

VIRGINIA BIOLOGY SOL PRACTICE TEST (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

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- 1. What type of lipid is an important energy source and makes up a significant portion of stored body fat?**
 - A. Phospholipid
 - B. Triglyceride
 - C. Steroid
 - D. Cholesterol
- 2. What is the name for a plant's orientation response to light?**
 - A. Phototropism
 - B. Geotropism
 - C. Thigmotropism
 - D. Hydrotropism
- 3. What is formed by the chemical union of two or more elements in definite proportions by weight?**
 - A. Compound
 - B. Mixture
 - C. Solution
 - D. Alloy
- 4. What is the term used for any animal that feeds on meat?**
 - A. Herbivore
 - B. Omnivore
 - C. Carnivore
 - D. Decomposer
- 5. Which stage is characterized by the chromosomes de-condensing and nuclear envelopes reforming?**
 - A. Prophase
 - B. Metaphase
 - C. Anaphase
 - D. Telophase

- 6. Which of the following correctly describes osmosis?**
- A. The movement of solutes
 - B. The movement of water from low to high solute concentration
 - C. The random movement of liquid molecules
 - D. The influx of ions through the membrane
- 7. Which category of genetic information serves as a unit of heredity?**
- A. Chromosome
 - B. Protein
 - C. Gene
 - D. Amino acid
- 8. Which process describes the conversion of DNA information into protein?**
- A. Gene replication
 - B. Gene translation
 - C. Gene expression
 - D. Gene transcription
- 9. Which of the following variables is always kept consistent throughout an experiment?**
- A. Independent Variable
 - B. Dependent Variable
 - C. Control Variable
 - D. Constant Variable
- 10. Which of the following terms refers to organisms within a taxonomic category?**
- A. Phylogeny
 - B. Taxa
 - C. Families
 - D. Species

Answers

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

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Explanations

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1. What type of lipid is an important energy source and makes up a significant portion of stored body fat?

- A. Phospholipid
- B. Triglyceride**
- C. Steroid
- D. Cholesterol

Triglycerides are a type of lipid that serve as a crucial energy source for the body. They are formed from glycerol and three fatty acid chains, and their primary role is to store energy. When the body needs energy, it can break down triglycerides to release fatty acids, which can then be utilized in metabolic processes to produce ATP, the energy currency of cells. Additionally, triglycerides comprise a large percentage of the stored fat in adipose tissue, which acts as an energy reserve, insulates the body, and provides cushioning for organs. This makes them essential for maintaining energy balance and overall metabolic health. Other lipid types listed, such as phospholipids, steroids, and cholesterol, play different roles in biological systems, primarily related to structure and function of cell membranes and signaling pathways, rather than serving as a primary energy source.

2. What is the name for a plant's orientation response to light?

- A. Phototropism**
- B. Geotropism
- C. Thigmotropism
- D. Hydrotropism

Phototropism is the name given to a plant's orientation response to light. In this process, plants grow towards a light source, which maximizes their ability to capture sunlight for photosynthesis. This growth response is driven by the hormone auxin, which promotes cell elongation on the side of the plant that is farthest from the light, causing the plant to bend toward the light source. This adaptation is crucial for a plant's survival, as it enhances its ability to produce energy. Geotropism refers to a plant's response to gravity, while thigmotropism is the response to touch, such as how climbing plants wrap around supports. Hydrotropism involves a plant's growth response to moisture levels in the soil. Each of these responses serves a different adaptive purpose in the plant's overall growth and survival strategy, but phototropism specifically pertains to how plants respond to light.

3. What is formed by the chemical union of two or more elements in definite proportions by weight?

- A. Compound**
- B. Mixture
- C. Solution
- D. Alloy

A compound is formed when two or more elements chemically combine in fixed proportions by weight. This means that the constituents of a compound are bonded together at a molecular level, resulting in a substance that has distinct properties differing from the individual elements that formed it. For example, water (H₂O) is a compound made up of two hydrogen atoms and one oxygen atom bonded in a specific ratio. In contrast, a mixture contains two or more substances that are physically combined but not chemically bonded, and the proportions can vary. A solution is a specific type of mixture where one substance is dissolved in another, typically involving a liquid. An alloy is a mixture of metals or a mixture of a metal and nonmetals, which can also include varying proportions, but is not specifically defined by the fixed weight proportions characteristic of compounds. Thus, the definition of a compound aligns perfectly with the description provided in the question.

4. What is the term used for any animal that feeds on meat?

- A. Herbivore
- B. Omnivore
- C. Carnivore**
- D. Decomposer

The term for any animal that primarily feeds on meat is "carnivore." Carnivores have adaptations that enable them to hunt and consume other animals for nutrients. These adaptations may include sharp teeth for tearing flesh, keen eyesight for spotting prey, and heightened senses to detect movements. Carnivores play a critical role in their ecosystems as predators, helping to control populations of herbivores and maintain a balance in food webs. Their hunting behavior and dietary needs distinguish them from herbivores, which strictly eat plants, and omnivores, which consume both plant and animal matter. Decomposers, on the other hand, break down dead organic material but do not fit the definition of a meat-eating animal.

5. Which stage is characterized by the chromosomes de-condensing and nuclear envelopes reforming?

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

The correct answer is associated with the telophase stage of cell division. During telophase, the chromosomes that were previously tightly coiled begin to de-condense, returning to a more relaxed form. This is essential for the chromosome's material to become accessible for transcription and the processes involved in cellular function that occur after division. Additionally, during this stage, the nuclear envelopes reform around each set of separated chromosomes, creating two distinct nuclei within the cell. This reformation is critical for preparing the new daughter cells' nuclei to function properly after cell division. In contrast, the other stages of mitosis involve different processes: prophase is marked by chromatin condensing into visible chromosomes and the nuclear envelope breaking down; metaphase involves chromosomes aligning at the cell's equator; and anaphase is characterized by sister chromatids being pulled apart to opposite poles of the cell. Each of these stages serves a specific purpose, but it is telophase that specifically focuses on de-condensation of chromosomes and the reformation of nuclear envelopes.

6. Which of the following correctly describes osmosis?

- A. The movement of solutes
- B. The movement of water from low to high solute concentration**
- C. The random movement of liquid molecules
- D. The influx of ions through the membrane

Osmosis is specifically defined as the movement of water molecules through a selectively permeable membrane. It occurs from an area of lower solute concentration to an area of higher solute concentration in order to achieve equilibrium. This process is essential for maintaining cell turgor and fluid balance within biological systems. By moving toward the region with a higher solute concentration, water helps to dilute the solute, thereby balancing concentrations on both sides of the membrane. The other options do not accurately capture the essence of osmosis. The first choice refers to the movement of solutes, which is different from osmosis, as osmosis is concerned with water. The third option mentions the random movement of liquid molecules, which is a general description of molecular motion but does not specifically relate to the directed movement of water in response to solute concentrations. The last choice discusses the influx of ions, which while important in cell function, is unrelated to the definition of osmosis.

7. Which category of genetic information serves as a unit of heredity?

- A. Chromosome
- B. Protein
- C. Gene**
- D. Amino acid

A gene is the correct answer because it serves as the fundamental unit of heredity. Genes are segments of DNA that carry the instructions for making proteins, which ultimately determine the traits and characteristics of an organism. Each gene is responsible for a specific function or trait, such as eye color, hair texture, or the ability to metabolize certain substances. Chromosomes are structures within cells that contain many genes, but they are not the basic unit of heredity themselves. Instead, they serve as the container that organizes and carries genes. Proteins, while essential for various functions in the body and made based on gene instructions, do not themselves carry hereditary information. Amino acids are the building blocks of proteins, but they do not contain genetic information either. Thus, while all the other options are related to genetics, only a gene directly serves as a unit of heredity.

8. Which process describes the conversion of DNA information into protein?

- A. Gene replication
- B. Gene translation
- C. Gene expression**
- D. Gene transcription

The conversion of DNA information into protein is best described as gene expression. This is a broad term that encompasses both transcription and translation, the two key processes involved in synthesizing proteins from genetic information. During gene expression, the information encoded in a gene is first transcribed from DNA to messenger RNA (mRNA) in the nucleus. This process is known as transcription. After transcription, the mRNA molecule is then translated into a specific sequence of amino acids, forming a protein, through the mechanism of translation that occurs in the cytoplasm, typically at ribosomes. Selecting gene expression reflects an understanding that it includes the entire pathway through which the genetic code leads to protein formation, rather than isolating just one part of the process, such as transcription or translation.

9. Which of the following variables is always kept consistent throughout an experiment?

- A. Independent Variable
- B. Dependent Variable
- C. Control Variable**
- D. Constant Variable

The correct response is the control variable. A control variable is any factor that is kept constant throughout an experiment to ensure that the results are due to the manipulation of the independent variable, rather than the influence of other changing factors. By maintaining control variables, an experimenter can isolate the effects of the independent variable on the dependent variable, which is what is being measured or observed. This consistent management of control variables helps enhance the reliability and validity of the experimental results. In contrast, the independent variable is the factor that is purposely changed or manipulated during the experiment, while the dependent variable represents the outcome that is measured. The term "constant variable" can also be synonymous with control variable in some contexts, but it is not a standard term used in scientific literature, which may lead to confusion. Therefore, the focus on control variables as those factors that must remain consistent is essential for maintaining the integrity of an experiment.

10. Which of the following terms refers to organisms within a taxonomic category?

A. Phylogeny

B. Taxa

C. Families

D. Species

The term "taxa" refers to groups of organisms that are classified within a specific taxonomic category. This classification system is used in biology to organize and categorize the diverse array of life forms based on shared characteristics and evolutionary relationships. Taxa can encompass a wide range of hierarchical levels, from broad categories such as domains and kingdoms to more specific ones like families, genera, and species. By categorizing organisms into taxa, biologists can more easily study, communicate, and understand the relationships among different groups of organisms. In contrast, phylogeny specifically relates to the evolutionary history and relationships among species, families, or other taxonomic categories. Families refer specifically to a higher taxonomic rank that groups related genera, and species is the most specific rank that identifies individual organisms capable of interbreeding. Hence, while families and species are types of taxa, "taxa" is the overarching term that encompasses all organisms within a taxonomic category.

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://vabiologysol.examzify.com>

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

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