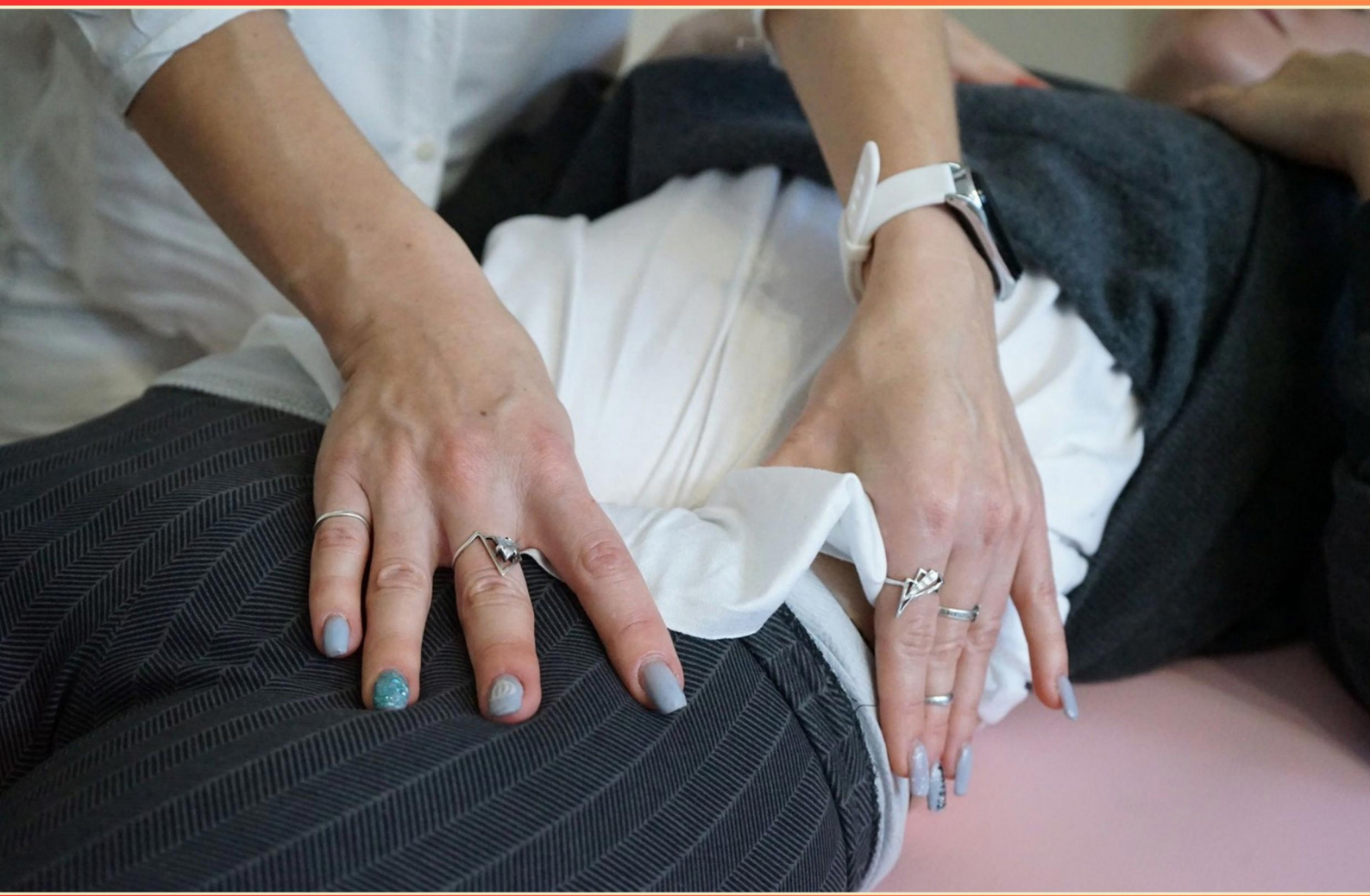
PASSIVE CARE EXAM 1 ELECTRICAL STIMULATION PRACTICE TEST (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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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

1. Distinguish between net current and net charge in electrical stimulation safety.

A. Net current is the total charge delivered over time

B. Net current is instantaneous flow at a given moment; net charge is the integral of current over time; balanced, biphasic currents minimize net charge to protect tissue

C. Net current and net charge are unrelated concepts

D. Net charge is the instantaneous flow at a moment

2. What is the ability of a material to store a charge?

A. Capacitance

B. Resistance

C. Inductance

D. Conductance

3. Summation of a motor neuron results in which condition?

A. Tetany

B. Spasm

C. Fatigue

D. Hypotonia

4. Which frequency is typically targeted to cause tetany in both slow and fast twitch muscles?

A. 50 pps

B. 5 pps

C. 1 pps

D. 100 pps

5. Which statement best describes biphasic current direction?

A. The flow of electrons changes direction regularly

B. The flow remains in one direction

C. It never changes

D. It stops after each pulse

6. What is a key difference between NMES and FES?

A. NMES is for general muscle strengthening; FES is applied to assist functional tasks (e.g., walking) by timing contractions to activity.

B. NMES uses only sensory fibers; FES uses motor fibers.

C. NMES is implanted; FES is surface-based.

D. NMES cannot be used during gait training.

7. What principle helps minimize tissue irritation by ensuring the device delivers balanced charge?

A. Use of monophasic unbalanced waveforms

B. Use of DC current with fixed polarity

C. Use of symmetric, balanced biphasic waveforms with near-zero net charge

D. Use of asymmetrical biphasic with high net charge

8. What is the effect of using larger electrodes on current density and patient comfort?

A. Increases current density and discomfort

B. Lowers current density and improves comfort

C. No effect on current density

D. Increases impedance and reduces comfort

9. Which action is not typically included in patient education for electrical stimulation?

A. Treatment expectations, safety, skin care, duration, and reporting symptoms

B. Dietary changes and supplementation during treatment

C. Device handling and maintenance basics

D. How to reassess effectiveness and adjust treatment plan

10. What happens to current density when electrode size decreases?

A. Current density decreases

B. Current density increases

C. No change

D. Current density becomes unpredictable

Answers

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

Explanations

1. Distinguish between net current and net charge in electrical stimulation safety.

A. Net current is the total charge delivered over time

B. Net current is instantaneous flow at a given moment; net charge is the integral of current over time; balanced, biphasic currents minimize net charge to protect tissue

C. Net current and net charge are unrelated concepts

D. Net charge is the instantaneous flow at a moment

Instantaneous current and accumulated charge are distinct ideas in electrical stimulation safety. Net current is the instantaneous flow of charge at a specific moment, whereas net charge is the total amount of charge delivered over time, found by integrating the current waveform. This distinction matters because tissue safety hinges on how much charge actually accumulates at the electrode–tissue interface. If the waveform delivers unequal positive and negative charge, charge can build up, driving unwanted electrochemical reactions and tissue irritation. Balanced, biphasic currents are used precisely because they pair positive and negative phases so that the charges cancel over each cycle, keeping the net charge near zero and reducing risk to tissue. Even when the instantaneous current peaks, what protects tissue is maintaining charge balance over time.

2. What is the ability of a material to store a charge?

A. Capacitance

B. Resistance

C. Inductance

D. Conductance

Capacitance describes how much electric charge a system can hold for a given voltage. It follows Q = C V, so the charge stored increases with the capacity C. In practical terms, a capacitor stores energy in the electric field between two conductors separated by a dielectric; increasing plate area or using a material with a higher dielectric constant raises capacitance. The unit is the farad. The other properties describe how current behaves: resistance is opposition to current flow, inductance stores energy in a magnetic field when current changes, and conductance is the ease of current flow (the reciprocal of resistance). So the ability to store a charge is capacitance.

3. Summation of a motor neuron results in which condition?

A. Tetany

B. Spasm

C. Fatigue

D. Hypotonia

When a motor neuron fires rapidly, the contractions of the muscle fibers it controls sum up in time. This rapid, repeated stimulation keeps calcium in the muscle cytoplasm and cross-bridges cycling, so the individual twitches fuse into a single, sustained contraction known as tetany (a tetanic contraction). If stimulation is slower, you'd see separate twitches or an unfused tetanus; a spasm is a brief, involuntary contraction not due to sustained summation, fatigue is the decline in ability to maintain contraction due to energy depletion, and hypotonia is low muscle tone at rest. So the summation of a motor neuron results in tetany.

4. Which frequency is typically targeted to cause tetany in both slow and fast twitch muscles?

A. 50 pps

B. 5 pps

C. 1 pps

D. 100 pps

Tetany happens when successive muscle twitches summate so the muscle does not have time to relax between impulses, creating a smooth, sustained contraction. That requires a stimulation rate high enough that the twitches overlap, and in skeletal muscle this typically occurs at a mid-range frequency around 50 pulses per second. This rate recruits both slow-twitch and fast-twitch fibers, giving a robust, tetanic contraction suitable for many applications. Lower rates, like 1 or 5 pps, produce discrete or unfused twitches with visible relaxation between pulses, while very high rates (around 100 pps) can cause faster fatigue and discomfort without necessarily improving the quality of the tetanus.

5. Which statement best describes biphasic current direction?

A. The flow of electrons changes direction regularly

B. The flow remains in one direction

C. It never changes

D. It stops after each pulse

Biphasic current direction means the current reverses direction within a single stimulation cycle. You have one phase pushing charge in one direction, followed by a second phase of opposite polarity that reverses the flow. This two-phase structure balances the charge delivered to the tissue and the electrode, reducing net charge buildup and lowering the risk of tissue irritation or electrode wear. That's why the description stating that the flow changes direction regularly best matches biphasic stimulation. If the current always moved in one direction, that would be monophasic; if it never changed, it wouldn't describe biphasic direction, and stopping after each pulse doesn't address the reversal inside the pulse.

6. What is a key difference between NMES and FES?

A. NMES is for general muscle strengthening; FES is applied to assist functional tasks (e.g., walking) by timing contractions to activity.

B. NMES uses only sensory fibers; FES uses motor fibers.

C. NMES is implanted; FES is surface-based.

D. NMES cannot be used during gait training.

The difference lies in the purpose and timing of the muscle contractions. NMES is used to strengthen or retrain muscles in a general way, not tied to a specific task. FES, however, is applied to help perform a functional activity by timing the contractions to the task—such as coordinating a foot lift during walking or enabling grasp during a task. This timing to activity is what makes FES particularly useful for functional tasks, while NMES focuses on overall strengthening and motor re-education. For example, using FES to stimulate ankle dorsiflexors right as you step helps prevent a foot drop during walking, whereas NMES would typically be used to strengthen those muscles outside of a specific task. The other statements mischaracterize NMES and FES—for instance, both can target motor fibers and be applied noninvasively via surface electrodes, and NMES can be used during gait training.

7. What principle helps minimize tissue irritation by ensuring the device delivers balanced charge?

A. Use of monophasic unbalanced waveforms

B. Use of DC current with fixed polarity

C. Use of symmetric, balanced biphasic waveforms with near-zero net charge

D. Use of asymmetrical biphasic with high net charge

Balancing charge during electrical stimulation is about ensuring the total charge delivered in a pulse sums to zero. When the device uses symmetric, balanced biphasic waveforms, the positive and negative phases carry equal charge, so there is no net charge at the electrode–tissue interface. This prevents electrochemical reactions, pH shifts, gas formation, and electrode polarization that can irritate or injure tissue and cause uncomfortable sensations. Therefore, this approach minimizes tissue irritation and improves safety and comfort. Monophasic unbalanced waveforms deliver net charge and increase tissue irritation; direct current with fixed polarity causes continuous polarization and harmful chemical effects; asymmetrical biphasic waveforms with a high net charge fail to balance charge effectively, so irritation potential remains.

8. What is the effect of using larger electrodes on current density and patient comfort?

A. Increases current density and discomfort

B. Lowers current density and improves comfort

C. No effect on current density

D. Increases impedance and reduces comfort

Increasing electrode size spreads the same amount of current over a larger area, which lowers the current density under the skin. With less concentrated stimulation at any point, the superficial nerves and skin receptors are less intensely activated, so the sensation is gentler and more comfortable for the patient. Larger electrodes also tend to reduce the skin–electrode impedance, helping current flow more smoothly and contributing to comfort. The idea that current density would increase with larger electrodes contradicts the basic relationship between current, area, and density. Saying there's no change ignores how distribution changes with area, and claiming impedance increases with larger electrodes goes against the typical inverse relationship between electrode area and impedance.

9. Which action is not typically included in patient education for electrical stimulation?

A. Treatment expectations, safety, skin care, duration, and reporting symptoms

B. Dietary changes and supplementation during treatment

C. Device handling and maintenance basics

D. How to reassess effectiveness and adjust treatment plan

Understanding how electrical stimulation is used, patient education focuses on safe, effective use of the device and monitoring response. The core topics include what to expect from treatment, safety guidelines, skin care to prevent irritation or burns, how long each session should last, and what symptoms or adverse effects should be reported. It also covers device handling and maintenance so the patient can use the equipment correctly and reliably, and how to reassess effectiveness and adjust the treatment plan as needed. Dietary changes and supplementation during treatment aren't typically part of this education because they don't influence the operation, safety, or immediate response to the electrical stimulation itself. They may be considered in broader health or rehabilitation contexts, but they aren't specific to educating someone on how to use the device or manage the therapy.

10. What happens to current density when electrode size decreases?

A. Current density decreases

B. Current density increases

C. No change

D. Current density becomes unpredictable

Current density is the amount of current flowing per unit area. If you keep the delivered current the same but shrink the electrode's surface area, that same current is forced through a smaller area, so the current density increases in inverse proportion to the area. This concentrates the electric field at the tissue interface, making the stimulation stronger locally and increasing the potential for heating if not carefully controlled. In most stimulators that regulate current, decreasing electrode size raises current density because the device maintains the same current while the area decreases.

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://passivecare1.examzify.com

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