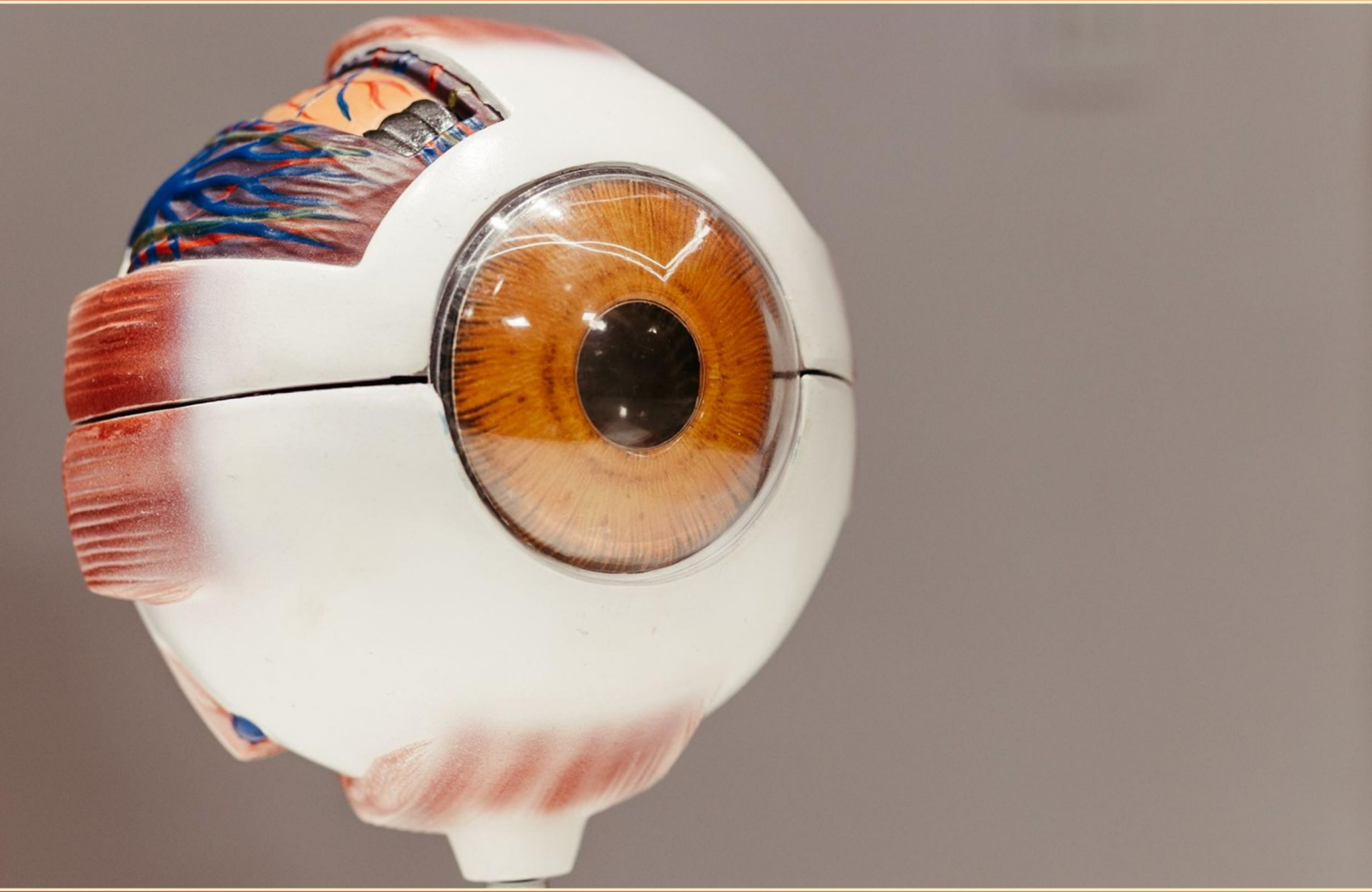
ARIZONA STATE UNIVERSITY (ASU) BIO202 HUMAN ANATOMY AND PHYSIOLOGY II EXAM 2 PRACTICE EXAM (SAMPLE)

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.

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 of the following describes the function of mucus in the nasal cavity?

A. Increased air temperature

B. Traps small particles and pathogens

C. Increases olfactory sensitivity

D. Assists in taste perception

2. Which of the following statements about squamous alveolar cells is true?

A. They are responsible for secreting surfactant.

B. They facilitate rapid gas diffusion.

C. They act as the body's immune defense.

D. They form mucus in the alveoli.

3. Which respiratory center has automatic, unconscious control over breathing?

A. Dorsal respiratory group (DRG)

B. Ventral respiratory group (VRG)

C. Medullary respiratory center

D. Pneumotaxic center

4. What percentage of carbon dioxide is transported as dissolved gas in our body?

A. 5%

B. 7%

C. 10%

D. 15%

5. What pressure primarily drives respiration in humans?

A. Hydrostatic pressure

B. Atmospheric pressure

C. Oxygen partial pressure

D. Carbon dioxide partial pressure

6. Particles greater than what size (in micrometers) get trapped in the upper respiratory tract?

A. 2 uM

B. 5 uM

C. 10 uM

D. 20 uM

7. What does the alveolar ventilation rate measure?

A. Total volume of air in the lungs

B. Air that actually ventilates alveoli multiplied by respiratory rate

C. Only the air exhaled after maximum inhalation

D. Air volume in the conducting zone

8. What syndrome involves automatic respiratory functions not working, requiring a ventilator during sleep?

A. Sleep apnea

B. Ondine's Curse

C. Chronic Obstructive Pulmonary Disease

D. Asthma

9. What occurs during inspiration when the ribs swing upward and outward?

A. The parietal pleura expands

B. The parietal pleura follows them

C. The parietal pleura compresses

D. The parietal pleura detaches

10. What is the relationship between PO2 levels in alveolar air and the amount of O2 picked up by the blood?

A. The lower the PO2, the more O2 picked up

B. The greater the PO2, the more O2 the blood picks up

C. PO2 has no impact on O2 pick-up

D. The relationship is always constant

Answers

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

Explanations

1. Which of the following describes the function of mucus in the nasal cavity?

A. Increased air temperature

B. Traps small particles and pathogens

C. Increases olfactory sensitivity

D. Assists in taste perception

Mucus in the nasal cavity plays a crucial role in the respiratory system, primarily through its ability to trap small particles and pathogens. It is produced by goblet cells and mucous glands lining the nasal passages. When air is inhaled, mucus acts as a sticky barrier that captures dust, pollen, smoke, and microorganisms such as bacteria and viruses. This helps prevent these potentially harmful particles from entering the lungs and causing infection or irritation. The other roles mentioned in the other options are either secondary functions or do not primarily align with the function of mucus in the nasal cavity. For instance, while mucus does aid in warming and humidifying incoming air, the primary description of its function related to trapping harmful substances makes the second option the most accurate choice.

2. Which of the following statements about squamous alveolar cells is true?

A. They are responsible for secreting surfactant.

B. They facilitate rapid gas diffusion.

C. They act as the body's immune defense.

D. They form mucus in the alveoli.

Squamous alveolar cells, also known as type I alveolar cells or type I pneumocytes, are the primary cells that make up the alveolar walls in the lungs. Their major function is to facilitate rapid gas diffusion between the alveoli and the blood in the surrounding capillaries. The thin, flat structure of these cells minimizes the distance that oxygen and carbon dioxide need to travel, making gas exchange efficient and effective. In contrast, type II alveolar cells are responsible for secreting surfactant, which reduces surface tension in the alveoli and helps keep them open. Immune defense in the alveoli is primarily carried out by immune cells known as macrophages rather than the squamous alveolar cells. Additionally, mucus production in the lungs is typically associated with goblet cells found in the airways, not in the alveoli, where squamous cells are found. Therefore, understanding the primary role of squamous alveolar cells in gas exchange helps clarify why this statement is considered true.

3. Which respiratory center has automatic, unconscious control over breathing?

A. Dorsal respiratory group (DRG)

B. Ventral respiratory group (VRG)

C. Medullary respiratory center

D. Pneumotaxic center

The correct response highlights the role of the Ventral Respiratory Group (VRG) in the brainstem, which is indeed crucial for the automatic and unconscious control of breathing. The VRG is located in the medulla oblongata and is responsible for rhythm generation during respiration. It initiates the basic rhythmic pattern of breathing by sending signals to the respiratory muscles, effectively coordinating the effort needed to inhale and exhale without conscious effort. In contrast, other respiratory centers contribute to the regulation of breathing but do not act solely in this automatic capacity. For instance, the Dorsal Respiratory Group (DRG) is primarily involved in the processing of sensory information regarding respiration and assists in modifying the patterns of breathing induced by the VRG based on the body's needs. The Medullary Respiratory Center encompasses both the VRG and DRG, but when considering functions specifically tied to automatic control, the VRG stands out. Lastly, the Pneumotaxic Center, found in the pons, helps regulate the rate and pattern of breathing by influencing signals from the medullary centers, further paralleling the control rather than being the primary site of automatic function.

4. What percentage of carbon dioxide is transported as dissolved gas in our body?

A. 5%

B. 7%

C. 10%

D. 15%

The percentage of carbon dioxide transported as dissolved gas in the body is about 7%. This form of transport occurs primarily in the plasma, which is the liquid portion of the blood. When carbon dioxide enters the bloodstream from tissues, a portion of it dissolves directly in the plasma, where it can be transported to the lungs for exhalation. The remaining carbon dioxide is transported in other forms: a significant portion binds to hemoglobin to form carbamino compounds, and a notable percentage is converted to bicarbonate ions through reactions facilitated by the enzyme carbonic anhydrase. Understanding these different transport mechanisms is crucial for grasping how the body regulates carbon dioxide levels and maintains acid-base balance.

5. What pressure primarily drives respiration in humans?

A. Hydrostatic pressure

B. Atmospheric pressure

C. Oxygen partial pressure

D. Carbon dioxide partial pressure

The driving force for respiration in humans is primarily atmospheric pressure. This pressure is essential because it creates the pressure gradient that facilitates the movement of air into and out of the lungs. When the diaphragm and intercostal muscles contract during inhalation, the thoracic cavity expands, decreasing the pressure inside the lungs compared to the atmospheric pressure outside. This difference causes air to flow into the lungs. Inhalation occurs as the atmospheric pressure is greater than the pressure within the lungs, allowing oxygen-rich air to enter. Conversely, during exhalation, the diaphragm relaxes, the thoracic cavity's volume decreases, and the pressure inside the lungs becomes greater than atmospheric pressure, pushing carbon dioxide-rich air out of the lungs. While oxygen and carbon dioxide partial pressures play important roles in the regulation of respiration at the level of gas exchange and influence respiratory drive, they do not primarily drive the mechanics of breathing. Hydrostatic pressure is not directly related to pulmonary function in terms of air movement and is more relevant in fluid dynamics, particularly within blood vessels. Thus, the correct answer reflects the fundamental role atmospheric pressure plays in the overall respiratory process.

6. Particles greater than what size (micrometers) get trapped in the upper respiratory tract?

A. 2 uM

B. 5 uM

C. 10 uM

D. 20 uM

Particles greater than 10 micrometers in size tend to get trapped in the upper respiratory tract due to the anatomical structure and defense mechanisms of the respiratory system. The upper respiratory tract, which includes the nose, nasopharynx, and larynx, is designed to filter out larger particles through several means, including the turbulence of airflow and mucous secretions. When inhaled, larger particles tend to collide with the surfaces of the upper respiratory tract due to their size, making it difficult for them to reach the lower respiratory passages such as the trachea and bronchi. This is particularly important because the upper respiratory tract acts as the first line of defense against pathogens and particulate matter, preventing them from entering the delicate tissues of the lungs where they could cause harm or infection. Particles smaller than 10 micrometers can bypass this upper defense and reach deeper parts of the respiratory system, potentially leading to respiratory issues. Thus, the cutoff point of 10 micrometers is significant in understanding how the respiratory system protects itself from harmful substances.

7. What does the alveolar ventilation rate measure?

A. Total volume of air in the lungs

B. Air that actually ventilates alveoli multiplied by respiratory rate

C. Only the air exhaled after maximum inhalation

D. Air volume in the conducting zone

The alveolar ventilation rate is a critical measurement in respiratory physiology that assesses the effectiveness of breathing in terms of gas exchange. It specifically focuses on the amount of fresh air that reaches the alveoli, where actual gas exchange occurs. This measurement is obtained by taking the volume of air that effectively ventilates the alveoli—known as the tidal volume minus the dead space volume—and multiplying it by the respiratory rate. This calculation is important because not all inhaled air participates in gas exchange; some air remains in the conducting zones of the respiratory system (like the trachea and bronchi) where it does not reach the alveoli. Therefore, by concentrating on the air that gets to the alveoli, we can more accurately gauge how much oxygen is available for exchange with the blood and how effectively carbon dioxide is being removed. The other options do not accurately represent the alveolar ventilation rate. The first choice pertains to total lung capacity, while the third focuses solely on exhaled air after a deep breath, which doesn't reflect continuous ventilation dynamics. The last option discusses the volume of air in the conducting zone, which is not relevant when measuring alveolar ventilation, as this air does not participate in gas exchange.

8. What syndrome involves automatic respiratory functions not working, requiring a ventilator during sleep?

A. Sleep apnea

B. Ondine's Curse

C. Chronic Obstructive Pulmonary Disease

D. Asthma

The correct answer relates to a rare condition known as Ondine's Curse, which is also referred to as congenital central hypoventilation syndrome (CCHS). This syndrome is characterized by the inability of the body to automatically regulate breathing during sleep, leading to a significant risk of hypoventilation and, consequently, low levels of oxygen in the bloodstream. Individuals with Ondine's Curse are often asymptomatic during wakefulness and may not exhibit breathing difficulties while alert, but they are unable to initiate breaths automatically during sleep. As a result, they require the use of a mechanical ventilator or positive pressure device during sleep to ensure adequate ventilation and oxygenation. In contrast, sleep apnea involves intermittent cessation of breathing during sleep due to obstruction or other factors, but it typically does not require mechanical ventilation unless it is severe and untreated. Chronic Obstructive Pulmonary Disease (COPD) is a progressive lung disease that primarily results in persistent respiratory symptoms and airflow limitation but does not specifically affect automatic respiratory function during sleep as Ondine's Curse does. Asthma is a condition characterized by airway inflammation and hyper-responsiveness, leading to breathing difficulties, but it does not specifically involve the loss of automatic respiratory control during sleep.

9. What occurs during inspiration when the ribs swing upward and outward?

A. The parietal pleura expands

B. The parietal pleura follows them

C. The parietal pleura compresses

D. The parietal pleura detaches

During inspiration, when the ribs swing upward and outward, the thoracic cavity expands as a result of the movement. This expansion reduces the pressure within the pleural cavity, which is the space between the parietal pleura (the membrane lining the thoracic cavity) and the visceral pleura (the membrane covering the lungs). As the ribs move outward, the parietal pleura follows this movement due to the pleural fluid that creates a cohesive bond between the pleura and the rib cage. This connection allows the parietal pleura to move along with the ribs, promoting an increase in volume of the thoracic cavity, which in turn causes air to be drawn into the lungs as the pressure within the thoracic cavity becomes lower than atmospheric pressure. This dynamic is crucial for effective breathing, as the movement of the parietal pleura is essential for the lungs to inflate properly, demonstrating the interdependence of the rib cage and pleural membranes during respiratory mechanics.

10. What is the relationship between PO2 levels in alveolar air and the amount of O2 picked up by the blood?

A. The lower the PO2, the more O2 picked up

B. The greater the PO2, the more O2 the blood picks up

C. PO2 has no impact on O2 pick-up

D. The relationship is always constant

The correct answer reflects the principle that the amount of oxygen (O2) picked up by the blood in the lungs is directly proportional to the partial pressure of oxygen (PO2) in alveolar air. This relationship is explained by Henry's law, which states that the amount of a gas that dissolves in a liquid is proportional to the partial pressure of that gas above the liquid. When the PO2 in the alveolar air is higher, more oxygen molecules will diffuse across the alveolar-capillary membrane into the blood because the gradient is steeper, driving increased oxygen uptake. Conversely, when PO2 levels are lower, there is less oxygen available to diffuse into the blood, resulting in reduced oxygen pick-up. This relationship reinforces the importance of maintaining optimal PO2 levels for effective oxygenation of the blood, and it is crucial for ensuring adequate oxygen delivery to tissues throughout the body. Therefore, under normal physiological conditions, a higher PO2 in the alveolar air directly enhances the efficiency of oxygen uptake into the bloodstream.

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://asu-bio202exam2.examzify.com

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