ATT Field Competency (FC) Practice Test (Sample)

Study Guide

Everything you need from our exam experts!

Questions

1. What does QoS stand for and why is it important?

- **A. Quality of Service; it enhances physical security**
- **B. Quality of Service; it prioritizes certain types of traffic to ensure reliable service**
- **C. Quality of Service; it improves user interface design**
- **D. Quality of Service; it manages network cable cleanliness**

2. How quickly does a fast acting fuse typically blow?

- **A. In about 1 second**
- **B. In approximately 5 seconds**
- **C. In roughly 10 seconds**
- **D. In 1-30 seconds**

3. What kind of fault provides no resistance to current flow?

- **A. A short**
- **B. A break**
- **C. A capacitor malfunction**
- **D. An open circuit**

4. In a power supply context, what does "pulsating DC" refer to?

- **A. A constant voltage**
- **B. A fluctuating direct current**
- **C. A type of alternating current**
- **D. A regulated output voltage**

5. What does "TP" mean in a schematic diagram?

- **A. Test Point**
- **B. Terminating Point**
- **C. Terminal Pin**
- **D. Transform Point**

6. What type of rectifier allows current to flow only during one half of the AC cycle?

A. Full wave rectifier

B. Bridge rectifier

C. Half wave rectifier

D. Transformer rectifier

7. What fault occurs when current flows in one direction through relay contacts?

A. Corroded contacts

B. Cratered contacts

C. Oxidized contacts

D. Loose connections

8. Which of the following is a primary factor in the severity of electric shock?

A. The path of current

B. The age of the victim

C. The ambient temperature

D. The skin's texture

9. How do you address a sealed relay that is not functioning?

A. Adjust its position

B. Replace the relay

C. Clean the casing

D. Inspect the connections

10. A step-down transformer _____ output voltage in the secondary.

A. maintains

B. decreases

C. increases

D. modulates

Answers

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

Explanations

1. What does QoS stand for and why is it important?

A. Quality of Service; it enhances physical security

B. Quality of Service; it prioritizes certain types of traffic to ensure reliable service

C. Quality of Service; it improves user interface design

D. Quality of Service; it manages network cable cleanliness

Quality of Service, or QoS, refers to the set of technologies and techniques used to manage network resources by prioritizing certain types of traffic over others. This is particularly important in environments where bandwidth is limited or where specific applications require guaranteed performance to function effectively, such as voice over IP (VoIP), video conferencing, and online gaming. By prioritizing traffic, QoS ensures that critical applications receive the necessary bandwidth and low latency they require to operate smoothly, even in situations where the network is congested. For example, if a network is handling both video calls and large file transfers simultaneously, QoS can be used to give higher priority to the video traffic, decreasing the likelihood of delays or interruptions. This leads to a more reliable and efficient network performance, as user experience is significantly improved when sensitive applications are adequately supported. Understanding QoS is essential for optimizing network performance and enhancing user satisfaction in environments where multiple types of data traffic coexist.

2. How quickly does a fast acting fuse typically blow?

A. In about 1 second

B. In approximately 5 seconds

C. In roughly 10 seconds

D. In 1-30 seconds

A fast-acting fuse is designed to respond quickly to overcurrent conditions, making it crucial for protecting sensitive electronic components from damage. Typically, these fuses can blow in about 1 second or even less when faced with a fault condition that exceeds their rated current. This rapid response ensures that the electrical circuitry is protected almost immediately, thereby minimizing potential damage or hazards that prolonged overcurrent could cause. In contrast, options that suggest longer blow times (such as approximately 5 seconds or roughly 10 seconds) do not align with the function of a fast-acting fuse, which is characterized by its ability to interrupt the circuit quickly. Similarly, the option indicating a blow time of 1-30 seconds is too broad and applies more to slow-blow or time-delay fuses, which are designed to withstand initial surges of current before blowing. Therefore, the correct answer reflects the fast response time that is essential for the functionality of fast-acting fuses.

3. What kind of fault provides no resistance to current flow?

A. A short

B. A break

C. A capacitor malfunction

D. An open circuit

A fault that provides no resistance to current flow is identified as a short. In electrical systems, a short circuit occurs when there is an unintended path of low resistance created, allowing an excessive amount of current to flow. This bypasses the normal load and, thus, can lead to overheating or damage due to the high current levels. Understanding this concept is crucial because it emphasizes the importance of proper circuit design, insulation, and protective devices such as fuses or circuit breakers to prevent these potentially hazardous situations. In contrast, a break leads to an open circuit, where current cannot flow at all, and a capacitor malfunction may involve variations in resistance but isn't characterized as having no resistance. An open circuit is a state where the electrical path is interrupted, preventing current flow entirely, indicating that understanding circuit integrity is vital in electrical safety.

4. In a power supply context, what does "pulsating DC" refer to?

A. A constant voltage

B. A fluctuating direct current

C. A type of alternating current

D. A regulated output voltage

Pulsating DC refers to a type of direct current that is not constant but varies in amplitude over time. This fluctuation occurs as the voltage level rises and falls periodically, typically as a result of the rectification process where AC (alternating current) is converted to DC. In this context, pulsating DC characterizes the output of a rectifier that has not yet undergone sufficient filtering to smooth out the variations, leading to a waveform that resembles the peaks of the input AC signal. This means the voltage level does not remain steady but shows pulsations rather than a smooth, continuous flow of current, which would be typical of pure DC. Understanding pulsating DC is essential in power supply design, as it impacts the performance and behavior of electronic circuits.

5. What does "TP" mean in a schematic diagram?

A. Test Point

B. Terminating Point

C. Terminal Pin

D. Transform Point

In a schematic diagram, "TP" stands for Test Point. Test Points are specific locations on a circuit where measurements can be made to facilitate troubleshooting and diagnostics. These points allow engineers and technicians to easily access and monitor the electrical signals within the circuit without interrupting its operation. Using test points is crucial for ensuring accurate testing and analysis, especially when checking for voltage, current, or signal integrity. They are typically marked clearly on the schematic to guide users to the appropriate locations for testing. The other terms, while they may refer to components or locations in a circuit, do not specifically denote the purpose of facilitating measurements in the way that Test Point does.

6. What type of rectifier allows current to flow only during one half of the AC cycle?

A. Full wave rectifier

B. Bridge rectifier

C. Half wave rectifier

D. Transformer rectifier

A half wave rectifier is designed specifically to allow current to flow through it only during one half of the alternating current (AC) cycle, effectively utilizing only one polarity of the input AC signal. This is accomplished using a single diode that conducts electricity only when the input voltage is positive (or negative, depending on the diode's orientation), blocking the current flow during the other half of the cycle. The main advantage of a half wave rectifier is its simplicity and low cost, as it requires fewer components compared to other types of rectifiers. However, one downside is that it is not very efficient since it only uses half of the waveform, which results in a lower average output voltage and current. Understanding the operation of the half wave rectifier is essential for applications in which simplicity and cost are prioritized over efficiency and smoother power output.

7. What fault occurs when current flows in one direction through relay contacts?

A. Corroded contacts

B. Cratered contacts

C. Oxidized contacts

D. Loose connections

When current flows in one direction through relay contacts, this situation can lead to cratered contacts. This phenomenon occurs as a result of arcing or excessive heat at the point of contact, which can happen when the contacts are closed while current is flowing in one direction. The arcing can cause material to be eroded from the contact surface, resulting in small pits or craters, which deteriorate the functionality of the relay over time. The creation of cratered contacts can significantly impair the reliability of the relay function, as these imperfections can cause fluctuating resistance levels. Without corrections to the contacts, such relays may fail to operate reliably in their intended applications. Understanding this specific fault is crucial for anyone working with relays in electrical systems, as it underscores the importance of maintaining relay integrity to ensure consistent performance.

8. Which of the following is a primary factor in the severity of electric shock?

A. The path of current

B. The age of the victim

C. The ambient temperature

D. The skin's texture

The primary factor in the severity of electric shock is indeed the path of current. This is because the human body has varying levels of resistance depending on the path that the electric current takes through it. If the current traverses vital organs, such as the heart or brain, the consequences can be far more severe than if it travels through less critical areas. When considering how electric shock affects the body, the magnitude of the current, the duration of exposure, and the route taken are crucial elements. A current that passes through the heart can disrupt its electrical activity, potentially leading to cardiac arrest, while a path along the skin may produce milder sensations. Thus, understanding the significance of the current's path is essential for assessing the potential hazards of electric shock.

9. How do you address a sealed relay that is not functioning?

A. Adjust its position

B. Replace the relay

C. Clean the casing

D. Inspect the connections

When addressing a sealed relay that is not functioning, replacing the relay is often the most effective course of action. Sealed relays are designed to protect their internal mechanisms from environmental factors such as dust, moisture, and corrosion. When a sealed relay fails, it typically indicates that the internal components may be damaged or have degraded functionality that cannot be repaired through cleaning or adjustment. Replacing the relay ensures that the circuit can function properly again with a new, reliable component. This approach is generally recommended in cases where the relay shows signs of failure and troubleshooting does not yield a solution. Other options, such as adjusting the relay's position, cleaning the casing, or inspecting connections, may not resolve the underlying issues associated with a malfunctioning sealed relay. These steps may be useful in other contexts but are not likely to be effective for a sealed relay that has stopped functioning.

10. A step-down transformer _____ output voltage in the secondary.

A. maintains

B. decreases

C. increases

D. modulates

A step-down transformer is specifically designed to reduce the voltage from its primary winding to its secondary winding. This means that the output voltage in the secondary is lower than the input voltage in the primary. When AC voltage is applied to the primary winding, the alternating magnetic field induces a lower voltage in the secondary winding based on the turns ratio between the primary and secondary coils. A step-down transformer achieves this by having fewer turns in the secondary winding compared to the primary winding. Therefore, the output voltage in the secondary is indeed decreased, making the choice of "decreases" the correct answer. In contrast, a step-up transformer would increase the voltage by having more turns in the secondary. The other options—maintaining, increasing, or modulating voltage—do not accurately describe the function of a step-down transformer.