Spectrum Field Technician 1 to 2 Practice Test (Sample)

Study Guide

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Questions

1. How high above a shed should the drop be installed?

A. 1 foot

B. 3 feet

C. 5 feet

D. 7 feet

2. What is a private IP address?

A. An address used for public data transport.

B. A non-routable IP address that can be used within a LAN.

C. An address reserved for broadband connections.

D. An IP address that is always static.

3. What is a key feature of 256-QAM technology?

A. It allows for higher data rates

B. It simplifies the transmission process

C. It uses less bandwidth

D. It prevents interference

4. What color tag should be used at the grounding block?

A. White Ground Tag

B. Red Ground Tag

C. Green Ground Tag

D. Blue Ground Tag

5. What is the longest length of drop you can run using RG-6?

A. 100ft

B. 150ft

C. 200ft

D. 250ft

6. Is TX typically higher at the CPE than at the TAP?

A. True

B. False

C. Not Always

D. Sometimes

7. What is the ANSI rating for safety glasses?

- **A. Z88.1 and above**
- **B. Z87.1 and above**
- **C. Z86.1 or better**
- **D. Z80.1 sufficient**

8. What is the purpose of Forward Error Correction?

- **A. It increases data speed**
- **B. It compresses data**
- **C. It adds redundant bits to help correct transmissions**
- **D. It filters out noise from signals**

9. What does a modem do to enable a computer to connect to the internet?

- **A. Stores data from the internet**
- **B. Maintains the local network**
- **C. Changes digital data from the computer into analog data for transmission**
- **D. Manages internet security**

10. What equipment is used to splice fiber optic cable?

- **A. Wire cutter**
- **B. Fusion splicer**
- **C. Coaxial stripper**
- **D. Handheld pigtail cutter**

Answers

1. B
2. B
3. A
4. C
5. B
6. A
7. B
8. C
9. C
10. B

Explanations

1. How high above a shed should the drop be installed?

A. 1 foot

B. 3 feet

C. 5 feet

D. 7 feet

The drop should be installed at a height of 3 feet above the shed. This height is important to ensure that the drop line has enough clearance to prevent accidental damage and to allow sufficient space for activities that may take place around the shed. Installing the drop too low increases the risk of it being obstructed or damaged by outdoor activities, gardening equipment, or even snow accumulation. Setting the height at 3 feet provides a good balance between accessibility for maintenance and protection against potential hazards. This height is typically in line with industry standards, creating a safe environment while still allowing for serviceability in case of any necessary adjustments or repairs. It facilitates clear passage and minimizes the risk of interference with the structure itself.

2. What is a private IP address?

A. An address used for public data transport.

B. A non-routable IP address that can be used within a LAN.

C. An address reserved for broadband connections.

D. An IP address that is always static.

A private IP address is specifically designed for use within a local area network (LAN) and is not routable on the public internet. This means that devices on a private network can communicate with each other but are not directly accessible from the broader internet, which provides an additional layer of security. Private IP addresses are defined by standards set by the Internet Assigned Numbers Authority (IANA) and typically fall within specific ranges, such as 10.0.0.0 to 10.255.255.255, 172.16.0.0 to 172.31.255.255, and 192.168.0.0 to 192.168.255.255. In contrast, the other choices do not accurately describe a private IP address. Public data transport relates to addresses that can be routed on the internet, while broadband connections do not specifically relate to the classification of private versus public IP addresses. Additionally, IP addresses can be dynamic or static; thus, it is inaccurate to say that a private IP address is always static, as it can also be assigned dynamically through methods like DHCP. This flexibility in usage is essential for efficient network management within private networks.

3. What is a key feature of 256-QAM technology?

A. It allows for higher data rates

B. It simplifies the transmission process

C. It uses less bandwidth

D. It prevents interference

A key feature of 256-QAM (Quadrature Amplitude Modulation) technology is its ability to allow for higher data rates. This modulation technique works by combining two amplitude-modulated signals into a single channel, effectively increasing the number of bits transmitted per symbol. Specifically, 256-QAM encodes data into 256 different combination states, which means it can transmit more information in the same amount of time compared to lower-order modulation types like QPSK or 16-QAM. This increased efficiency in encoding allows for greater data throughput, making it particularly advantageous in broadband communication systems, such as cable modems or wireless networks. The higher the modulation order, the more complex the signal, permitting more data to be sent over a given bandwidth. While some might think that 256-QAM simplifies the transmission process or reduces interference, those aspects are not inherent characteristics of this modulation type. Bandwidth usage might not necessarily be lower, as higher-order modulations often require more bandwidth to maintain signal integrity, especially in environments with noise or interference. Additionally, while 256-QAM can help make better use of available bandwidth, it does not inherently prevent interference; adequate signal-to-noise ratios are needed to take advantage of its benefits.

4. What color tag should be used at the grounding block?

A. White Ground Tag

B. Red Ground Tag

C. Green Ground Tag

D. Blue Ground Tag

The use of a green ground tag at the grounding block is standard because green is universally recognized as the color that indicates grounding or earth connections. Grounding is crucial in electrical systems to ensure safety and reliability by providing a path for fault currents to flow safely to the ground. Properly tagging grounding points helps technicians quickly identify and differentiate them from other types of connections, reducing the risk of accidental mistakes during maintenance or troubleshooting. The use of other colors such as white, red, or blue does not align with this universally accepted color-coding convention. White tags generally indicate neutrals, red tags might be used for specific circuits or signaling applications, and blue tags usually signify telecommunication or data-related connections. Therefore, using a green tag for grounding helps maintain consistency and clarity within the electrical and telecommunications fields, ensuring that all technicians, regardless of their specific background, can recognize the grounding block's function immediately.

5. What is the longest length of drop you can run using RG-6?

A. 100ft

B. 150ft

C. 200ft

D. 250ft

The correct length for running a drop with RG-6 coaxial cable is typically 150 feet. RG-6 cables are commonly used for transmitting television signals, internet, and other data due to their superior shielding and lower signal loss compared to other coaxial cables, such as RG-59. Using RG-6, a drop length of up to 150 feet is generally recommended to maintain optimal performance and signal integrity. Beyond this length, there can be significant signal degradation, which may lead to issues such as reduced picture quality or intermittent connectivity. The limitations in signal loss over distance are primarily due to the inherent electrical characteristics of the cable, which can attenuate signals if extended too far. Maintaining drops within this distance helps ensure that the potential issues associated with signal loss are minimized, allowing users to enjoy the best possible performance from their cable service.

6. Is TX typically higher at the CPE than at the TAP?

A. True

B. False

C. Not Always

D. Sometimes

The statement that TX (transmit power) is typically higher at the CPE (customer premises equipment) than at the TAP (test access point) is accurate. In a cable network, the CPE usually operates at a higher power level to ensure that the signal can effectively travel over the distance to reach the service provider's infrastructure. The TAP is a point where signals can be accessed for testing or monitoring, and generally does not require the same level of power as the CPE, since it's positioned within the network where signal strength is generally maintained and managed. By having a higher TX at the CPE, it compensates for losses that may occur along the cable run to ensure the end user receives a strong and clear signal. This is essential for maintaining the quality of services such as internet, video, and voice that rely on transmission fidelity. While there might be instances where the power levels could vary due to network design specifics, generally speaking, this statement holds true as a standard practice in network design and implementation. Hence, the correct answer reflects an understanding of how signal transmission operates in cable network environments.

7. What is the ANSI rating for safety glasses?

A. Z88.1 and above

B. Z87.1 and above

C. Z86.1 or better

D. Z80.1 sufficient

The ANSI rating for safety glasses is Z87.1 and above, which signifies that the eyewear meets the American National Standards Institute's requirements for eye protection in various workplaces. This standard is essential for ensuring that safety glasses are sufficiently impact-resistant and can provide adequate protection against various hazards, such as flying debris and chemical splashes. Choosing safety glasses with a Z87.1 rating ensures compliance with regulations that govern workplace safety, particularly in environments where eye injuries are a risk. This standard has been the benchmark for safety eyewear since it was established and is widely recognized in industries where eye protection is crucial. The other choices, while they may reference standards, do not pertain to safety glasses. Z88.1 is related to respiratory protection, Z86.1 pertains to lasers, and Z80.1 is focused on eyewear for vision correction, making them unsuitable for safety eyewear standards. Thus, Z87.1 is the correct and specific standard for safety glasses.

8. What is the purpose of Forward Error Correction?

A. It increases data speed

B. It compresses data

C. It adds redundant bits to help correct transmissions

D. It filters out noise from signals

Forward Error Correction (FEC) plays a crucial role in digital communication systems. Its primary purpose is to enhance the reliability of data transmission by incorporating redundancy through the addition of extra bits. These redundant bits are strategically added to the original data stream, enabling the receiver to detect and correct errors that may occur during transmission without the need for retransmission. When data is sent over a communication channel, it can be susceptible to errors caused by factors such as noise or interference. With FEC, the system is capable of correcting these errors based on the additional information included in the transmission. This ability to correct errors on-the-fly improves the overall integrity and quality of the communication. In comparison to increasing data speed, data compression, or filtering noise, FEC specifically addresses the challenge of error correction, making it vital for maintaining robust and efficient data communications in challenging environments.

9. What does a modem do to enable a computer to connect to the internet?

A. Stores data from the internet

B. Maintains the local network

C. Changes digital data from the computer into analog data for transmission

D. Manages internet security

The function of a modem is crucial for enabling a computer to connect to the internet. Specifically, a modem converts digital data from the computer into analog signals that can be transmitted over telephone lines or coaxial cables. This conversion is essential because many traditional communication systems, including those used by Internet Service Providers (ISPs), are designed to handle analog signals. By transforming digital data into analog, the modem facilitates communication between the digital environment of a computer and the analog infrastructure of the internet. In addition to this primary function, a modem also works in reverse, converting incoming analog signals back into digital data that the computer can understand. This bidirectional capability allows for a seamless exchange of information between the user and the internet, which is vital for activities such as browsing websites, downloading files, or streaming content. Understanding the role of the modem helps clarify why the other options do not accurately describe its function. For instance, while it may play a part in managing security, that is primarily the role of firewalls and other security software rather than the modem itself. Similarly, storing data from the internet and maintaining the local network are functions associated with other devices, like routers and servers, rather than the modem's primary purpose.

10. What equipment is used to splice fiber optic cable?

A. Wire cutter

B. Fusion splicer

C. Coaxial stripper

D. Handheld pigtail cutter

The equipment designated for splicing fiber optic cable is a fusion splicer. A fusion splicer is specifically designed for joining two optical fibers together by aligning them precisely and using heat to melt the fiber ends, creating a continuous optical connection. This method ensures that the splice has minimal loss of signal and maintains the integrity of the fiber optic system, which is crucial for high-speed data transmission. The fusion splicing process is highly effective for creating reliable and durable connections, making the fusion splicer an essential tool for technicians working with fiber optics. In contrast, a wire cutter is primarily used for cutting copper or aluminum wires and is not suitable for the delicate nature of fiber optics. A coaxial stripper is designed to remove insulation from coaxial cables and does not apply to fiber optics. A handheld pigtail cutter also serves a different purpose, typically for cutting pigtails of fiber, but it does not splice fibers together as effectively or accurately as a fusion splicer does. Thus, the fusion splicer is the appropriate choice for splicing fiber optic cables.