

Automotive Electrical/Electronics (Auto 170) Practice Exam (Sample)

Study Guide



Everything you need from our exam experts!

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Introduction

Preparing for a certification exam can feel overwhelming, but with the right tools, it becomes an opportunity to build confidence, sharpen your skills, and move one step closer to your goals. At Examzify, we believe that effective exam preparation isn't just about memorization, it's about understanding the material, identifying knowledge gaps, and building the test-taking strategies that lead to success.

This guide was designed to help you do exactly that.

Whether you're preparing for a licensing exam, professional certification, or entry-level qualification, this book offers structured practice to reinforce key concepts. You'll find a wide range of multiple-choice questions, each followed by clear explanations to help you understand not just the right answer, but why it's correct.

The content in this guide is based on real-world exam objectives and aligned with the types of questions and topics commonly found on official tests. It's ideal for learners who want to:

- Practice answering questions under realistic conditions,
- Improve accuracy and speed,
- Review explanations to strengthen weak areas, and
- Approach the exam with greater confidence.

We recommend using this book not as a stand-alone study tool, but alongside other resources like flashcards, textbooks, or hands-on training. For best results, we recommend working through each question, reflecting on the explanation provided, and revisiting the topics that challenge you most.

Remember: successful test preparation isn't about getting every question right the first time, it's about learning from your mistakes and improving over time. Stay focused, trust the process, and know that every page you turn brings you closer to success.

Let's begin.

How to Use This Guide

This guide is designed to help you study more effectively and approach your exam with confidence. Whether you're reviewing for the first time or doing a final refresh, here's how to get the most out of your Examzify study guide:

1. Start with a Diagnostic Review

Skim through the questions to get a sense of what you know and what you need to focus on. Your goal is to identify knowledge gaps early.

2. Study in Short, Focused Sessions

Break your study time into manageable blocks (e.g. 30 - 45 minutes). Review a handful of questions, reflect on the explanations.

3. Learn from the Explanations

After answering a question, always read the explanation, even if you got it right. It reinforces key points, corrects misunderstandings, and teaches subtle distinctions between similar answers.

4. Track Your Progress

Use bookmarks or notes (if reading digitally) to mark difficult questions. Revisit these regularly and track improvements over time.

5. Simulate the Real Exam

Once you're comfortable, try taking a full set of questions without pausing. Set a timer and simulate test-day conditions to build confidence and time management skills.

6. Repeat and Review

Don't just study once, repetition builds retention. Re-attempt questions after a few days and revisit explanations to reinforce learning. Pair this guide with other Examzify tools like flashcards, and digital practice tests to strengthen your preparation across formats.

There's no single right way to study, but consistent, thoughtful effort always wins. Use this guide flexibly, adapt the tips above to fit your pace and learning style. You've got this!

Questions

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- 1. Which of the following is NOT a function of a vehicle computer?**
 - A. Control fuel delivery**
 - B. Transmitting data wirelessly**
 - C. Monitoring engine parameters**
 - D. Executing diagnostic tests**

- 2. How can a technician effectively check for a short circuit within a wiring harness?**
 - A. Using a voltmeter to measure voltage drops**
 - B. Using a multimeter to test continuity and resistance**
 - C. Checking for physical damage only**
 - D. Measuring the length of the harness**

- 3. What does 'load test' refer to when evaluating battery performance?**
 - A. A test to check if the battery is fully charged**
 - B. A measurement of the battery's ability to deliver current under load**
 - C. An assessment of battery color and condition**
 - D. A test that determines the physical size of the battery**

- 4. Which of the following safety precautions is critical when working on automotive electrical systems?**
 - A. Wearing gloves**
 - B. Disconnecting the battery**
 - C. Using insulated tools**
 - D. All of the above**

- 5. A semiconductor is a material _____.**
 - A. With fewer than four electrons in the outer orbit of its atoms**
 - B. With more than four electrons in the outer orbit of its atoms**
 - C. With exactly four electrons in the outer orbit of its atoms**
 - D. Determined by other factors besides the number of electrons**

- 6. What does an open circuit mean?**
- A. A complete path for current flow**
 - B. A path where the current can flow without resistance**
 - C. A broken or interrupted path for current flow**
 - D. A circuit with low resistance**
- 7. What two things can a vehicle computer actually perform (output)?**
- A. Store and process information**
 - B. Turn something on or turn something off**
 - C. Calculate and vary temperature**
 - D. Control fuel and timing only**
- 8. What is true regarding the charging of a maintenance-free (lead calcium) battery?**
- A. The initial charging rate should be about 25 amperes for 30 minutes**
 - B. It may not accept a charge for several hours but could still be good**
 - C. The battery temperature should not exceed 150°F**
 - D. None of the above are correct**
- 9. The neutral safety switch is located _____.**
- A. Between the starter solenoid and the starter motor**
 - B. Inside the ignition switch itself**
 - C. Between the ignition switch and the starter solenoid**
 - D. In the battery cable between the battery and the starter solenoid**
- 10. How do modern vehicles utilize body control modules (BCM)?**
- A. To control electronic systems enhancing vehicle functionality**
 - B. To solely manage engine performance**
 - C. To monitor tire pressure only**
 - D. To regulate fuel efficiency**

Answers

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

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Explanations

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1. Which of the following is NOT a function of a vehicle computer?

- A. Control fuel delivery**
- B. Transmitting data wirelessly**
- C. Monitoring engine parameters**
- D. Executing diagnostic tests**

The function of transmitting data wirelessly is not a primary role of a vehicle computer, as it typically deals with processing and controlling various aspects of vehicle operation. Vehicle computers are primarily designed to manage and optimize engine performance, including control of fuel delivery, monitoring engine parameters like temperature and pressure, and executing diagnostic tests to ensure proper functioning of vehicle systems. While some modern vehicles may include modules that can communicate wirelessly for telematics or features such as infotainment systems, the core functions associated with the engine control unit and other dedicated vehicle computers do not involve transmitting data wirelessly as a standard capability.

2. How can a technician effectively check for a short circuit within a wiring harness?

- A. Using a voltmeter to measure voltage drops**
- B. Using a multimeter to test continuity and resistance**
- C. Checking for physical damage only**
- D. Measuring the length of the harness**

A technician can effectively check for a short circuit within a wiring harness by using a multimeter to test continuity and resistance. This method allows the technician to determine if there is an unintended electrical connection between wires that should not be connected. When a short circuit occurs, it typically creates a path that allows current to flow in an unintended manner. By using the multimeter to measure continuity, the technician can check for unexpected connections between wires. If continuity is present where it should not be, this is indicative of a short circuit. Additionally, measuring resistance can help identify low resistance paths that could signal a short. This approach is more effective compared to other options. Simply checking for physical damage may not reveal a short circuit if the damage is not visibly apparent, and measuring voltage drops would typically be used to diagnose other issues or verify circuit function rather than isolating shorts. Lastly, measuring the length of the harness does not provide any information on electrical connectivity or the integrity of the wiring itself.

3. What does 'load test' refer to when evaluating battery performance?

- A. A test to check if the battery is fully charged**
- B. A measurement of the battery's ability to deliver current under load**
- C. An assessment of battery color and condition**
- D. A test that determines the physical size of the battery**

A load test is specifically designed to measure a battery's ability to deliver current while under a simulated load condition. This test simulates the demands placed on the battery when the vehicle starts or when heavy electrical loads are applied, such as during the operation of headlights, radio, or air conditioning. During the load test, a specified load is applied to the battery for a particular duration, and the voltage is monitored to determine how well the battery maintains its voltage under this load. A healthy battery should maintain a voltage above a certain threshold during the test, which indicates that it can adequately power the vehicle's electrical systems when necessary. In contrast, checking if the battery is fully charged pertains to assessing the state of charge rather than the battery's performance under load. Evaluating battery color and condition is related to visual inspection rather than performance testing. Lastly, determining the physical size of the battery does not provide any information about its electrical performance capabilities. Therefore, the focus of the load test is a crucial aspect of battery performance evaluation.

4. Which of the following safety precautions is critical when working on automotive electrical systems?

- A. Wearing gloves**
- B. Disconnecting the battery**
- C. Using insulated tools**
- D. All of the above**

When working on automotive electrical systems, prioritizing safety is essential, and the correct response encompasses a comprehensive approach to prevention. Each of the listed precautions plays a vital role in ensuring safety during electrical work on vehicles. Wearing gloves is crucial as it protects hands from electrical shocks, sharp edges, and chemical exposure from battery acids. It adds a layer of safety, particularly when handling components that may carry voltage. Disconnecting the battery is perhaps one of the most critical steps. This action prevents accidental short circuits and eliminates the risk of electric shock while working on the vehicle's electrical system. It also protects delicate electronic components from potential damage that could be caused by stray currents. Using insulated tools is equally important, as these tools significantly reduce the risk of electrical shock and help in preventing short circuits while working on live systems. Insulated tools are specifically designed to handle electrical components safely, providing an extra layer of protection. By implementing all these safety precautions, technicians can work more confidently and reduce the likelihood of accidents, making the collective use of gloves, disconnecting the battery, and using insulated tools indispensable when servicing automotive electrical systems.

5. A semiconductor is a material _____.

- A. With fewer than four electrons in the outer orbit of its atoms
- B. With more than four electrons in the outer orbit of its atoms
- C. With exactly four electrons in the outer orbit of its atoms**
- D. Determined by other factors besides the number of electrons

The correct choice identifies that a semiconductor typically has exactly four electrons in its outer orbit, which allows it to have unique electrical properties. Semiconductors, such as silicon and germanium, fall into this category because their atomic structure leads to a moderate level of conductivity that can be manipulated through the addition of impurities in a process called doping. This property is what differentiates semiconductors from conductors (which typically have many free electrons and allow electric current to pass through easily) and insulators (which have very few free electrons and do not conduct electricity). The controlled conductivity of semiconductors is essential for the operation of electronic devices, such as diodes and transistors, which rely on the ability to switch between conducting and non-conducting states. In summary, the defining characteristic of semiconductors is their four outer electrons, which facilitate their unique role in electronics, allowing for the control of electrical flow under certain conditions.

6. What does an open circuit mean?

- A. A complete path for current flow
- B. A path where the current can flow without resistance
- C. A broken or interrupted path for current flow**
- D. A circuit with low resistance

An open circuit is characterized by a broken or interrupted path for current flow. In a circuit, electricity requires a continuous pathway to travel from a power source to the components that use that power, such as lights, motors, or electronic devices. When a circuit is open, this pathway is disrupted, preventing current from flowing. This condition can occur due to various reasons, such as a broken wire, a faulty connection, or a switch that is turned off. In contrast, other options describe different circuit conditions. A complete path for current flow refers to a closed circuit where current can maintain its flow. A path where current can flow without resistance implies an ideal condition that does not occur in practical scenarios, as all materials have some degree of resistance. Lastly, a circuit with low resistance may still be closed and functional, whereas an open circuit inherently means there is no electrical flow at all. Therefore, the definition of an open circuit aligns directly with the idea of an interrupted pathway for current flow.

7. What two things can a vehicle computer actually perform (output)?

- A. Store and process information**
- B. Turn something on or turn something off**
- C. Calculate and vary temperature**
- D. Control fuel and timing only**

The vehicle computer can perform the action of turning something on or off, which is crucial for managing various systems within the vehicle. This capability enables the computer to control components like fuel injectors, ignition coils, relays, and other electrical devices throughout the vehicle. By exerting control over these components, the vehicle computer can effectively manage operations such as the starting and stopping of the engine, activating lights, or engaging the air conditioning system, facilitating the vehicle's overall functionality. While other functions like storing and processing information or calculating values are important roles of vehicle computers, they primarily serve the purpose of managing outputs and actions within the vehicle systems.

8. What is true regarding the charging of a maintenance-free (lead calcium) battery?

- A. The initial charging rate should be about 25 amperes for 30 minutes**
- B. It may not accept a charge for several hours but could still be good**
- C. The battery temperature should not exceed 150°F**
- D. None of the above are correct**

The statement that a maintenance-free (lead calcium) battery may not accept a charge for several hours but could still be good highlights an important characteristic of these batteries. Lead calcium batteries are designed to have reduced self-discharge rates compared to traditional lead-acid batteries, which can lead to situations where they appear to be dead or unresponsive to charging initially. This behavior can occur due to several factors, such as temperature effects or internal resistance that may temporarily hinder the charging process. It indicates that even if the battery doesn't show signs of accepting charge immediately, it may still be in good condition and could eventually take a charge after some time. This aspect is particularly crucial for technicians to understand, as they may encounter scenarios where further examination or extended charging time is required to properly assess the battery's health and capacity. The other statements do not accurately reflect best practices or characteristics of maintenance-free lead calcium batteries. For example, the initial charging rate mentioned and the temperature limit might be outside ideal parameters for these batteries, which can lead to overcharging or damage. Understanding the specific charging behavior and characteristics of this type of battery allows for more effective maintenance and ensures longevity in performance.

9. The neutral safety switch is located _____.

- A. Between the starter solenoid and the starter motor
- B. Inside the ignition switch itself
- C. Between the ignition switch and the starter solenoid**
- D. In the battery cable between the battery and the starter solenoid

The neutral safety switch is designed to prevent a vehicle from starting unless the transmission is in the neutral or park position. This safety feature is crucial for ensuring that the vehicle does not accidentally start in gear, which could lead to unintended movement and potential accidents. The correct placement of the neutral safety switch is between the ignition switch and the starter solenoid. When the ignition switch is turned to the start position, the neutral safety switch checks the position of the transmission. If the transmission is in the appropriate gear (neutral or park), the switch closes the circuit, allowing current to flow to the starter solenoid, which then engages the starter motor to turn over the engine. This arrangement ensures that only when the vehicle is in a safe starting condition will the start signal be sent, effectively integrating the functionality of the neutral safety switch within the starting system circuit. The other options do not accurately represent the typical location and function of the neutral safety switch, emphasizing the importance of its correct placement in ensuring vehicle safety during the starting process.

10. How do modern vehicles utilize body control modules (BCM)?

- A. To control electronic systems enhancing vehicle functionality**
- B. To solely manage engine performance
- C. To monitor tire pressure only
- D. To regulate fuel efficiency

Modern vehicles utilize body control modules (BCM) primarily to control and coordinate a variety of electronic systems that enhance overall vehicle functionality. The BCM acts as a central hub that integrates various components such as lighting, power windows, door locks, and comfort features, allowing for efficient management of these electronic systems. The BCM processes inputs from sensors and communicates with other control modules in the vehicle, facilitating functions such as automatic lighting, keyless entry, and even some safety features. By centralizing control, the BCM contributes to improved vehicle performance, convenience, and safety, making it an essential component of modern automotive design. The other options mention aspects that are either too narrow or not within the primary function of the BCM. While the BCM does not solely manage engine performance, monitor tire pressure exclusively, or regulate fuel efficiency, it works alongside other modules that handle those specific responsibilities. Thus, the BCM's comprehensive control over various electronic systems is what makes it integral to modern vehicle operation.

Next Steps

Congratulations on reaching the final section of this guide. You've taken a meaningful step toward passing your certification exam and advancing your career.

As you continue preparing, remember that consistent practice, review, and self-reflection are key to success. Make time to revisit difficult topics, simulate exam conditions, and track your progress along the way.

If you need help, have suggestions, or want to share feedback, we'd love to hear from you. Reach out to our team at hello@examzify.com.

Or visit your dedicated course page for more study tools and resources:

<https://auto170.examzify.com>

We wish you the very best on your exam journey. You've got this!

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