Biology STAAR (State of Texas Assessments of Academic Readiness) Practice Test (Sample)

Study Guide

Everything you need from our exam experts!

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 **16**

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. **What type of molecules mainly constitute the plasma membrane?**
   - **A. Carbohydrates**
   - **B. Proteins**
   - **C. Phospholipids**
   - **D. Nucleic acids**

2. **What is a consequence of the phosphorus cycle being disrupted?**
   - **A. Increased water temperature**
   - **B. Reduced agricultural production**
   - **C. Overpopulation of species**
   - **D. Decreased rainfall**

3. **What is the role of the adrenal glands in the body?**
   - **A. Regulate body temperature**
   - **B. Produce hormones for the "fight or flight" response**
   - **C. Control voluntary muscle movements**
   - **D. Secrete insulin**

4. **Which of the following best describes the integumentary system?**
   - **A. A system that supports the body and protects internal organs**
   - **B. The body's first line of defense that helps maintain homeostasis**
   - **C. A system that facilitates movement of bones**
   - **D. A system responsible for digestion and nutrient absorption**

5. **What is the primary function of the cerebrum in the brain?**
   - **A. Regulating blood sugar levels**
   - **B. Controlling balance and coordination**
   - **C. Managing conscious activities and intelligence**
   - **D. Fighting diseases**

6. What is parasitism?

A. A relationship where both species benefit

B. A relationship where one benefits and the other is harmed

C. A relationship where one is unaffected

D. A relationship based on mutual dependence

7. What is the science of naming and classifying organisms called?

A. Taxonomy

B. Phylogenetics

C. Ecology

D. Biogeography

8. Which chambers of the heart are responsible for pumping blood to the lungs and body?

A. Atria

B. Capillaries

C. Ventricles

D. Veins

9. Which of the following best describes codominance?

A. One allele is completely dominant over another

B. Two different alleles are blended together in the phenotype

C. Both alleles are expressed equally in the phenotype

D. Only recessive alleles affect the phenotype

10. How many cells are produced at the end of meiosis?

A. 2 cells

B. 4 cells

C. 8 cells

D. 16 cells

Answers

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

Explanations

1. What type of molecules mainly constitute the plasma membrane?

A. Carbohydrates

B. Proteins

C. Phospholipids

D. Nucleic acids

The plasma membrane, which surrounds and protects the cell, is primarily made up of phospholipids. These molecules have a unique structure that includes a hydrophilic (water-attracting) "head" and two hydrophobic (water-repelling) "tails." This arrangement allows them to form a bilayer, where the hydrophilic heads face outward toward the watery environments both inside and outside the cell, while the hydrophobic tails face each other, away from water. This phospholipid bilayer is crucial for the membrane's functions, providing a barrier to most water-soluble substances and maintaining the cell's internal environment. While proteins, carbohydrates, and nucleic acids play important roles in cellular functions and processes associated with the plasma membrane, such as signaling and structural support, it is the phospholipids that create the fundamental structure of the membrane itself. Thus, phospholipids are essential for forming the basic framework that enables the membrane's selective permeability and overall integrity.

2. What is a consequence of the phosphorus cycle being disrupted?

A. Increased water temperature

B. Reduced agricultural production

C. Overpopulation of species

D. Decreased rainfall

A disruption in the phosphorus cycle primarily impacts the availability of phosphorus, an essential nutrient for plant growth and agriculture. Phosphorus is a critical component of DNA, RNA, and ATP, which are vital for energy transfer and genetic information within living organisms. When the phosphorus cycle is disrupted, it can lead to a shortage of this nutrient in soils, making it difficult for plants to grow and thrive. This directly results in reduced agricultural production, as crops may not receive the necessary nutrients to achieve their full growth potential. The other options pertain to environmental changes that are not directly linked to disruptions in the phosphorus cycle. Increased water temperature is more closely associated with climate change and aquatic ecosystems, overpopulation of species results from ecological imbalances or changes in predator-prey relationships, and decreased rainfall is often tied to broader climatic shifts rather than specifically to nutrient cycles. Thus, the direct link between phosphorus availability and agricultural output makes the answer about reduced agricultural production the most relevant consequence of a disrupted phosphorus cycle.

3. What is the role of the adrenal glands in the body?

A. Regulate body temperature

B. Produce hormones for the "fight or flight" response

C. Control voluntary muscle movements

D. Secrete insulin

The adrenal glands play a crucial role in the body's response to stress, primarily by producing hormones such as adrenaline (epinephrine) and norepinephrine. These hormones are integral to the "fight or flight" response, which prepares the body to respond to perceived threats or emergencies. When faced with stress, the adrenal glands release these hormones into the bloodstream, causing various physiological changes such as increased heart rate, elevated blood pressure, and heightened alertness. This rapid response ensures that the body is ready to either confront the danger or escape from it. The other roles listed do not pertain to the primary function of the adrenal glands. For instance, regulating body temperature is primarily managed by the hypothalamus and other components of the endocrine system. Control of voluntary muscle movements is mainly a function of the central nervous system, particularly the brain and spinal cord. Insulin secretion is the responsibility of the pancreas, which regulates blood sugar levels, not the adrenal glands.

4. Which of the following best describes the integumentary system?

A. A system that supports the body and protects internal organs

B. The body's first line of defense that helps maintain homeostasis

C. A system that facilitates movement of bones

D. A system responsible for digestion and nutrient absorption

The integumentary system is best described as the body's first line of defense that helps maintain homeostasis. This system includes the skin, hair, nails, and glands, functioning primarily to protect the body from external elements such as pathogens, chemicals, and physical abrasions. Additionally, it plays a crucial role in regulating body temperature, providing sensory information, and helping prevent dehydration. The skin, as a major component, acts as a barrier to harmful pathogens and helps in the synthesis of vitamin D, which is important for calcium absorption and overall health. By regulating temperature through sweat production and blood flow adjustments, the integumentary system contributes to homeostasis, ensuring that the internal environment of the body remains stable despite external changes. In comparison, other systems described do not accurately capture the primary functions of the integumentary system. While supporting the body and protecting organs is a key function of the skeletal system, facilitating movement pertains directly to the muscular and skeletal systems. The digestive system's role is strictly related to food processing and nutrient absorption, which is unrelated to the integumentary system's protective and regulatory tasks.

5. What is the primary function of the cerebrum in the brain?

A. Regulating blood sugar levels

B. Controlling balance and coordination

C. Managing conscious activities and intelligence

D. Fighting diseases

The primary function of the cerebrum is to manage conscious activities and intelligence. This part of the brain is responsible for higher brain functions such as thought, action, reasoning, and critical thinking. It is divided into different lobes, each associated with various functions, including sensory perception, decision-making, and voluntary movements. The cerebrum plays a crucial role in processing sensory information, helping in problem-solving, and controlling complex behaviors and emotional responses. In contrast, functions like regulating blood sugar levels are managed by the pancreas and other endocrine glands, while balance and coordination are primarily overseen by the cerebellum. The immune system's role in fighting diseases is not a function of the cerebrum but involves other systems in the body, such as the lymphatic system and the production of immune cells. Therefore, the correct choice highlights the cerebrum's significance in the realm of conscious thought and intellect.

6. What is parasitism?

A. A relationship where both species benefit

B. A relationship where one benefits and the other is harmed

C. A relationship where one is unaffected

D. A relationship based on mutual dependence

Parasitism is defined as a specific type of symbiotic relationship where one organism, known as the parasite, benefits at the expense of another organism, called the host. In this interaction, the parasite derives nutrients or some advantage from the host, which may suffer harm as a result of this relationship. This harm can range from mild effects, such as reduced fitness or growth in the host, to severe outcomes, including illness or death. Understanding parasitism is crucial in ecology and biology as it illustrates the complex interactions that can occur within ecosystems, highlighting the balance of dependence and the struggles organisms face for survival. The options that describe mutual benefit or lack of effect do not accurately capture the essence of parasitism, which is inherently characterized by this imbalance.

7. What is the science of naming and classifying organisms called?

A. Taxonomy

B. Phylogenetics

C. Ecology

D. Biogeography

The science of naming and classifying organisms is called taxonomy. This field of biology involves the identification, naming (nomenclature), and grouping (classification) of living organisms based on shared characteristics and genetic relationships. Taxonomy helps scientists organize biological diversity, making it easier to study and communicate about species and their relationships with one another. Each organism is classified into hierarchical categories such as domain, kingdom, phylum, class, order, family, genus, and species, which reflects its evolutionary relationships and characteristics. For instance, humans are classified as Homo sapiens within the family Hominidae, demonstrating our place in the biological classification system. While phylogenetics focuses on the evolutionary relationships among species, analyzing the branching patterns of evolution, it relies heavily on taxonomy for the classification of organisms. Ecology studies the interactions between organisms and their environment, and biogeography investigates the distribution of species and ecosystems across geographical areas. These fields are distinct from taxonomy, which is specifically concerned with classification.

8. Which chambers of the heart are responsible for pumping blood to the lungs and body?

A. Atria

B. Capillaries

C. Ventricles

D. Veins

The ventricles are crucial for the heart's function as they are the main pumping chambers responsible for sending blood out of the heart. The right ventricle pumps deoxygenated blood to the lungs through the pulmonary artery, allowing the blood to pick up oxygen. Meanwhile, the left ventricle pumps oxygenated blood to the rest of the body through the aorta, ensuring that all tissues receive the oxygen and nutrients they need for cellular processes. The atria, while important in receiving blood from the body and lungs, do not perform the actual pumping of blood; they act as receiving chambers that channel blood into the ventricles. Capillaries are tiny blood vessels where the exchange of oxygen, carbon dioxide, nutrients, and waste occurs, but they do not pump blood. Veins facilitate the return of blood to the heart but also do not have a pumping function. Thus, the ventricles play the essential role in the heart's pumping action to propel blood to the lungs and the rest of the body.

9. Which of the following best describes codominance?

A. One allele is completely dominant over another

B. Two different alleles are blended together in the phenotype

C. Both alleles are expressed equally in the phenotype

D. Only recessive alleles affect the phenotype

Codominance is a genetic scenario where both alleles in a heterozygous organism are fully and equally expressed in the phenotype. This means that rather than one allele overriding the other, both contribute to the observable traits. A classic example of codominance is seen in the ABO blood group system, where individuals with one allele for type A blood and one for type B blood express both types on the surface of their red blood cells, resulting in type AB blood. This concept distinguishes codominance from other types of inheritance, such as complete dominance, where one allele masks the effect of another, and incomplete dominance, where alleles blend to create a new phenotype. In codominance, the distinct traits from both alleles are visible, allowing for a diverse representation of genetic characteristics in the organism.

10. How many cells are produced at the end of meiosis?

A. 2 cells

B. 4 cells

C. 8 cells

D. 16 cells

At the end of meiosis, a total of four cells are produced. Meiosis is a specialized form of cell division that reduces the chromosome number by half, creating gametes—sperm and eggs in animals. This process consists of two rounds of division: meiosis I and meiosis II. During meiosis I, a diploid cell divides to create two haploid cells, each containing half the original number of chromosomes. Then, in meiosis II, each of those two haploid cells divides again without replicating their DNA, resulting in a total of four distinct haploid cells. Each of these cells has a unique combination of alleles due to the genetic recombination that occurs during the first division. This is essential for sexual reproduction, as it increases genetic diversity in the offspring. Therefore, the correct answer is the production of four cells at the end of meiosis.

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://biology-staar.examzify.com

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