Ivy Tech Anatomy and Physiology II (APHY 102) Heart Practice Test (Sample)

Study Guide

BY EXAMZIFY

Everything you need from our exam experts!

Table of Contents

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. Which heart chamber receives oxygenated blood from the lungs?

A. Left atrium

B. Right atrium

C. Left ventricle

D. Right ventricle

2. Which phase follows Atrial Systole in the listed sequence?

A. Isovolumetric Contraction

B. Diastole

C. Ejection

D. Isovolumetric Relaxation

3. Which autonomic receptor mediates heart rate decrease via parasympathetic stimulation?

A. Nicotinic receptor

B. Muscarinic (M2) acetylcholine receptor

C. Beta-1 adrenergic receptor

D. Alpha-1 adrenergic receptor

4. Which valve prevents backflow from the aorta into the left ventricle?

A. Aortic semilunar

B. Tricuspid

C. Pulmonary semilunar

D. Mitral valve

5. What valve lies between the left ventricle and the aorta?

A. Aortic semilunar

B. Pulmonary semilunar

C. Tricuspid

D. Bicuspid

6. Which chamber receives oxygenated blood from the lungs via the pulmonary veins?

A. Left atrium

B. Right atrium

C. Left ventricle

D. Right ventricle

7. What is the effect of increasing extracellular calcium on cardiac contractility?

A. Decreases contractility

B. Increases heart rate but not contractility

C. Increases contractility

D. Causes no change in contractility

8. Which vein accompanies the anterior interventricular artery and drains into the coronary sinus?

A. Left Pulmonary Artery

B. Left Common Carotid Artery

C. Anterior Interventricular Artery

D. Great Cardiac Vein

9. If venous return increases (and preload increases) assuming contractility is constant, what happens to stroke volume?

A. Stroke volume decreases

B. Stroke volume increases

C. Stroke volume remains unchanged

D. Stroke volume becomes unpredictable

10. Isovolumetric contraction occurs when which valves are closed?

A. Mitral and aortic valves closed

B. Mitral and aortic valves open

C. Only mitral valve closed

D. Only aortic valve closed

Answers

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

Explanations

1. Which heart chamber receives oxygenated blood from the lungs?

A. Left atrium

B. Right atrium

C. Left ventricle

D. Right ventricle

Oxygenated blood from the lungs returns to the heart and enters through the left atrium. The pulmonary veins carry this oxygen-rich blood from the lungs into the left atrium, where it collects before moving to the left ventricle and then to the rest of the body. In contrast, the right atrium handles deoxygenated blood returning from the body, the left ventricle pumps oxygenated blood to the body, and the right ventricle sends blood to the lungs.

2. Which phase follows Atrial Systole in the listed sequence?

A. Isovolumetric Contraction

B. Diastole

C. Ejection

D. Isovolumetric Relaxation

Right after atrial systole, the ventricles start to contract. The pressure inside the ventricles rises quickly, causing the atrioventricular valves to snap shut while the semilunar valves remain closed. Since both sets of valves are closed, the ventricular volume doesn't change—this is the isovolumetric contraction phase. Only after ventricular pressure surpasses that in the aorta and pulmonary artery do the semilunar valves open and blood is ejected, transitioning to the next phase. The other phases—diastole (ventricular relaxation and filling), isovolumetric relaxation (ventricular pressure falls with all valves closed), and rapid/euvoled ejection—occur later in the cycle.

3. Which autonomic receptor mediates heart rate decrease via parasympathetic stimulation?

A. Nicotinic receptor

B. Muscarinic (M2) acetylcholine receptor

C. Beta-1 adrenergic receptor

D. Alpha-1 adrenergic receptor

Parasympathetic control of heart rate is achieved when acetylcholine acts on M2 muscarinic receptors in the SA and AV nodes. Activation of these receptors slows the rate of spontaneous depolarization and slows conduction by opening GIRK potassium channels and reducing calcium and cAMP signaling. The overall effect is a slower heart rate and slower AV nodal conduction. Nicotinic receptors are located in autonomic ganglia and at the neuromuscular junction, not in the heart to mediate this effect. Beta-1 adrenergic receptors drive sympathetic increases in heart rate and contractility, while alpha-1 receptors mainly affect vascular smooth muscle.

4. Which valve prevents backflow from the aorta into the left ventricle?

A. Aortic semilunar

B. Tricuspid

C. Pulmonary semilunar

D. Mitral valve

Valves ensure one-way blood flow and prevent backflow as the heart relaxes between beats. The aortic semilunar valve sits at the exit of the left ventricle into the aorta. When the heart finishes contracting, the pressure in the aorta stays higher than in the ventricle, so the aortic valve cusps meet and close, stopping blood from flowing back into the left ventricle. The other valves are in different locations and regulate flow between other chambers: the mitral and tricuspid valves prevent backflow from ventricles into the atria, and the pulmonary semilunar valve prevents backflow from the pulmonary artery into the right ventricle.

5. What valve lies between the left ventricle and the aorta?

A. Aortic semilunar

B. Pulmonary semilunar

C. Tricuspid

D. Bicuspid

Between the left ventricle and the aorta sits the aortic semilunar valve. It has three cusps that form pocket-like openings. When the left ventricle contracts, pressure pushes the cusps open to push blood into the aorta. As the ventricle relaxes, the aorta's elasticity and the cusps closing prevent blood from flowing back into the ventricle. This arrangement ensures one-way, high-pressure blood flow into the systemic circulation during systole and prevents backflow during diastole. The other valves are located elsewhere: the semilunar valve between the right ventricle and the pulmonary artery, the tricuspid valve between the right atrium and right ventricle, and the mitral (bicuspid) valve between the left atrium and left ventricle.

6. Which chamber receives oxygenated blood from the lungs via the pulmonary veins?

A. Left atrium

B. Right atrium

C. Left ventricle

D. Right ventricle

Oxygenated blood returning from the lungs via the pulmonary veins enters the left atrium. This chamber serves as the receiving room for oxygen-rich blood before it moves to the left ventricle and then out to the body through the aorta. The right atrium and right ventricle handle deoxygenated blood from the body and pump it to the lungs, not from the lungs to the heart.

7. What is the effect of increasing extracellular calcium on cardiac contractility?

A. Decreases contractility

B. Increases heart rate but not contractility

C. Increases contractility

D. Causes no change in contractility

Increasing extracellular calcium enhances the amount of calcium that enters cardiac muscle cells during the action potential through L-type calcium channels. That extra entry triggers more calcium release from the sarcoplasmic reticulum, increasing the intracellular calcium transient. With more calcium available, calcium binds to troponin C on the thin filaments, promoting more cross-bridge cycling between actin and myosin, and thus stronger, more forceful contractions. In other words, this is a positive inotropic effect: contractility goes up. (Heart rate is a separate parameter and is not the primary effect of small increases in extracellular calcium.)

8. Which vein accompanies the anterior interventricular artery and drains into the coronary sinus?

A. Left Pulmonary Artery

B. Left Common Carotid Artery

C. Anterior Interventricular Artery

D. Great Cardiac Vein

The main concept is how the heart's veins run with its arteries and drain into the coronary sinus. The vein that follows the anterior interventricular artery in the anterior interventricular sulcus collects blood from the regions supplied by the left coronary artery, particularly the anterior wall of the left ventricle. This great cardiac vein then drains into the coronary sinus, which channels blood into the right atrium. The other options aren't veins in this pathway: the left pulmonary artery is an artery, the left common carotid artery is a neck artery, and the anterior interventricular artery is an artery as well. So the vein that matches this description is the great cardiac vein.

9. If venous return increases (and preload increases) assuming contractility is constant, what happens to stroke volume?

A. Stroke volume decreases

B. Stroke volume increases

C. Stroke volume remains unchanged

D. Stroke volume becomes unpredictable

The main idea is the Frank-Starling relationship: increasing venous return raises end-diastolic volume (preload), and with contractility held constant, the heart responds by contracting more forcefully. This stronger contraction ejects more blood during systole, so the stroke volume increases. In other words, more filling leads to a greater amount of blood pumped out per beat when the muscle's intrinsic ability to contract isn't changing. The increase in stroke volume assumes afterload and contractility stay the same, and it won't rise indefinitely if the muscle is stretched beyond its optimal length.

10. Isovolumetric contraction occurs when which valves are closed?

A. Mitral and aortic valves closed

B. Mitral and aortic valves open

C. Only mitral valve closed

D. Only aortic valve closed

Isovolumetric contraction is the part of ventricular systole when the ventricle is contracting but the volume stays the same. This happens because both valves controlling inflow and outflow are closed: the mitral valve has closed as the ventricular pressure rises above atrial pressure, and the aortic valve remains closed until the ventricle pressure is high enough to open it. With both valves shut, no blood enters or leaves the ventricle, so the pressure increases without a change in volume. When the ventricular pressure finally exceeds the aortic pressure, the aortic valve opens and ejection begins, ending the isovolumetric phase.

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://ivytechaphy102heart.examzify.com

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