

Biomedical Equipment Technician (BMET) CDC Set A Volume 3 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 imaging technique utilizes magnetic fields and radio waves for diagnostic purposes?**
 - A. Computed Tomography (CT)**
 - B. X-ray Imaging**
 - C. Magnetic Resonance Imaging (MRI)**
 - D. Ultrasound Imaging**

- 2. What is the relationship between current, voltage, and resistance in a circuit?**
 - A. Current is inversely proportional to the applied voltage and inversely proportional to the circuit resistance.**
 - B. Current is inversely proportional to the applied voltage and directly proportional to the circuit resistance.**
 - C. Current is directly proportional to the applied voltage and inversely proportional to the circuit resistance.**
 - D. Current is directly proportional to the applied voltage and directly proportional to the circuit resistance.**

- 3. In a defibrillator, what is the purpose of the paddles or pads?**
 - A. To monitor heart rate**
 - B. To deliver an electrical shock to restore normal heart rhythm**
 - C. To administer medication**
 - D. To extract blood samples**

- 4. Which semiconductor device requires an external trigger pulse for operation?**
 - A. NPN transistor.**
 - B. Silicon controlled rectifier (SCR).**
 - C. Unijunction transistor (UJT).**
 - D. Zener diode.**

- 5. What characteristic of the complementary metal-oxide-semiconductor (CMOS) makes it suitable for battery-powered equipment?**
 - A. Speed**
 - B. Power consumption**
 - C. Handling requirements**
 - D. Current handling capabilities**

- 6. Why is it important to maintain accurate logs of equipment maintenance?**
- A. To comply with regulatory standards and track equipment performance**
 - B. To reduce maintenance costs**
 - C. To enhance staff training procedures**
 - D. To promote new equipment purchases**
- 7. The binary numbering system uses which base?**
- A. One**
 - B. Two**
 - C. Eight**
 - D. Sixteen**
- 8. What is the circuit resistance in ohms if the applied voltage is 48 volts and the current is 0.5 amperes?**
- A. 24Ω.**
 - B. 56Ω.**
 - C. 96Ω.**
 - D. 144Ω.**
- 9. What is the octal equivalent of binary 110011?**
- A. 628**
 - B. 638**
 - C. 1228**
 - D. 123**
- 10. Which number represents the binary equivalent of octal 766?**
- A. 101110011**
 - B. 111110011**
 - C. 101110110**
 - D. 111110110**

Answers

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

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Explanations

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1. Which imaging technique utilizes magnetic fields and radio waves for diagnostic purposes?

- A. Computed Tomography (CT)**
- B. X-ray Imaging**
- C. Magnetic Resonance Imaging (MRI)**
- D. Ultrasound Imaging**

Magnetic Resonance Imaging (MRI) is the imaging technique that utilizes magnetic fields and radio waves for diagnostic purposes. The fundamental principle behind MRI revolves around the behavior of hydrogen atoms in a strong magnetic field. When a patient is placed in the MRI machine, the magnetic field aligns the hydrogen nuclei in the body. When radiofrequency pulses are applied, they disrupt this alignment, and as the nuclei return to their original state, they emit signals. These signals are detected and used to create detailed cross-sectional images of the body's internal structures, making MRI particularly useful in visualizing soft tissues, such as the brain, muscles, and ligaments. In contrast, other imaging techniques like Computed Tomography (CT) and X-ray imaging rely on ionizing radiation to create images based on differences in tissue density. Ultrasound imaging utilizes sound waves and is effective for real-time imaging of moving structures, particularly in obstetrics and organ assessment. Each of these modalities has its unique mechanisms, but MRI is distinctly characterized by its use of magnetic fields and radio waves, leading to its ability to produce detailed soft tissue images without exposure to radiation.

2. What is the relationship between current, voltage, and resistance in a circuit?

- A. Current is inversely proportional to the applied voltage and inversely proportional to the circuit resistance.**
- B. Current is inversely proportional to the applied voltage and directly proportional to the circuit resistance.**
- C. Current is directly proportional to the applied voltage and inversely proportional to the circuit resistance.**
- D. Current is directly proportional to the applied voltage and directly proportional to the circuit resistance.**

The correct answer describes Ohm's Law, which states that current (I) is directly proportional to voltage (V) and inversely proportional to resistance (R). This means that as the voltage applied across a circuit increases, the current flowing through the circuit also increases, given that the resistance remains constant. Conversely, if the resistance increases while the voltage is held constant, the current will decrease. This relationship is mathematically expressed in the formula $I = V/R$, where I is the current in amperes, V is the voltage in volts, and R is the resistance in ohms. This principle is fundamental in circuit analysis and underpins the operation of various electrical and electronic devices. In summary, the relationship illustrated in the correct answer reflects the essential principles governing electrical circuits and provides crucial insights for troubleshooting and designing circuits in biomedical equipment.

3. In a defibrillator, what is the purpose of the paddles or pads?

A. To monitor heart rate

B. To deliver an electrical shock to restore normal heart rhythm

C. To administer medication

D. To extract blood samples

In a defibrillator, the paddles or pads serve the crucial function of delivering an electrical shock to the heart. This shock is intended to depolarize the heart muscle, effectively interrupting any abnormal electrical activity that may be causing life-threatening arrhythmias. By restoring a normal heart rhythm, the defibrillator can significantly increase the chances of survival in cases of cardiac arrest or severe arrhythmias such as ventricular fibrillation or pulseless ventricular tachycardia. The design of the paddles or pads allows for the efficient transfer of the electrical energy directly to the heart, which is essential in clinical settings where rapid intervention is required to restore proper heart function.

4. Which semiconductor device requires an external trigger pulse for operation?

A. NPN transistor.

B. Silicon controlled rectifier (SCR).

C. Unijunction transistor (UJT).

D. Zener diode.

The silicon controlled rectifier (SCR) is a semiconductor device that indeed requires an external trigger pulse to operate. It is a type of thyristor that can be turned on and off by applying a gate pulse. When a positive voltage is applied to the gate terminal, it allows current to flow between its anode and cathode, turning the SCR on. Once the SCR is conducting, it continues to conduct even if the gate pulse is removed, but it will stop conducting only when the current through it falls below a certain threshold. This characteristic makes the SCR particularly useful in applications such as power control, where it can manage high voltages and currents, making it a popular choice in AC power control and motor speed control circuits. The need for a trigger pulse distinguishes the SCR from other semiconductor devices like transistors and diodes, which operate based on different principles.

5. What characteristic of the complementary metal-oxide-semiconductor (CMOS) makes it suitable for battery-powered equipment?

A. Speed

B. Power consumption

C. Handling requirements

D. Current handling capabilities

The characteristic that makes complementary metal-oxide-semiconductor (CMOS) technology particularly suitable for battery-powered equipment is its low power consumption. CMOS circuits are designed with transistors that consume very little power when in a static state, which is essential for devices that rely on battery energy. This low power usage extends battery life significantly, allowing devices to operate longer without needing a recharge or battery replacement. Further, CMOS technology also allows for a high density of logic functions on a single chip, which means that complex operations can be performed efficiently without a significant increase in power usage. This capability is critical in portable devices, where minimizing power consumption is a primary design consideration. In contrast, other characteristics such as speed, handling requirements, and current handling capabilities may vary among technologies, but the defining aspect of CMOS that particularly benefits battery-powered equipment is its efficient power consumption, making it the most relevant choice.

6. Why is it important to maintain accurate logs of equipment maintenance?

A. To comply with regulatory standards and track equipment performance

B. To reduce maintenance costs

C. To enhance staff training procedures

D. To promote new equipment purchases

Maintaining accurate logs of equipment maintenance is crucial for several reasons, most importantly for compliance with regulatory standards and tracking equipment performance. Regulatory bodies often require healthcare facilities to keep detailed records of their medical equipment maintenance to ensure safety and effectiveness. These logs serve as a documented history of service that can be reviewed during inspections or audits. Additionally, accurate maintenance records help in tracking the performance of equipment over time. By analyzing this data, technicians can identify trends, predict failures, and determine when more extensive repairs or replacements are necessary. This proactive approach not only enhances patient safety but also helps ensure that equipment is functioning optimally. While reducing maintenance costs, enhancing staff training procedures, and promoting new equipment purchases are valuable considerations in a healthcare setting, they do not encompass the primary reasons for maintaining accurate maintenance logs. The practice goes beyond cost-saving or procedural training and is fundamental for ensuring compliance and optimal performance within a facility.

7. The binary numbering system uses which base?

- A. One
- B. Two**
- C. Eight
- D. Sixteen

The binary numbering system operates using base two. This means it only employs two digits: 0 and 1. Each digit in a binary number represents a power of two, which allows for representing larger values through combinations of these two symbols. In contrast, the other bases mentioned have different numeric representations. For instance, the decimal system, which is base ten, uses ten digits (0-9), while the octal system uses base eight with digits 0-7, and the hexadecimal system is based on sixteen, using digits 0-9 and letters A-F. Understanding that binary is based solely on two options—0 and 1—is crucial for grasping many concepts in digital electronics and computing, where binary is foundational for data representation, processing, and storage.

8. What is the circuit resistance in ohms if the applied voltage is 48 volts and the current is 0.5 amperes?

- A. 24Ω.
- B. 56Ω.
- C. 96Ω.**
- D. 144Ω.

To determine the circuit resistance in ohms, you can use Ohm's law, which states that voltage (V) is equal to the product of current (I) and resistance (R). This relationship can be expressed with the formula: $V = I \times R$. By rearranging this formula to solve for resistance, we get: $R = V/I$. In this case, the applied voltage is 48 volts and the current is 0.5 amperes. Plugging these values into the formula provides: $R = 48 \text{ volts} / 0.5 \text{ amperes}$, $R = 96 \text{ ohms}$. The correct calculation leads to a resistance of 96 ohms, confirming that this is the right answer. It reflects the relationship between current, voltage, and resistance in an electrical circuit based on Ohm's law.

9. What is the octal equivalent of binary 110011?

- A. 628
- B. 638**
- C. 1228
- D. 123

To convert the binary number 110011 to its octal equivalent, we first group the binary digits into sets of three, starting from the right. If the leftmost group has fewer than three digits, we can add leading zeros to complete the group. In this case: - The binary number is 110011. - Grouping from the right: 110 011. - The leftmost group (110) represents the number 6 in decimal ($4 + 2 + 0 = 6$). - The rightmost group (011) represents the number 3 in decimal ($0 + 2 + 1 = 3$). Now, we combine the two decimal values of the groups: 63. Consequently, the octal representation of the binary number 110011 is 63. In reviewing the answer choices, 63 converts to octal 63, which means the correct answer reflects this conversion accurately. The other choices do not represent the correct octal equivalent of the binary number due to incorrect conversions or misinterpretations of the binary groups.

10. Which number represents the binary equivalent of octal 766?

- A. 101110011**
- B. 111110011**
- C. 101110110**
- D. 111110110**

To convert the octal number 766 to its binary equivalent, it's important to understand how octal (base 8) correlates with binary (base 2). Each octal digit can be represented by a set of three binary digits (bits). Breaking down the octal number 766: - The first digit is 7. In binary, 7 is represented as 111. - The second digit is 6. In binary, 6 is represented as 110. - The third digit is also 6, which is again represented as 110. Now we combine these binary representations together: - From the octal digit 7, we have 111. - From the first 6, we have 110. - From the second 6, we again have 110. Putting it all together, we get: 111 (for 7) + 110 (for the first 6) + 110 (for the second 6) = 111110110. This binary sequence is thus the equivalent of the octal number 766. Therefore, the correct answer is represented by the binary number 111110110. This methodical conversion from octal to binary underscores the relationship between the two

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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://bmetcdcsetavol3.examzify.com>

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

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