

CARDIOVASCULAR SYSTEM – HEART ANATOMY, FUNCTION, AND CIRCULATORY PATHWAYS 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

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- 1. The Bainbridge reflex is designed to prevent overfilling by increasing heart rate in response to which condition?**
 - A. Increased venous return.
 - B. Decreased venous return.
 - C. Increased arterial pressure.
 - D. Decreased arterial pressure.
- 2. Which side of the heart pumps oxygenated blood to the body?**
 - A. Left side
 - B. Right side
 - C. Both sides
 - D. None
- 3. What are the three electrical events that occur at the sarcolemma of cardiac muscle cells?**
 - A. Atrial depolarization (P wave), 2. Ventricular depolarization (QRS complex), 3. Ventricular repolarization (T wave)
 - B. Atrial repolarization, 2. Ventricular depolarization, 3. Atrial depolarization
 - C. P wave, 2. QRS, 3. U wave
 - D. Atrial depolarization, 2. Ventricular repolarization, 3. Atrial repolarization
- 4. Which valve activity is associated with S1, the first heart sound?**
 - A. Closure of the atrioventricular valves
 - B. Closure of the semilunar valves
 - C. Opening of the atrioventricular valves
 - D. Opening of the semilunar valves
- 5. What is the resting membrane potential of cardiac muscle cells?**
 - A. -60 mV
 - B. -70 mV
 - C. -90 mV
 - D. -80 mV

- 6. What does the QRS complex in an ECG signify?**
- A. Electrical changes associated with ventricular depolarization and atrial repolarization.
 - B. Atrial depolarization
 - C. Ventricular repolarization
 - D. P wave generation
- 7. What occurs during the atrial and ventricular filling phase?**
- A. Blood passively flows into the ventricles, and AV valves remain open.
 - B. The ventricles actively eject blood into the arteries.
 - C. The SL valves are pushed open.
 - D. AV valves close at the start of systole.
- 8. During the onset of ventricular contraction, what is the status of the AV valves and SL valves?**
- A. AV valves close and SL valves open.
 - B. AV valves open and SL valves close.
 - C. Both valves open.
 - D. Both valves closed.
- 9. What is the Q-T interval in an ECG?**
- A. The time from ventricular depolarization (QRS complex) to ventricular repolarization (T wave).
 - B. The time from atrial depolarization to ventricular depolarization.
 - C. The duration of the P wave.
 - D. The interval from Q wave to the end of the T wave.
- 10. Which side of the heart is responsible for pumping blood to the lungs?**
- A. Right side
 - B. Left side
 - C. Both sides
 - D. None

Answers

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

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Explanations

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1. The Bainbridge reflex is designed to prevent overfilling by increasing heart rate in response to which condition?

- A. Increased venous return.**
- B. Decreased venous return.
- C. Increased arterial pressure.
- D. Decreased arterial pressure.

The Bainbridge reflex is triggered by increased venous return that stretches the walls of the right atrium. When more blood returns to the heart, atrial stretch receptors are activated and transmit signals to the autonomic nervous system to raise heart rate. This helps prevent overfilling by moving blood more quickly from the atria into the ventricles, maintaining steady flow and cardiac output. So, the condition that elicits this reflex is increased venous return.

2. Which side of the heart pumps oxygenated blood to the body?

- A. Left side**
- B. Right side
- C. Both sides
- D. None

The left side is the systemic pump that delivers oxygen-rich blood to the body. After blood picks up oxygen in the lungs, it returns to the heart into the left atrium, moves into the left ventricle, and is ejected through the aorta to nourish tissues throughout the body. The left ventricle has a thicker muscular wall because it must generate higher pressure to propel blood systemically. The right side, by contrast, handles deoxygenated blood from the body and sends it to the lungs for oxygenation. Since the left side drives the circulation to the body with oxygenated blood, it is the side that performs this function.

3. What are the three electrical events that occur at the sarcolemma of cardiac muscle cells?

- A. Atrial depolarization (P wave), 2. Ventricular depolarization (QRS complex), 3. Ventricular repolarization (T wave)**
- B. Atrial repolarization, 2. Ventricular depolarization, 3. Atrial depolarization
- C. P wave, 2. QRS, 3. U wave
- D. Atrial depolarization, 2. Ventricular repolarization, 3. Atrial repolarization

The sequence reflects the main electrical events across the sarcolemma of cardiac muscle as the heart activates and then relaxes. First, atrial depolarization occurs, which shows up on the ECG as the P wave. Next comes ventricular depolarization, represented by the QRS complex as the ventricles activate. Finally, ventricular repolarization appears as the T wave, signaling the ventricles returning to their resting state. Atrial repolarization does happen, but it is masked by the large QRS complex and not seen as a separate deflection on the standard ECG. The U wave isn't part of the normal triad of events. So the best description is atrial depolarization, ventricular depolarization, and ventricular repolarization.

4. Which valve activity is associated with S1, the first heart sound?

- A. Closure of the atrioventricular valves
- B. Closure of the semilunar valves
- C. Opening of the atrioventricular valves
- D. Opening of the semilunar valves

S1 is produced when the ventricles start to contract and the atrioventricular valves snap shut to prevent blood from flowing back into the atria. This sudden closure of the mitral and tricuspid valves marks the beginning of ventricular systole and creates the first heart sound. By contrast, the semilunar valves close later, producing the second heart sound, and openings of either valve are generally silent. So the valve activity tied to S1 is the closure of the atrioventricular valves.

5. What is the resting membrane potential of cardiac muscle cells?

- A. -60 mV
- B. -70 mV
- C. -90 mV
- D. -80 mV

The resting membrane potential of cardiac muscle cells is set mainly by potassium leak channels. At rest, the cell membrane is highly permeable to K⁺, so the interior tends to approach the potassium equilibrium potential. For cardiac myocytes, that equilibrium potential is around -90 mV, created and maintained by the balance of K⁺ ions leaving the cell and the activity of the Na⁺/K⁺ ATPase that keeps the gradients for Na⁺ and K⁺ across the membrane. This makes the inside of cardiac muscle cells very negative at rest, which is crucial for stabilizing the cell until an action potential is triggered. That's why -90 mV fits best. Values like -60 mV or -70 mV are less negative and more typical of other cell types (such as many neurons), while -80 mV is less characteristic for ventricular cardiac cells. The strong negativity around -90 mV reflects the heart's reliance on K⁺ conductance at rest to maintain readiness for rapid, coordinated excitation.

6. What does the QRS complex in an ECG signify?

- A. Electrical changes associated with ventricular depolarization and atrial repolarization.
- B. Atrial depolarization
- C. Ventricular repolarization
- D. P wave generation

QRS complex represents ventricular depolarization—the rapid spread of electrical activity through the ventricles that triggers their contraction. This large, fast deflection comes from activation of the ventricular myocardium via the His-Purkinje system. Atrial repolarization occurs during this same interval, but it isn't seen as a separate wave because it is masked by the much bigger ventricular depolarization signal. The P wave shows atrial depolarization, and the T wave shows ventricular repolarization. So, the QRS complex is the electrical signature of ventricular depolarization, with atrial repolarization occurring concurrently but not visibly distinct.

7. What occurs during the atrial and ventricular filling phase?

- A. Blood passively flows into the ventricles, and AV valves remain open.
- B. The ventricles actively eject blood into the arteries.
- C. The SL valves are pushed open.
- D. AV valves close at the start of systole.

During this phase the heart is in diastole and the ventricles are relaxing. Blood flows passively from the atria into the ventricles because atrial pressure is higher than ventricular pressure while the atrioventricular (AV) valves are open. This is the main filling flow. The semilunar valves stay closed, so there's no ejection into the arteries yet. Atrial contraction toward the end of this phase (the atrial kick) adds a final amount of blood into the ventricles, but the majority of filling is passive.

8. During the onset of ventricular contraction, what is the status of the AV valves and SL valves?

- A. AV valves close and SL valves open.
- B. AV valves open and SL valves close.
- C. Both valves open.
- D. Both valves closed.

At the onset of ventricular contraction the heart is in the isovolumetric contraction phase. As the ventricles begin to contract, their pressure rises above the atrial pressure, causing the atrioventricular valves to snap shut to prevent backflow into the atria. The semilunar valves remain closed at this moment because the ventricular pressure has not yet exceeded the pressure in the aorta and pulmonary trunk. With both sets of valves closed, the ventricle contracts without changing its volume. Ejection begins only later, once ventricular pressure surpasses arterial pressures and the semilunar valves open.

9. What is the Q-T interval in an ECG?

- A. The time from ventricular depolarization (QRS complex) to ventricular repolarization (T wave).
- B. The time from atrial depolarization to ventricular depolarization.
- C. The duration of the P wave.
- D. The interval from Q wave to the end of the T wave.

The QT interval represents the total time of ventricular electrical activity in one beat, from the start of ventricular depolarization to the end of ventricular repolarization. The onset of ventricular depolarization is seen as the beginning of the QRS complex, and ventricular repolarization completes with the end of the T wave. So the interval spans the entire ventricular action potential duration. This is why the best description is the time from the start of ventricular depolarization (the QRS onset) to the end of ventricular repolarization (the T wave). Clinically, QT length can change with heart rate and certain drugs or electrolyte issues, and a prolonged QT can raise the risk of arrhythmias.

10. Which side of the heart is responsible for pumping blood to the lungs?

A. Right side

B. Left side

C. Both sides

D. None

The right side is responsible for pumping blood to the lungs because it governs the pulmonary circulation. Blood from the body returns to the right atrium, moves into the right ventricle, and this ventricle sends deoxygenated blood to the lungs via the pulmonary arteries for oxygenation. After gas exchange, oxygenated blood returns to the left atrium and then to the left ventricle to supply the body. The left side handles pumping to the systemic circulation, so it isn't the side that pushes blood to the lungs.

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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://cardiosysanatomyfunctionpathways.examzify.com>

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

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