HESI A2 28 ANATOMY AND PHYSIOLOGY PRACTICE EXAM (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

VISIT US ONLINE FOR THE FULL VERSION STUDY GUIDE

https://hes1i2.examzify.com

Copyright © 2026 by Examzify - A Kaluba Technologies Inc. product.

ALL RIGHTS RESERVED.

No part of this book may be reproduced or transferred in any form or by any means, graphic, electronic, or mechanical, including photocopying, recording, web distribution, taping, or by any information storage retrieval system, without the written permission of the author.

Notice: Examzify makes every reasonable effort to obtain accurate, complete, and timely information about this product from reliable sources.

SAMPLE

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

SAMPLE

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.

SAMPLE

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!

SAMPLE

Questions

SAMPLE

1. What is the total number of lumbar vertebrae in the human body?

A. 3

B. 5

C. 7

D. 9

2. What are the two major groups of hormones?

A. Steroid and glycoprotein

B. Peptide and steroid

C. Steroid and nonsteroid

D. Protein and lipid

3. What significant hormonal change occurs on the 14th day of the female cycle?

A. A surge of FSH is released

B. A surge of LH is released from the pituitary gland

C. Estrogen levels drop

D. Ovulation ceases

4. Which of the following is influenced by testosterone?

A. Growth of breast tissue

B. Development of sperm cells and secondary male sex characteristics

C. Menstrual cycle regulation

D. Fat distribution in females

5. What role do some nonsteroid hormones play?

A. Act as enzymes for digestion

B. Serve as protein hormones

C. Act as neurotransmitters

D. Form structural proteins

6. What are the names of the veins parallel to the arteries?

A. Carry the same name as the arteries

B. Have distinct names

C. Are uniform in naming

D. Are called capillary veins

SAMPLE

7. What is a key function of cilia in the respiratory system?

A. To assist in gas exchange
B. To trap and expel debris
C. To facilitate oxygen diffusion
D. To enhance sound abilities

8. What is the name for the smallest arteries?

A. Arteries
B. Capillaries
C. Arterioles
D. Venules

9. What is one role of the axon in the nervous system?

A. Store neurotransmitters
B. Transmit impulses toward the muscle tissues
C. Conduct electrical impulses away from the neuron cell body
D. Provide structural support to the neuron

10. During which stage does the formation of gametes primarily occur?

A. During fertilization
B. During organogenesis
C. During meiosis
D. During implantation

SAMPLE

Answers

SAMPLE

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

SAMPLE

Explanations

SAMPLE

1. What is the total number of lumbar vertebrae in the human body?

A. 3

B. 5

C. 7

D. 9

The human body typically contains five lumbar vertebrae. These vertebrae are designated as L1 through L5 and play a crucial role in providing lower back support and enabling a range of motions, including flexion, extension, and lateral movement. The lumbar region is located between the thoracic vertebrae above and the sacral vertebrae below. The design of the lumbar vertebrae is such that they are larger and thicker than thoracic or cervical vertebrae, as they must support a significant amount of body weight and absorb impact during movement. Therefore, the answer reflects the standard anatomical structure found in most adults, solidifying the understanding of spinal anatomy in this region.

2. What are the two major groups of hormones?

A. Steroid and glycoprotein

B. Peptide and steroid

C. Steroid and nonsteroid

D. Protein and lipid

The correct distinction between the two major groups of hormones is between steroid hormones and nonsteroid hormones. Steroid hormones are lipophilic and derived from cholesterol, allowing them to easily cross the cellular membrane and bind to intracellular receptors, which then influence gene expression and protein synthesis. Examples of steroid hormones include cortisol, testosterone, and estrogen. Nonsteroid hormones, on the other hand, can be further categorized into peptide hormones and amine hormones. These are typically hydrophilic and cannot cross lipid membranes, so they bind to receptors on the cell surface, initiating signaling cascades within the cell. This group includes hormones like insulin and growth hormone. The categorization into steroid and nonsteroid encompasses a broader range of hormonal characteristics, including their biochemical structure and method of action, making it the most accurate classification of hormones.

3. What significant hormonal change occurs on the 14th day of the female cycle?

A. A surge of FSH is released

B. A surge of LH is released from the pituitary gland

C. Estrogen levels drop

D. Ovulation ceases

On the 14th day of the female menstrual cycle, there is a surge of luteinizing hormone (LH) released from the pituitary gland. This surge is a crucial event that triggers ovulation, which is when a mature egg is released from the ovary. The rise in LH levels is typically preceded by an increase in estrogen levels, which prepares the body for ovulation by inducing the maturation of the ovarian follicle and the thickening of the uterine lining. The timing of this LH surge is essential for fertility as it ensures that the egg is released at a point in the cycle where it can be fertilized, typically about 24 to 36 hours later. The precise regulation of hormone levels throughout the cycle plays a vital role in the reproductive process.

SAMPLE

4. Which of the following is influenced by testosterone?

A. Growth of breast tissue

B. Development of sperm cells and secondary male sex characteristics

C. Menstrual cycle regulation

D. Fat distribution in females

Testosterone is a key hormone in male physiology and plays a crucial role in various biological processes. The development of sperm cells is directly stimulated by testosterone, as it is essential for spermatogenesis, the process of sperm production in the testes. Furthermore, testosterone is responsible for the development of secondary male sex characteristics, which include features such as increased muscle mass, body hair growth, and a deeper voice. This makes the option regarding the development of sperm cells and secondary male sex characteristics the correct choice, as it accurately reflects testosterone's significant effects on male reproductive and secondary sexual development. In contrast, the growth of breast tissue is primarily influenced by hormones such as estrogen rather than testosterone. The regulation of the menstrual cycle involves various hormones, particularly estrogen and progesterone, and is not directly influenced by testosterone. Lastly, fat distribution in females is also largely regulated by estrogen, with testosterone playing a minor role compared to other hormones in females. Thus, the correct response highlights the specific functions of testosterone in male reproductive health and characteristics.

5. What role do some nonsteroid hormones play?

A. Act as enzymes for digestion

B. Serve as protein hormones

C. Act as neurotransmitters

D. Form structural proteins

Some nonsteroid hormones, particularly peptide and protein hormones, play crucial roles in cellular signaling and regulation within the body. These hormones are made up of chains of amino acids and can vary in size. Unlike steroid hormones, which are lipid-soluble and can cross cell membranes to directly influence gene expression, nonsteroid hormones bind to specific receptors on the surface of target cells. This binding activates signaling pathways that trigger a variety of physiological responses. For example, insulin is a well-known nonsteroid hormone that regulates blood sugar levels by facilitating the uptake of glucose into cells. By interacting with cell surface receptors, nonsteroid hormones can initiate rapid responses, such as altering enzyme activity or affecting ion channel permeability, which affects processes like metabolism, growth, and development. The roles of various types of hormones are distinct, and it's important to differentiate these functions. Nonsteroid hormones do not generally act as enzymes for digestion, transmit nerve impulses in the way neurotransmitters do, or form structural proteins. Each type of hormone (steroid and nonsteroid) has its unique mechanisms and effects within the body, highlighting the specificity of hormonal action in physiological processes.

SAMPLE

6. What are the names of the veins parallel to the arteries?

A. Carry the same name as the arteries

B. Have distinct names

C. Are uniform in naming

D. Are called capillary veins

The correct answer reflects the anatomical relationship between arteries and their corresponding veins. In many cases, veins that accompany arteries are named the same as the arteries they parallel. This is particularly true for major arteries and their accompanying veins, such as the femoral artery and femoral vein or the brachial artery and brachial vein. This naming convention aids in the identification of blood vessels and facilitates understanding of anatomical relationships within the circulatory system. The structure and function of veins are such that they tend to mirror the pathways of arteries, which is why they share names. This parallel naming convention is not only a practical aspect of anatomy but also important for understanding clinical contexts such as surgical procedures or diagnostic imaging. The other options do not accurately reflect this naming convention. For instance, distinct names for veins would suggest a lack of correspondence with systemic arteries, which is not the case for many systemic veins. Similarly, uniform naming would imply a simplified system that doesn't exist in anatomical nomenclature, as variations do occur in different regions of the body. Lastly, the term "capillary veins" refers to a different concept entirely, as capillaries are the smallest blood vessels where exchange of substances occurs rather than a parallel vessel system with arteries.

7. What is a key function of cilia in the respiratory system?

A. To assist in gas exchange

B. To trap and expel debris

C. To facilitate oxygen diffusion

D. To enhance sound abilities

Cilia play a crucial role in the respiratory system by serving as a defense mechanism to trap and expel debris. These hair-like structures line the respiratory tract and are covered in a layer of mucus. When inhaled air passes through the respiratory system, cilia continuously beat in a coordinated manner to move mucus, along with trapped particles, pathogens, and dust, upward toward the throat. This process is part of the mucociliary escalator, which helps keep the airways clear and free from irritants, thereby maintaining respiratory health. This function is vital for preventing infections and ensuring that the lungs remain clear for optimal gas exchange. The other options do not accurately describe the primary function of cilia in this context. Gas exchange primarily occurs in the alveoli, and while cilia do help maintain a conducive environment for gas exchange by keeping the airways clear, they do not directly participate in the diffusion of gases. Sound production is mainly related to the vocal cords and the larynx rather than the respiratory tract's cilia.

SAMPLE

8. What is the name for the smallest arteries?

A. Arteries

B. Capillaries

C. Arterioles

D. Venules

The smallest arteries in the circulatory system are called arterioles. These blood vessels are crucial in regulating blood flow and blood pressure within the body. Arterioles branch off from small arteries and lead directly into capillaries, where the exchange of oxygen, carbon dioxide, nutrients, and waste products occurs. Arterioles have a muscular wall that allows them to constrict and dilate, playing a significant role in controlling blood flow to different tissues based on their metabolic needs. This capability is vital for maintaining homeostasis and ensuring that various organs receive adequate blood supply when needed. Understanding the role of arterioles highlights their importance in the overall function of the cardiovascular system, particularly in terms of blood distribution and pressure regulation.

9. What is one role of the axon in the nervous system?

A. Store neurotransmitters

B. Transmit impulses toward the muscle tissues

C. Conduct electrical impulses away from the neuron cell body

D. Provide structural support to the neuron

The axon plays a crucial role in the nervous system by conducting electrical impulses away from the neuron cell body. This structure is essential because it enables the transmission of signals over distances, allowing communication between neurons and facilitating the coordination of functions throughout the body. The axon is typically long and slender, which helps it effectively carry electrical signals, known as action potentials, to other neurons, muscle cells, or glands. This process is vital for a wide range of bodily functions, including reflexes, voluntary movements, and complex cognitive tasks. The ability to transmit impulses efficiently is fundamental to the overall performance of the nervous system and its ability to respond to internal and external stimuli.

10. During which stage does the formation of gametes primarily occur?

A. During fertilization

B. During organogenesis

C. During meiosis

D. During implantation

The formation of gametes primarily occurs during meiosis, which is a specialized type of cell division that reduces the chromosome number by half, leading to the production of haploid cells. In humans and many other organisms, meiosis takes place in the gonads—specifically in the ovaries for females and the testes for males. During this process, diploid germ cells undergo two rounds of division to create four non-identical haploid gametes, which are sperm in males and ova (eggs) in females. This is crucial for sexual reproduction, as the fusion of two haploid gametes during fertilization restores the diploid state in the resulting zygote. Meiosis includes key processes such as crossing over and independent assortment, which contribute to genetic diversity in the offspring. Understanding meiosis is fundamental to concepts in genetics and reproduction, making it vital for studies in anatomy and physiology. The other stages mentioned do not involve gametogenesis. Fertilization pertains to the union of gametes, organogenesis is the phase where organs are formed during embryonic development, and implantation refers to the attachment of the fertilized egg to the uterine wall.

SAMPLE

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://hes1i2.examzify.com

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

SAMPLE