch

✓ Crossover Ethernet cable

Workstation to router

✓ Crossover Ethernet cable

Router to router

✓ Crossover Ethernet cable

Explanation

If Auto-MDI/MDIX is not enabled, then you must use a crossover Ethernet cable when connecting the following devices:

- Switch to switch
- Switch to hub
- Hub to hub
- Workstation to router
- Workstation to workstation
- Router to router

Use a straight-through Ethernet cable to connect the following devices:

- Workstation to hub
- Workstation to switch
- Router to hub
- Router to switch

References

▶️ **2.3.1 Network Design Overview**

▶️ **2.3.2 Cables and Connectors**

📄 **2.3.3 Twisted Pair Facts**

📄 **2.3.4 Fiber Optic Facts**

▶️ **2.5.7 Ethernet Standards**

📄 **2.5.8 Ethernet Standards Facts**

resources\text\t_twistedpair_ccna7\q_twistedpair_01_ccna7.question.xml

You are deploying a new 10GB Ethernet network using Cat 6 cabling.

Which of the following are true concerning this media? (Select two.)

- ☐ It uses twisted 18- or 16-gauge copper wiring.
- → ☑ PVC insulation surrounds each copper wire.
- ☐ It supports multi-mode transmissions.
- ☐ It is completely immune to EMI.
- → ☑ It supports 10 GB Ethernet connections.

Explanation

Cat 6 cabling supports 10-gigabit Ethernet and high-bandwidth broadband communications. It is also backwards-compatible with earlier Ethernet standards, such as 10 Mbps Ethernet. Cat 6 cables have PVC insulation that surrounds each copper wire and often include a solid plastic core that keeps the twisted pairs separated and prevents the cable from being bent too tightly.

Even though Cat 6 cabling uses a very tight twist rate, it is still susceptible to EMI. Only fiber-optic cabling is completely immune to EMI.

Cat 6 cabling typically uses 24-gauge copper wiring.

Multi-mode transmissions are associated with fiber-optic cabling.

References

📽 **2.3.1 Network Design Overview**

📽 **2.3.2 Cables and Connectors**

📄 **2.3.3 Twisted Pair Facts**

📄 **2.3.4 Fiber Optic Facts**

📽 **2.5.7 Ethernet Standards**

📄 **2.5.8 Ethernet Standards Facts**

resources\text\t_twistedpair_ccna7\q_twistedpair_02_ccna7.question.xml

You want to implement an Ethernet network using the 1000BaseT standard using the minimum hardware specifications possible. Which of the following should you include in your plan? (Select two.)

- ☐ LC connectors
- → ☑ RJ-45 connectors
- ☐ Cat4 twisted pair cable
- ☐ Cat5 twisted pair cable
- → ☑ Cat5e twisted pair cable
- ☐ Multi-mode fiber optic cable

Explanation

1000BaseT runs at 1 Gbps speeds over twisted pair copper cable (the T in the specification stands for twisted pair). 1000BaseT requires Cat5e cable. Use an RJ-45 connector for the cable.

Fiber optic cables use LC, ST, or SC connectors. 100BaseFX, 1000BaseSX, and 1000BaseLX are all standards that use fiber optic.

References

📽 **2.3.1 Network Design Overview**

📽 **2.3.2 Cables and Connectors**

📄 **2.3.3 Twisted Pair Facts**

📄 **2.3.4 Fiber Optic Facts**

📽 **2.5.7 Ethernet Standards**

📄 **2.5.8 Ethernet Standards Facts**

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You have a small network with two switches, SwitchA and SwitchB. MDI-X is not enabled on either switch. Each switch has three client computers connected. IP addresses have been assigned to various devices as follows:

WrkA_1, WrkA_2, and WrkA_3 are connected to SwitchA, while WrkB_4, WrkB_5, and WrkB_6 are connected to SwitchB. All of the devices are configured to operate within the same subnet.

You need to connect SwitchA and SwitchB so that workstations connected to SwitchA can communicate with workstations connected to SwitchB. What should you do?

- ○ Connect SwitchA and SwitchB using a straight-through cable.
- ○ Connect SwitchA and SwitchB to a router using a straight-through cable on each side.
- → ◉ Connect SwitchA and SwitchB using a crossover cable.
- ○ Connect SwitchA and SwitchB to a router using a crossover cable on each side.

Explanation

Because all of the devices on both switches are configured to operate within the same subnet, you can connect both switches directly together. Use a crossover cable when connecting two switches together.

Use a router to connect two switches that are in different subnets. To connect a router to a switch, use a straight-through cable.

References

🎞 **2.3.1 Network Design Overview**

🎞 **2.3.2 Cables and Connectors**

📄 **2.3.3 Twisted Pair Facts**

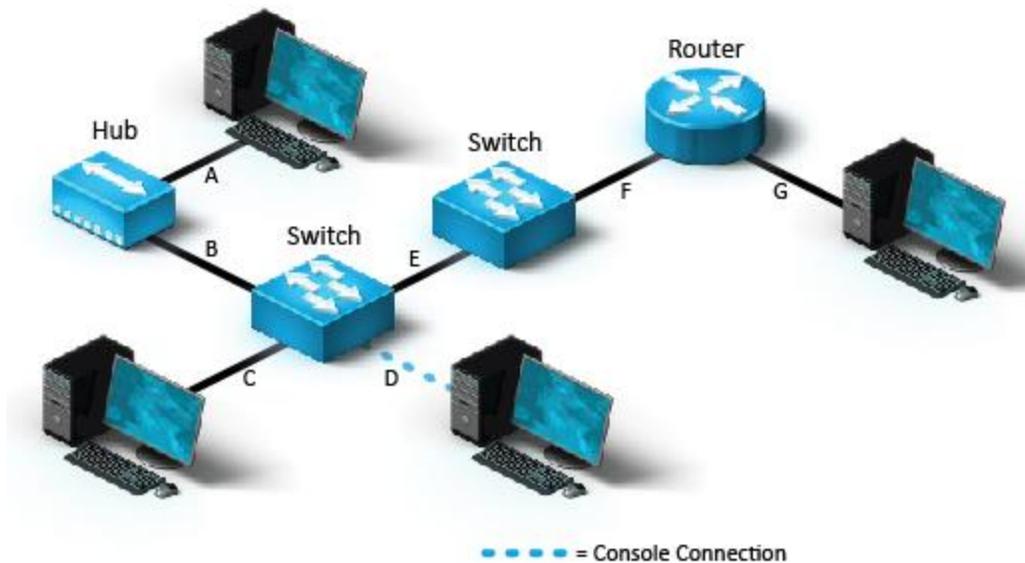📄 **2.3.4 Fiber Optic Facts**

🎞 **2.5.7 Ethernet Standards**

📄 **2.5.8 Ethernet Standards Facts**

resources\text\t_twistedpair_ccna7\q_twistedpair_04_ccna7.question.xml

Question 5.   ✓ Correct

Each connection in the image is labeled A-G. Drag the cable type from the left that you would use to make each connection type.

= Console Connection

Connection A

| ✓   Ethernet straight-through cable |

Connection B

| ✓   Ethernet crossover cable |

Connection C

| ✓   Ethernet straight-through cable |

Connection E

| ✓   Ethernet crossover cable |

Connection F

✓	Ethernet straight-through cable

Connection G

✓	Ethernet crossover cable

Explanation

Use a straight-through Ethernet cable to connect a workstation to a hub or a switch.

Use a straight-through Ethernet cable to connect a router to a switch.

Use a crossover Ethernet cable to connect a hub or a switch to another switch.

Use a crossover Ethernet cable to connect a workstation directly to a router.

References

▷ **2.3.1 Network Design Overview**

▷ **2.3.2 Cables and Connectors**

▷ **2.3.3 Twisted Pair Facts**

▷ **2.3.4 Fiber Optic Facts**

▷ **2.5.7 Ethernet Standards**

▷ **2.5.8 Ethernet Standards Facts**

resources\text\t_twistedpair_ccna7\q_twistedpair_05_ccna7.question.xml

Which pins are used in a Cat 5 Ethernet (100BASE-T) UTP cable?

○ 2, 5, 6, and 9

→ ◉ 1, 2, 3, and 6

○ 1, 3, 4, and 7

○ 4, 5, 7, and 8

Explanation

Cat 5 Ethernet (100BASE-T) and below (Tx is a pin used for transmitting, and Rx is a pin used for receiving):

- Pin 1: Tx+
- Pin 2: Tx-
- Pin 3: Rx+
- Pin 4: Unused
- Pin 5: Unused
- Pin 6: Rx-
- Pin 7: Unused
- Pin 8: Unused

For Cat 5e (1000BASE-T) and above, all eight pins are used for both transmitting and receiving.

References

▶ **2.3.1 Network Design Overview**

▶ **2.3.2 Cables and Connectors**

▤ **2.3.3 Twisted Pair Facts**

▤ **2.3.4 Fiber Optic Facts**

▶ **2.5.7 Ethernet Standards**

▤ **2.5.8 Ethernet Standards Facts**

resources\text\t_twistedpair_ccna7\q_twistedpair_06_ccna7.question.xml

Match each characteristic on the left with the appropriate fiber optic connector on the right.

MT-RJ

> ✓ Metal guide pins for alignment

LC

> ✓ Half the size of other connectors

ST

> ✓ Bayonet-type connector

SC

> ✓ Push-on, pull-off connector

Explanation

Each fiber optic connector has the following characteristics:

- The ST connector uses a bayonet-type connector.
- The SC connector uses a separate push-on, pull-off connector with a locking tab for each wire.
- The LC connector is half the size of other fiber optic connectors.
- The MT-RJ connector uses metal guide pins to ensure proper alignment.

References

▶ **2.3.1 Network Design Overview**

▶ **2.3.2 Cables and Connectors**

▤ **2.3.3 Twisted Pair Facts**

resources\text\t_cablefiber_ccna7\q_cablefiber_01_cna7.question.xml

You want to implement an Ethernet network using the 100Base-FX standard and the minimum hardware specifications possible. You need to support distances of up to 1,000 meters without repeaters.

Which of the following should you include in your plan? (Select two.)

- [ ] Multi-mode fiber optic cable
- [ ] Cat5e twisted pair cable
- → [x] SC connectors
- [ ] Cat5 twisted pair cable
- → [x] Single-mode fiber optic cable
- [ ] RJ-45 connectors
- [ ] Cat4 twisted pair cable

Explanation

100BaseFX uses fiber optic cables with SC, ST, LC, or MT-RJ connectors (SC being the preferred connector). To support distances of up to 2,000 meters without repeaters, use full duplex single-mode cables. Multi-mode cables support distance of up to 412 meters without repeaters.

Twisted pair cables and RJ-45 connectors are used with 100BaseTX, 100BaseT4, and 1000BaseT Ethernet. Maximum distances are up to 100 meters when using twisted pair.

References

🎬 **2.3.1 Network Design Overview**

🎬 **2.3.2 Cables and Connectors**

📄 **2.3.3 Twisted Pair Facts**

📄 **2.3.4 Fiber Optic Facts**

🎬 **2.5.7 Ethernet Standards**

📄 **2.5.8 Ethernet Standards Facts**

Which of the following are features of multimode fiber cable? (Select three.)

→ ☑   Supports only limited distance cable lengths

☐   Has a core diameter around 10 microns

→ ☑   Transfers data through the core using multiple light rays

☐   Supports cable lengths that extend a great distance

☐   Typically used for connecting networks between buildings

→ ☑   Has a core diameter around 50 to 100 microns

☐   Transfers data through the core using a single light ray

Explanation

Multimode fiber cable:

- Transfers data through the core using multiple light rays
- Has a core diameter around 50 to 100 microns
- Supports only limited distance cable lengths

Single-mode fiber cable:

- Transfers data through the core using a single light ray (the ray is also called a mode)
- Supports a large amount of data
- Has a core diameter around 10 microns
- Supports cable lengths that extend a great distance

References

2.3.1 Network Design Overview

2.3.2 Cables and Connectors

2.3.3 Twisted Pair Facts

2.3.4 Fiber Optic Facts

2.5.7 Ethernet Standards

2.5.8 Ethernet Standards Facts

Question 10.   ✓ Correct

Which fiber optic cable requires the exposed fiber tip to be polished as part of the assembly process?

○   RJ-45 connectors

○   Pre-polished connectors

○   Only plastic core fiber connectors

→ ◉   Field terminated epoxy connectors

Explanation

If a connector requires epoxy during termination in the field, the ends must be polished.

Pre-polished connectors do not require polishing during field termination.

RJ-45 is a copper wire connector and does not work with fiber-optic cables.

The connector type is what determines requirements for polishing, not the core material.

References

🎞 **2.3.1 Network Design Overview**

🎞 **2.3.2 Cables and Connectors**

📄 **2.3.3 Twisted Pair Facts**

📄 **2.3.4 Fiber Optic Facts**

🎞 **2.5.7 Ethernet Standards**

📄 **2.5.8 Ethernet Standards Facts**

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