UNIVERSITY OF CENTRAL FLORIDA (UCF) PCB3703C HUMAN PHYSIOLOGY EXAM 4 PRACTICE (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. Which of the following hormones increases gastric motility?

A. Somatostatin

B. Gastrin

C. Insulin

D. Glucagon

2. Proteases are responsible for breaking down which type of macromolecule?

A. Starch

B. Fat

C. Protein

D. Sugar

3. What type of vitamins are absorbed by chylomicrons?

A. Water-soluble vitamins

B. Fat-soluble vitamins

C. Mineral supplements

D. Amino acids

4. Retinopathy is characterized by damage to which part of the body?

A. The retina

B. The cornea

C. The optic nerve

D. The lens

5. What type of cells secrete surfactant in the alveoli?

A. Cuboidal cells

B. Squamous cells

C. Columnar cells

D. Type 1 pneumocytes

6. Which neurotransmitter is involved in hyperpolarization of the GI tract?

A. Serotonin

B. Dopamine

C. Norepinephrine

D. Adenosine

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7. What role does transferrin play in iron metabolism?

A. It stores iron in the liver

B. It transports iron from the small intestine to the liver

C. It absorbs iron in the gut

D. It degrades heme iron

8. Which condition can result from hypertrophy and hyperplasia of gastric mucosa?

A. Gastritis

B. Heart disease

C. Stomach cancer

D. Chronic fatigue syndrome

9. What is a significant complication of pulmonary fibrosis?

A. Increased lung capacity

B. Improved gas diffusion

C. Decreased lung compliance

D. Enhanced lung elasticity

10. What happens to the upper esophageal sphincter during the swallowing process?

A. It contracts

B. It relaxes

C. It closes completely

D. It opens to allow fluids

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Answers

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

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Explanations

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1. Which of the following hormones increases gastric motility?

A. Somatostatin

B. Gastrin

C. Insulin

D. Glucagon

Gastrin is the hormone that increases gastric motility, making it the correct answer. It is produced by G cells in the stomach in response to food entering the stomach and stimulates the gastric muscle contractions, promoting the movement and mixing of food with gastric juices. This increased motility is crucial for proper digestion as it facilitates the breakdown of food and the absorption of nutrients. In contrast, somatostatin primarily inhibits gastric motility and secretion, thereby playing a role in regulating digestive processes. Insulin, while important for glucose metabolism, does not have a direct effect on gastric motility. Glucagon, which raises blood glucose levels by promoting glycogen breakdown, also does not enhance gastric motility and instead can suppress gastrointestinal activity. Understanding the specific roles of these hormones highlights why gastrin is the main hormone responsible for increasing gastric motility.

2. Proteases are responsible for breaking down which type of macromolecule?

A. Starch

B. Fat

C. Protein

D. Sugar

Proteases are enzymes that specifically catalyze the breakdown of proteins into smaller peptides or amino acids. This process is essential for various physiological functions, including digestion, cellular repair, and the regulation of biological pathways. The term "protease" is derived from "protein" and "ase," where "ase" signifies an enzyme. In contrast, other types of macromolecules are broken down by different classes of enzymes: carbohydrates such as starch and sugars are processed by carbohydrases, while fats are broken down by lipases. Understanding these distinctions is key in biochemistry and physiology, as it highlights the specificity of enzyme action, which is crucial for metabolism and digestion in living organisms.

3. What type of vitamins are absorbed by chylomicrons?

A. Water-soluble vitamins

B. Fat-soluble vitamins

C. Mineral supplements

D. Amino acids

Chylomicrons are a type of lipoprotein that play a crucial role in the absorption and transport of dietary fats and fat-soluble substances from the intestines into the lymphatic system and then into the bloodstream. Fat-soluble vitamins, which include vitamins A, D, E, and K, are absorbed alongside lipids in the gastrointestinal tract. Because they are soluble in fats, these vitamins require dietary fat for their absorption; the presence of lipids facilitates their incorporation into chylomicrons. Once formed, chylomicrons transport these fat-soluble vitamins through the lymphatic system and eventually deliver them to various tissues and organs in the body, allowing for proper utilization and distribution. This process underscores the essential role of dietary fat in the bioavailability of fat-soluble vitamins. In contrast, water-soluble vitamins (like the B vitamins and vitamin C) are absorbed directly into the bloodstream from the intestinal tract and do not require chylomicrons for their transport. Therefore, the specific relationship between chylomicrons and fat-soluble vitamins solidifies the latter as the correct answer in this context.

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4. Retinopathy is characterized by damage to which part of the body?

A. The retina

B. The cornea

C. The optic nerve

D. The lens

Retinopathy specifically refers to damage to the retina, which is the light-sensitive tissue located at the back of the eye. The retina is crucial for vision as it converts light into neural signals that are sent to the brain. Conditions such as diabetic retinopathy highlight the importance of the retina, where high blood sugar levels can lead to damage, affecting vision and leading to potential blindness if not treated appropriately. Understanding the unique function and vulnerability of the retina is key to recognizing why retinopathy is defined by damage occurring in this part of the eye. Other structures, like the cornea, optic nerve, and lens, play important roles in vision but are not associated with the condition of retinopathy.

5. What type of cells secrete surfactant in the alveoli?

A. Cuboidal cells

B. Squamous cells

C. Columnar cells

D. Type 1 pneumocytes

Surfactant in the alveoli is secreted by cuboidal cells, specifically known as type II alveolar cells or type II pneumocytes. These cells play a crucial role in maintaining the surface tension within the alveoli, which is essential for proper lung function. Surfactant is a lipoprotein complex that reduces surface tension, preventing the collapse of alveoli during exhalation and facilitating easier expansion during inhalation. The structure of cuboidal cells allows them to effectively synthesize and secrete this complex surfactant material. In contrast, type I pneumocytes, which are squamous cells, primarily serve as a barrier for gas exchange and do not have the capacity to produce surfactant. Thus, the presence of cuboidal cells as the primary source of surfactant highlights their vital role in respiratory physiology and the maintenance of lung compliance.

6. Which neurotransmitter is involved in hyperpolarization of the GI tract?

A. Serotonin

B. Dopamine

C. Norepinephrine

D. Adenosine

Norepinephrine is indeed involved in the hyperpolarization of the gastrointestinal (GI) tract. When norepinephrine is released in the context of the sympathetic nervous system response, it interacts with adrenergic receptors in the smooth muscles and gastrointestinal tissues. This interaction can lead to a decrease in the excitability of the neurons and cells in the GI tract, thus resulting in hyperpolarization. Hyperpolarization refers to an increase in the membrane potential, making it more negative and moving it further away from the threshold needed to trigger an action potential. This inhibitory effect slows down GI motility and reduces digestive activity, aligning with the body's need to conserve energy and resources during stress or 'fight or flight' situations. Understanding this process is essential for recognizing how neurotransmitters modulate physiological functions and how balance between sympathetic and parasympathetic activity is crucial for maintaining digestive health.

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7. What role does transferrin play in iron metabolism?

A. It stores iron in the liver

B. It transports iron from the small intestine to the liver

C. It absorbs iron in the gut

D. It degrades heme iron

Transferrin plays a crucial role in iron metabolism by transporting iron in the bloodstream. Specifically, it binds to iron that is absorbed from the small intestine and carries it to various tissues and organs, including the liver. This transport is vital because free iron can be toxic, so transferrin serves the important function of protecting the body from oxidative damage while ensuring that iron is delivered to cells that require it for processes such as hemoglobin synthesis and cellular respiration. The other choices describe functions that are not accurate for transferrin. While it is important for storing iron, this role is primarily fulfilled by ferritin in the liver. The absorption of iron in the gut is a different process involving specific transport proteins rather than transferrin. Additionally, heme iron degradation is handled by other cellular mechanisms, not transferrin itself. Thus, the correct answer reflects the specific role of transferrin in the transport of iron, highlighting its importance in maintaining iron homeostasis in the body.

8. Which condition can result from hypertrophy and hyperplasia of gastric mucosa?

A. Gastritis

B. Heart disease

C. Stomach cancer

D. Chronic fatigue syndrome

The condition that can result from hypertrophy and hyperplasia of the gastric mucosa is stomach cancer. Hypertrophy refers to the increase in the size of cells, while hyperplasia is an increase in the number of cells within a tissue or organ. When the gastric mucosa undergoes these changes, it often indicates a response to chronic irritation or inflammation. Over time, this continuous stimulation and alteration of gastric mucosal cells can lead to dysplastic changes, which are precursors to malignancy. The cells may become more abnormal in structure and function, contributing to the development of cancerous growths in the stomach lining. Therefore, the connection between these cellular changes and the risk of stomach cancer underscores the significance of monitoring and addressing conditions that lead to such alterations in the gastric mucosa. In contrast, while gastritis involves inflammation of the gastric mucosa, it does not inherently lead to cancer as hypertrophy and hyperplasia would. Similarly, heart disease and chronic fatigue syndrome are not directly related to changes in gastric mucosal tissues, further clarifying why stomach cancer is the primary condition of concern linked to these specific cellular changes.

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9. What is a significant complication of pulmonary fibrosis?

A. Increased lung capacity

B. Improved gas diffusion

C. Decreased lung compliance

D. Enhanced lung elasticity

Pulmonary fibrosis is a progressive lung disease characterized by the accumulation of scar tissue in the lungs, which impairs their ability to function properly. One of the significant complications of this condition is decreased lung compliance. Lung compliance refers to the ease with which the lungs can expand during inhalation. In pulmonary fibrosis, the lung tissue becomes stiff due to fibrosis, making it much less compliant. This stiffness leads to difficulty in fully expanding the lungs, resulting in a reduced ability to take in air and effectively exchange gases. As a result of decreased lung compliance, patients may experience severe limitations in their respiratory function, which can manifest as shortness of breath and a reduced capacity for physical activity. The changes in lung compliance associated with pulmonary fibrosis are crucial to understanding the disease's impact on respiratory physiology and patient quality of life. The other options do not appropriately describe the effects of pulmonary fibrosis. Increased lung capacity and improved gas diffusion would be contrary to the effects of scarring in the lungs, while enhanced lung elasticity is also not applicable, as the elasticity of lung tissue is typically reduced in this condition.

10. What happens to the upper esophageal sphincter during the swallowing process?

A. It contracts

B. It relaxes

C. It closes completely

D. It opens to allow fluids

During the swallowing process, the upper esophageal sphincter relaxes. This sphincter serves as a barrier between the pharynx and the esophagus, coordinating its movement with the act of swallowing. When a person swallows, a series of neurological signals trigger the sphincter to open, which allows the bolus (a mass of food or liquid) to enter the esophagus from the pharynx. This relaxation is crucial for the proper passage of food and liquids down into the esophagus without obstruction. If the upper esophageal sphincter were to contract instead of relax, it would impede the bolus from passing through and could lead to choking or discomfort. Furthermore, while it does close to prevent air from entering the esophagus during breathing, its primary action during swallowing is to open, facilitating the safe transition of substances from the throat to the esophagus.

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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-exam4.examzify.com

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

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