

UNIVERSITY OF CENTRAL FLORIDA (UCF) PCB3703C HUMAN PHYSIOLOGY LAB PRACTICE EXAM 2 (SAMPLE)

STUDY GUIDE



Prepare with structure. Pass with confidence



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Table of Contents

Copyright	1
Table of Contents	2
Introduction	3
How to Use This Guide	4
Questions	5
Answers	8
Explanations	10
Next Steps	15

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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 of the following describes atrial fibrillation (A-Fib)?**
 - A. Wide QRS complex, P waves blend with Q
 - B. Saw tooth, multiple P waves
 - C. Irregular QRS distance, no distinguishable P waves
 - D. Cardiac arrest with no identifiable waves
- 2. What characterizes sickle cell anemia?**
 - A. Excessive iron in the blood
 - B. Change in shape of erythrocytes
 - C. Deficiency of white blood cells
 - D. Low hemoglobin levels
- 3. What distinguishes the pulmonary circuit from the systemic circuit?**
 - A. Only the pulmonary circuit involves heart valves
 - B. The pulmonary circuit travels to the lungs
 - C. Circulatory direction of the systemic circuit
 - D. The systemic circuit filters blood
- 4. What mechanism helps maintain homeostasis when blood acidity increases?**
 - A. Decreased glucose uptake by cells
 - B. Respiratory and renal compensation
 - C. Increased release of insulin
 - D. Increased production of red blood cells
- 5. What would be the expected heart rate classification for bradycardia?**
 - A. Less than 60 beats per minute
 - B. 60-100 beats per minute
 - C. More than 100 beats per minute
 - D. 85-95 beats per minute
- 6. What role does glucagon play in glucose homeostasis?**
 - A. It lowers blood glucose levels
 - B. It increases blood glucose levels
 - C. It inhibits glycogen breakdown
 - D. It decreases insulin secretion

7. Which leukocyte primarily attacks parasitic infections?

- A. Basophils
- B. Eosinophils
- C. Neutrophils
- D. Monocytes

8. What is the primary function of the endocrine system?

- A. To allow for voluntary muscle movements
- B. To produce and secrete hormones
- C. To facilitate gas exchange in lungs
- D. To regulate temperature in the body

9. What is the primary function of albumin in the blood?

- A. Transports oxygen
- B. Maintains osmotic pressure
- C. Clots blood
- D. Fights infections

10. What is the main function of glucagon in the body?

- A. To decrease blood glucose levels
- B. To increase blood glucose levels
- C. To promote fat storage
- D. To stimulate muscle contraction

Answers

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

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Explanations

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1. Which of the following describes atrial fibrillation (A-Fib)?

- A. Wide QRS complex, P waves blend with Q
- B. Saw tooth, multiple P waves
- C. Irregular QRS distance, no distinguishable P waves**
- D. Cardiac arrest with no identifiable waves

Atrial fibrillation (A-Fib) is a common type of arrhythmia characterized by rapid and irregular beating of the atria. The key features of A-Fib include an irregularly irregular ventricular response, which is reflected in the QRS complexes on an electrocardiogram (ECG). In this condition, the P waves are often not discernible because the electrical activity in the atria is chaotic, leading to a situation where these waves are absent or appear in a disorganized fashion. The description of "irregular QRS distance" indicates that the timing between the QRS complexes varies unpredictably, which is a hallmark characteristic of A-Fib. The lack of distinguishable P waves aligns with the chaotic electrical activity of the atria, where the atrial contractions are ineffective and do not produce consistent P waves. This understanding of A-Fib is crucial for its diagnosis and management. Other choices involve features of different cardiac conditions, with the correct choice specifically detailing the irregularities seen in atrial fibrillation, distinguishing it from other arrhythmias where more organized electrical activities might be present.

2. What characterizes sickle cell anemia?

- A. Excessive iron in the blood
- B. Change in shape of erythrocytes**
- C. Deficiency of white blood cells
- D. Low hemoglobin levels

Sickle cell anemia is characterized by a change in the shape of erythrocytes, or red blood cells. In this condition, the normal biconcave disc shape of red blood cells is altered into a crescent or sickle shape due to a mutation in the hemoglobin gene. This structural change occurs because of the presence of abnormal hemoglobin called hemoglobin S (HbS). When deoxygenated, HbS causes the red blood cells to become rigid and take on a sickle shape. This altered shape is significant because it leads to various complications. Sickle-shaped cells can get lodged in small blood vessels, impeding blood flow and causing pain, anemia, and increased risk for infections. The reduced flexibility of these cells also means they are more prone to rupture, leading to a lower overall count of functional red blood cells and contributing to anemia. Therefore, the characteristic deformity of the cells not only defines the disease but also directly impacts the clinical manifestations of sickle cell anemia.

3. What distinguishes the pulmonary circuit from the systemic circuit?

- A. Only the pulmonary circuit involves heart valves
- B. The pulmonary circuit travels to the lungs**
- C. Circulatory direction of the systemic circuit
- D. The systemic circuit filters blood

The pulmonary circuit is distinguished from the systemic circuit primarily by its specific function of transporting deoxygenated blood from the heart to the lungs for oxygenation and then returning oxygen-rich blood back to the heart. This circuit plays a crucial role in gas exchange, as it is in the lungs that carbon dioxide is expelled from the blood, and oxygen is absorbed, which is essential for maintaining the body's oxygen levels. While the systemic circuit is responsible for delivering oxygenated blood from the heart to the rest of the body and returning deoxygenated blood back to the heart, it does not directly involve the process of gas exchange that occurs in the lungs, which is the defining characteristic of the pulmonary circuit. Understanding this distinction is key to grasping the different roles that each circuit plays in the overall circulatory system and how they contribute to homeostasis.

4. What mechanism helps maintain homeostasis when blood acidity increases?

- A. Decreased glucose uptake by cells
- B. Respiratory and renal compensation**
- C. Increased release of insulin
- D. Increased production of red blood cells

The mechanism that helps maintain homeostasis when blood acidity increases is respiratory and renal compensation. When blood pH decreases, indicating increased acidity (often due to excess carbon dioxide or metabolic processes), the body initiates two primary responses to restore balance. Firstly, the respiratory system responds by increasing the rate and depth of breathing. This hypoventilation helps to expel more carbon dioxide from the blood, which reduces the acidity (increases pH) because carbon dioxide can combine with water to form carbonic acid. Thus, reducing carbon dioxide levels leads to a decrease in the concentration of hydrogen ions, which are responsible for acidity. Secondly, the renal system plays a crucial role by adjusting bicarbonate reabsorption and hydrogen ion secretion. The kidneys can excrete more hydrogen ions into the urine and reabsorb bicarbonate from the urine, thereby helping to neutralize the acid in the blood and restore normal pH. Together, these compensatory mechanisms serve to correct the pH imbalance effectively, demonstrating the body's ability to adjust physiological functions to maintain homeostasis in response to changes in blood acidity.

5. What would be the expected heart rate classification for bradycardia?

- A. Less than 60 beats per minute**
- B. 60-100 beats per minute
- C. More than 100 beats per minute
- D. 85-95 beats per minute

Bradycardia is defined as a condition in which an individual's heart rate is slower than the normal range. The standard classification for a resting heart rate in adults typically ranges from 60 to 100 beats per minute. When the heart rate drops below 60 beats per minute, it is classified as bradycardia. This can occur in various scenarios, such as during sleep, in highly trained athletes, or as a result of certain medical conditions. Understanding this classification is essential because bradycardia can indicate underlying health issues or the effect of medications, and it may necessitate clinical evaluation if the heart rate falls significantly below this threshold. The classification aligns with established medical guidelines, making it crucial for distinguishing between normal physiological rhythms and those that may require intervention.

6. What role does glucagon play in glucose homeostasis?

- A. It lowers blood glucose levels
- B. It increases blood glucose levels**
- C. It inhibits glycogen breakdown
- D. It decreases insulin secretion

Glucagon primarily functions to increase blood glucose levels, which is crucial for maintaining glucose homeostasis, particularly during periods of fasting or when blood sugar levels drop. This hormone is secreted by the alpha cells of the pancreas and acts on the liver to promote gluconeogenesis, the process of generating glucose from non-carbohydrate sources, and glycogenolysis, the breakdown of glycogen into glucose. When blood glucose levels are low, glucagon is released into the bloodstream, binding to receptors on liver cells and stimulating these processes. As a result, more glucose is released into the bloodstream, raising blood glucose levels and ensuring that the body has a sufficient energy supply, especially for vital organs like the brain that rely heavily on glucose. This action is an essential counter-regulatory mechanism to insulin, which lowers blood glucose levels, thus highlighting glucagon's vital role in glucose regulation and homeostasis.

7. Which leukocyte primarily attacks parasitic infections?

- A. Basophils
- B. Eosinophils**
- C. Neutrophils
- D. Monocytes

Eosinophils play a crucial role in the body's defense against parasitic infections. These white blood cells are characterized by their ability to respond specifically to larger parasites like helminths (worms) that are too big for phagocytosis. When a parasitic infection occurs, eosinophils are recruited to the site of infection where they release cytotoxic granules containing proteins such as major basic protein and eosinophil peroxidase. These substances are effective in damaging the parasite's cell membrane, leading to the destruction of the pathogen. In addition to their role in combating parasitic infections, eosinophils are also involved in allergic reactions and asthma. Their numbers can increase significantly during these types of responses, but their primary function remains in the immune defense against larger parasites, distinguishing them from other types of leukocytes such as neutrophils, monocytes, or basophils, which have different roles in the immune response.

8. What is the primary function of the endocrine system?

- A. To allow for voluntary muscle movements
- B. To produce and secrete hormones**
- C. To facilitate gas exchange in lungs
- D. To regulate temperature in the body

The primary function of the endocrine system is to produce and secrete hormones, which are chemical messengers that play crucial roles in regulating various physiological processes throughout the body. These hormones are secreted directly into the bloodstream and can affect distant target organs or tissues, influencing functions such as metabolism, growth and development, tissue function, and mood regulation. Unlike the nervous system, which offers rapid and short-term responses to stimuli, the endocrine system typically operates over longer durations, providing a more sustained influence on the body's activities. For example, hormones like insulin regulate blood glucose levels, while others like cortisol are involved in stress response and metabolism. The other choices pertain to distinct systems or functions not primarily associated with the endocrine system. Muscle movements are controlled by the muscular system under the influence of the nervous system, gas exchange occurs primarily in the respiratory system, and temperature regulation involves multiple systems, including the integumentary system and hypothalamus. Each of these systems has a specialized role, but the fundamental purpose of the endocrine system centers on hormone production and secretion.

9. What is the primary function of albumin in the blood?

- A. Transports oxygen
- B. Maintains osmotic pressure**
- C. Clots blood
- D. Fights infections

Albumin is a crucial protein found in the blood, and its primary role is to maintain osmotic pressure. This is essential for regulating the balance of fluids between the blood vessels and surrounding tissues. By exerting osmotic pressure, albumin helps to keep fluid within the bloodstream, preventing it from leaking into the tissues, which can lead to edema (swelling). The ability of albumin to bind and transport various substances, including hormones and fatty acids, also plays a secondary role in maintaining overall fluid balance, but its primary function is the regulation of osmotic pressure. This is vital for proper cardiovascular and renal function, as well as for overall homeostasis in the body.

10. What is the main function of glucagon in the body?

- A. To decrease blood glucose levels
- B. To increase blood glucose levels**
- C. To promote fat storage
- D. To stimulate muscle contraction

Glucagon plays a critical role in regulating blood glucose levels, primarily by increasing them when they fall too low. It is a hormone produced by the alpha cells of the pancreas. When blood sugar levels decrease, glucagon is secreted into the bloodstream and acts primarily on the liver. There, it stimulates glycogenolysis, the process by which glycogen is broken down into glucose, and gluconeogenesis, where new glucose is created from non-carbohydrate sources. This release of glucose into the bloodstream raises blood sugar levels, providing essential energy to the body's cells, particularly during fasting or between meals. In contrast to other hormones like insulin, which lowers blood glucose levels, glucagon's main function ensures that glucose is available for energy production, particularly during periods of low energy intake or increased energy demand. This balance is vital for maintaining homeostasis in the body.

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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://ucf-pcb3703c-labexam2.examzify.com>

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

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