

# HESI A2 Anatomy (Sample)

## Study Guide



**Everything you need from our exam experts!**

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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. What term describes the abundant bacteria in the large intestine?**
  - A. Microbiota**
  - B. Gut flora**
  - C. Intestinal flora**
  - D. Dysbiosis**
- 2. Which phase of mitosis is characterized by the formation of two new nuclei?**
  - A. Prophase**
  - B. Metaphase**
  - C. Anaphase**
  - D. Telophase**
- 3. What are the three main components of whole blood?**
  - A. Platelets, plasma, and electrolytes**
  - B. Plasma, leukocytes, and erythrocytes**
  - C. White blood cells, red blood cells, and proteins**
  - D. Liquid, solid cells, and plasma**
- 4. Which type of white blood cells are primarily responsible for forming antibodies?**
  - A. Lymphocytes**
  - B. Neutrophils**
  - C. Monocytes**
  - D. Eosinophils**
- 5. Which blood vessel carries deoxygenated blood to the heart?**
  - A. Arteries**
  - B. Veins**
  - C. Capillaries**
  - D. Venules**

**6. What type of cells are responsible for the production of fibers and collagen in connective tissue?**

- A. Skeletal muscles**
- B. Fibroblasts**
- C. Macrophages**
- D. Chondrocytes**

**7. Which part of the brain is involved in higher-order functions such as reasoning and problem-solving?**

- A. Cerebellum**
- B. Brainstem**
- C. Cerebrum**
- D. Limbic system**

**8. From which gland is cortisol released?**

- A. Thyroid gland**
- B. Pituitary gland**
- C. Adrenal cortex**
- D. Pancreas**

**9. Which valves are located between the atria and ventricles of the heart?**

- A. Venous and pulmonary valves**
- B. Tricuspid and bicuspid valves**
- C. Aortic and mitral valves**
- D. Semilunar valves**

**10. What is the primary function of the skeletal system?**

- A. To pump blood throughout the body**
- B. To provide support and protection to the body**
- C. To aid in digestion**
- D. To facilitate movement**

## **Answers**

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

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## **Explanations**

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**1. What term describes the abundant bacteria in the large intestine?**

- A. Microbiota**
- B. Gut flora**
- C. Intestinal flora**
- D. Dysbiosis**

The term that accurately describes the abundant bacteria in the large intestine is commonly known as intestinal flora. This includes a diverse array of microorganisms that play an essential role in digestion, vitamin synthesis, and immune function. The large intestine, or colon, is particularly rich in these bacteria, which help break down complex carbohydrates and fiber that are not digested in the small intestine. While gut flora and microbiota can also refer to these communities of bacteria, "intestinal flora" specifically emphasizes their location within the intestines, making it a precise term. Dysbiosis, on the other hand, refers to an imbalance in these microbial populations, often associated with health issues, rather than describing the beneficial presence of bacteria as a whole. Overall, "intestinal flora" is a comprehensive term that captures the significance of these microorganisms within the large intestine.

**2. Which phase of mitosis is characterized by the formation of two new nuclei?**

- A. Prophase**
- B. Metaphase**
- C. Anaphase**
- D. Telophase**

The phase of mitosis characterized by the formation of two new nuclei is telophase. During telophase, the chromosomes, which have been separated into two sets, begin to de-condense back into chromatin. The nuclear envelope re-forms around each set of chromosomes, resulting in the creation of two distinct nuclei within the cell. This process effectively marks the end of mitosis, as the cellular material is prepared for the final separation into two daughter cells. In contrast, during prophase, the chromosomes condense and become visible, and the nuclear envelope starts to break down, but new nuclei have not yet formed. In metaphase, the chromosomes align at the cell's equatorial plate, and during anaphase, the sister chromatids are pulled apart toward opposite poles of the cell. However, it is in telophase that the newly formed nuclear membranes encapsulate each set of chromosomes, culminating in the establishment of two nuclei in the daughter cells.

### 3. What are the three main components of whole blood?

- A. Platelets, plasma, and electrolytes
- B. Plasma, leukocytes, and erythrocytes**
- C. White blood cells, red blood cells, and proteins
- D. Liquid, solid cells, and plasma

The three main components of whole blood are plasma, leukocytes, and erythrocytes. Plasma is the liquid portion of blood, comprising about 55% of its volume. It contains water, electrolytes, nutrients, hormones, and waste products. Leukocytes, or white blood cells, play a crucial role in the immune system by defending the body against infection. Erythrocytes, or red blood cells, are responsible for transporting oxygen from the lungs to the body's tissues and returning carbon dioxide from the tissues back to the lungs. This choice accurately reflects the composition of whole blood, specifically focusing on the cellular (leukocytes and erythrocytes) and liquid (plasma) components that are essential for its functioning. Each element is vital for different physiological processes, such as oxygen transport, immune response, and maintaining fluid balance in the circulatory system.

### 4. Which type of white blood cells are primarily responsible for forming antibodies?

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

Lymphocytes are a crucial component of the immune system, specifically responsible for producing antibodies. When the body is exposed to pathogens such as bacteria and viruses, lymphocytes, particularly B cells (a subtype of lymphocytes), are activated. These B cells undergo a process of differentiation and proliferation, leading to the production of antibodies that specifically target the antigens present on these pathogens.

Antibodies play a key role in the immune response by binding to the antigens, neutralizing them, and marking them for destruction by other components of the immune system. This ability to generate a tailored response to specific threats makes lymphocytes indispensable in both the adaptive immune response and in forming immunological memory, which allows for a faster and more effective response upon subsequent exposures to the same pathogen. The other types of white blood cells listed have different roles in the immune response and do not primarily function in antibody production. Neutrophils primarily take charge of the initial response to infection, phagocytizing bacteria and fungi. Monocytes also engage in phagocytosis and can differentiate into macrophages or dendritic cells, which are vital for orchestrating the immune response but do not produce antibodies directly. Eosinophils are mainly involved in combating parasitic infections and

**5. Which blood vessel carries deoxygenated blood to the heart?**

**A. Arteries**

**B. Veins**

**C. Capillaries**

**D. Venules**

Veins are the blood vessels responsible for carrying deoxygenated blood back to the heart. This occurs after the oxygen has been delivered to the body's tissues via the arteries and capillaries. Once the oxygen is utilized by the cells, the blood collects carbon dioxide and other waste products, transforming it into deoxygenated blood. The veins then channel this deoxygenated blood toward the heart, where it is sent to the lungs for re-oxygenation. In contrast, arteries are primarily responsible for transporting oxygenated blood away from the heart to the various parts of the body. Capillaries serve as the exchange sites where oxygen and carbon dioxide are swapped at the tissue level, and venules, which are small blood vessels that connect capillaries to veins, also carry deoxygenated blood but are not the primary vessels recognized for this function. Thus, veins are correctly identified as the vessels that carry deoxygenated blood back to the heart.

**6. What type of cells are responsible for the production of fibers and collagen in connective tissue?**

**A. Skeletal muscles**

**B. Fibroblasts**

**C. Macrophages**

**D. Chondrocytes**

Fibroblasts are essential cells found within connective tissue that play a critical role in producing fibers and collagen. These cells are responsible for synthesizing and maintaining the extracellular matrix, which includes collagen and other structural proteins that provide strength and support to various tissues. Collagen is particularly important as it is the most abundant protein in mammals, forming a scaffold that helps in the structural integrity and elasticity of tissues. Fibroblasts not only produce collagen but also other components like elastin and proteoglycans, contributing to the overall function and resilience of connective tissue. Other cell types mentioned, such as skeletal muscle cells, are primarily involved in muscle contraction and movement, while macrophages are immune cells that help in the defense against pathogens and tissue repair. Chondrocytes are specialized cells found in cartilage that maintain the cartilaginous matrix but are not primarily involved in the production of fibers like collagen in general connective tissue. This distinction highlights the specific functional role of fibroblasts in connective tissue compared to these other cell types.

**7. Which part of the brain is involved in higher-order functions such as reasoning and problem-solving?**

- A. Cerebellum**
- B. Brainstem**
- C. Cerebrum**
- D. Limbic system**

The cerebrum is indeed the part of the brain that is primarily responsible for higher-order functions such as reasoning and problem-solving. It makes up the largest portion of the brain and is divided into two hemispheres, each comprising four lobes: the frontal, parietal, occipital, and temporal lobes. The frontal lobe, in particular, plays a crucial role in complex cognitive tasks, decision-making, and executive functions. The development of language, abstract thought, and planning also take place in this area. In contrast, the cerebellum mainly coordinates movement and balance rather than higher mental capacities. The brainstem is involved in basic life functions like heart rate and breathing but does not engage in higher cognitive functions. The limbic system is associated with emotions and memory, which, while important for the overall functioning of the brain, does not directly encompass reasoning and problem-solving as the cerebrum does. Thus, the cerebrum is the central hub for the processes that define our ability to think critically and solve problems.

**8. From which gland is cortisol released?**

- A. Thyroid gland**
- B. Pituitary gland**
- C. Adrenal cortex**
- D. Pancreas**

Cortisol is a steroid hormone produced by the adrenal cortex, which is the outer layer of the adrenal glands located on top of each kidney. The adrenal cortex is responsible for synthesizing and releasing various hormones, including cortisol, which plays a vital role in regulating metabolism, the immune response, and stress response. When the body experiences stress, the hypothalamus signals the adrenal cortex to release cortisol, which helps to mobilize energy and manage bodily functions in response to stressors. Understanding the role of the adrenal cortex in hormone production is crucial for comprehending how the endocrine system functions and maintains homeostasis.

**9. Which valves are located between the atria and ventricles of the heart?**

- A. Venous and pulmonary valves**
- B. Tricuspid and bicuspid valves**
- C. Aortic and mitral valves**
- D. Semilunar valves**

The valves located between the atria and ventricles of the heart are the tricuspid and bicuspid (or mitral) valves. These valves play a crucial role in ensuring unidirectional blood flow through the heart's chambers. The tricuspid valve is situated between the right atrium and the right ventricle, while the bicuspid valve, also known as the mitral valve, is found between the left atrium and the left ventricle. During the contraction of the atria, these valves open to allow blood to flow into the ventricles. When the ventricles contract, the valves close to prevent backflow of blood into the atria, which is essential for maintaining effective circulation. In contrast, the other options refer to different types of valves that do not separate the atria from the ventricles. The venous and pulmonary valves are not standard terms used in this context; the terms aortic and mitral valves pertain to different structures, including the aortic valve, which is found between the left ventricle and the aorta, and the semilunar valves are located at the openings of the ventricles to the pulmonary trunk and aorta. Thus, the tricuspid and bic

**10. What is the primary function of the skeletal system?**

- A. To pump blood throughout the body**
- B. To provide support and protection to the body**
- C. To aid in digestion**
- D. To facilitate movement**

The primary function of the skeletal system is to provide support and protection to the body. The skeleton serves as the framework that supports the body's structure, allowing us to maintain an upright posture and giving shape to the body. It also plays a crucial role in protecting vital organs. For instance, the skull encases the brain, the rib cage shields the heart and lungs, and the vertebral column safeguards the spinal cord. In addition to support and protection, the skeletal system is involved in storing minerals and producing blood cells in the bone marrow. While aiding in movement is a function of the skeletal system, it is primarily a support system that works in conjunction with muscles, tendons, and ligaments to facilitate movement. This distinction emphasizes that support and protection are at the core of what the skeletal system is designed to accomplish.

# 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](mailto:hello@examzify.com).**

**Or visit your dedicated course page for more study tools and resources:**

**<https://hesia2anatomy.examzify.com>**

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

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