ELECTROPHYSIOLOGY UNIT (EPU) PRACTICE EXAM (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.

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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!

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Questions

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1. Concentric activation in CS recordings refers to activation spreading around which structure?

A. AV node

B. Coronary Sinus

C. Atria

D. His bundle

2. What is the reported rate category for atrioesophageal fistula with Arctic Front Advance Cryoballoon?

A. <1 in 100000

B. >1 in 25000

C. <1 in 25000

D. <1 in 5000

3. Triggered activity can be caused by delayed after-depolarization (DAD) or which other mechanism?

A. repolarization

B. early after-depolarization (EAD)

C. delayed after-depolarization (DAD)

D. delayed after-repolarization

4. AVNRT involves dual AV nodal pathways (fast and slow).

A. True

B. False

C. Only fast

D. Only slow

5. Which term describes the measurement obtained directly from a catheter inside the heart?

A. Intracardiac EGMs

B. Heart electrical activity

C. HIS-EGM

D. Respiratory rate

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6. Repeated freezing cycles in cryoablation are used to enhance irreversible cell death via ice formation.

A. True

B. False

C. Not determinable

D. Some

7. Phase 0 depolarization in ventricular myocytes is driven by opening of which channels?

A. Potassium

B. Calcium

C. Sodium

D. Chloride

8. In AV nodal reentrant tachycardia, a premature beat causes a ___ block in the fast pathway and the impulse travels down the ___

A. unidirectional, slow

B. bidirectional, slow

C. bidirectional, fast

D. unidirectional, fast

9. All of the following tissue characteristics are required to sustain a reentry circuit EXCEPT

A. one pathway conducts slower than the other

B. two parallel pathways connected proximally and distally

C. one pathway has a longer refractory period

D. one pathway is an isthmus between two conductive areas

10. The CS ostium is located on which wall?

A. On the lateral wall of the RA

B. On the lateral wall of the LA

C. On the posterior septal wall of the RA

D. On the septal wall of the LA

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Answers

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

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Explanations

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1. Concentric activation in CS recordings refers to activation spreading around which structure?

A. AV node

B. Coronary Sinus

C. Atria

D. His bundle

Concentric activation means the wavefront spreads in a circumferential pattern around a circular structure. In the heart, the coronary sinus is a circular venous channel that runs in the atrioventricular groove, effectively forming a ring around the left atrium. When activation propagates around this ring, the recordings along the coronary sinus tracings capture signals that advance around the ostium in a circular fashion, which is described as concentric activation. The other structures listed aren't ring-shaped corridors around which activation would wrap, so they don't produce this circumferential CS pattern. Hence, concentric activation in CS recordings points to the coronary sinus.

2. What is the reported rate category for atrioesophageal fistula with Arctic Front Advance Cryoballoon?

A. <1 in 100000

B. >1 in 25000

C. <1 in 25000

D. <1 in 5000

Atrioesophageal fistula is an extremely rare but catastrophic complication after left atrial ablation, arising when thermal injury to the esophagus creates a fistulous connection with the atrium. For the Arctic Front Advance Cryoballoon, the safety data and post market reports place this event at a very low rate—less than 1 in 25,000 procedures. In other words, the incidence is around 0.004% or lower, reflecting the device's energy delivery pattern and the safeguards used during ablation (such as esophageal temperature monitoring and careful lesion planning). While it remains a critical complication to recognize and prevent, this very small risk category is what the literature and labeling describe for this specific cryoballoon system.

3. Triggered activity can be caused by delayed after-depolarization (DAD) or which other mechanism?

A. repolarization

B. early after-depolarization (EAD)

C. delayed after-depolarization (DAD)

D. delayed after-repolarization

Triggered activity happens when an afterdepolarization reaches the threshold to fire another impulse. There are two main forms: delayed afterdepolarizations, which occur after the cell has repolarized (during diastole) and are driven by calcium overload and inward currents that create a depolarizing swing; and early afterdepolarizations, which occur during the repolarization phase itself when the action potential is abnormally prolonged. In this scenario, the other mechanism capable of producing triggered activity alongside DAD is early after-depolarization (EAD). This often links to situations with QT prolongation, where reactivation of depolarizing currents during the prolonged repolarization can spark an extra beat.

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4. AVNRT involves dual AV nodal pathways (fast and slow).

A. True

B. False

C. Only fast

D. Only slow

AVNRT happens because the AV node contains two pathways with different conduction and refractoriness: a fast pathway and a slow pathway. A premature atrial impulse can travel down the slow pathway and then conduct retrogradely up the fast pathway, creating a reentrant circuit around the AV node. This dual-pathway setup is what allows the rapid, regular, narrow-complex tachycardia characteristic of AVNRT, so the statement is correct.

5. Which term describes the measurement obtained directly from a catheter inside the heart?

A. Intracardiac EGMs

B. Heart electrical activity

C. HIS-EGM

D. Respiratory rate

When a catheter is inside the heart, the signals it records are called intracardiac electrograms. These are measurements of the local electrical activity at the catheter tip, giving a precise view of when that specific heart tissue depolarizes. This direct, site-specific recording is essential for mapping arrhythmias and guiding ablation, because it reveals the exact timing and sequence of activation at different intracardiac sites. More general "heart electrical activity" is vague and can refer to surface ECG or other broad measures, while a HIS-EGM is a specific intracardiac signal near the His bundle rather than the general term. Respiratory rate is unrelated.

6. Repeated freezing cycles in cryoablation are used to enhance irreversible cell death via ice formation.

A. True

B. False

C. Not determinable

D. Some

Repeated freezing cycles are used in cryoablation to increase tissue destruction. Ice formation damages cell membranes, organelles, and the microvasculature, causing cell death. The first freeze-thaw cycle produces injury, but some cells survive thaw; a second freeze compounds intracellular ice formation and adds osmotic and mechanical stress, pushing more cells toward irreversible injury. In practice, two to three cycles are often employed to ensure complete ablation. Thus, the statement is true.

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7. Phase 0 depolarization in ventricular myocytes is driven by opening of which channels?

A. Potassium

B. Calcium

C. Sodium

D. Chloride

Phase 0 depolarization in ventricular myocytes is driven by the rapid opening of fast voltage-gated sodium channels. When the cell reaches threshold, these channels open quickly, allowing a large inward Na+ current that swings the membrane potential from its resting negative value to a very positive level, creating the steep upstroke and driving the high conduction velocity of ventricular tissue. After this rapid depolarization, calcium channels sustain the plateau phase, and potassium channels mediate the repolarization, while chloride channels do not play a major role in this initial upstroke.

8. In AV nodal reentrant tachycardia, a premature beat causes a ___ block in the fast pathway and the impulse travels down the ___

A. unidirectional, slow

B. bidirectional, slow

C. bidirectional, fast

D. unidirectional, fast

AV nodal reentrant tachycardia relies on dual AV nodal pathways with different conduction times and refractory properties. When a premature atrial beat arrives, the fast pathway is still refractory in the antegrade direction, so the impulse cannot travel down it—this is a unidirectional block. The impulse can instead conduct down the slow pathway to the ventricles. By the time it reaches the ventricles, the fast pathway has recovered enough to conduct retrogradely, allowing the impulse to travel back up the fast pathway and re-enter the atria, creating the reentrant loop. This is why the correct description is a unidirectional block in the fast pathway with conduction down the slow pathway.

9. All of the following tissue characteristics are required to sustain a reentry circuit EXCEPT

A. one pathway conducts slower than the other

B. two parallel pathways connected proximally and distally

C. one pathway has a longer refractory period

D. one pathway is an isthmus between two conductive areas

Sustained reentry happens when a continuous circuit exists for the impulse to keep circulating, with timing and tissue properties that allow the wavefront to re-excite tissue after it has recovered from refractoriness. Having a pathway that conducts more slowly helps create the timing gap needed for the impulse to complete the loop and return to tissue that's just exiting its refractory period, promoting circular propagation rather than extinguishing the wave. A circuit structure with two parallel conducting routes connected at both ends provides a loop around an obstacle, so the impulse can travel around and around as long as one path blocks in one direction while the other can conduct, supporting reentry. A difference in refractory periods between pathways fosters unidirectional block: the impulse can move in one direction where tissue has recovered, but is blocked in the opposite direction where tissue is still refractory, enabling the reentrant loop to persist. The idea of one pathway serving as an isthmus between two conductive areas is not required for all reentry circuits; some reentrant circuits can form around obstacles or through networks without a distinct narrow isthmus. Therefore, an isthmus is not a universal requirement for a reentry circuit to be sustained.

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10. The CS ostium is located on which wall?

A. On the lateral wall of the RA

B. On the lateral wall of the LA

C. On the posterior septal wall of the RA

D. On the septal wall of the LA

The coronary sinus drains into the right atrium, and its ostium sits on the posterior, septal aspect of the right atrial wall, near the interatrial septum just above the tricuspid valve. This placement explains why the opening is in the right atrium itself and specifically on the posterior septal area, not on the lateral walls or in the left atrium.

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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://electrophysiologyunit.examzify.com

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

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