

# Penn Foster Biology - The Cell Practice Test (Sample)

## Study Guide



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

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**SAMPLE**

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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. Where can keratin be found in humans?**
  - A. In blood plasma**
  - B. In hair and fingernails**
  - C. In bones and muscles**
  - D. In the respiratory system**
- 2. What is taxonomy?**
  - A. The science of animal behavior**
  - B. The scientific study of how living things are classified**
  - C. The study of biochemical processes in living organisms**
  - D. The examination of ecosystems and their components**
- 3. What is the correct order of classification categories from least to most inclusive?**
  - A. Species, Genus, Family, Order, Class, Phylum, Kingdom, Domain**
  - B. Kingdom, Phylum, Class, Order, Family, Genus, Species**
  - C. Domain, Kingdom, Phylum, Class, Order, Family, Genus, Species**
  - D. Species, Class, Phylum, Order, Kingdom, Family, Genus, Domain**
- 4. What does the structure of the cell wall provide?**
  - A. Energy production**
  - B. Support and shape to the cell**
  - C. Movement of substances**
  - D. Protein synthesis**
- 5. What is the function of ribosomes in a cell?**
  - A. Synthesis of lipids**
  - B. Production of ATP**
  - C. Production of proteins**
  - D. Modification of DNA**

- 6. What role does density variation play in aquatic environments?**
- A. It allows different species to access food**
  - B. It affects the layering of water bodies, influencing temperature and oxygen distribution**
  - C. It determines the salt concentration**
  - D. It affects the movement of aquatic animals**
- 7. What process converts glucose into pyruvate?**
- A. Photolysis**
  - B. Glycolysis**
  - C. Cellular respiration**
  - D. Krebs cycle**
- 8. What is the primary function of a flagellum?**
- A. Absorption of nutrients**
  - B. Propulsion of the cell**
  - C. Formation of cellular structures**
  - D. Replicating DNA**
- 9. What structure selectively allows substances to pass into and out of the cell?**
- A. Cell wall**
  - B. Nucleus**
  - C. Ribosome**
  - D. Cell membrane**
- 10. How is a molecule defined in biology?**
- A. A single atom of an element**
  - B. The union of two or more atoms of the same or different elements**
  - C. A structure made up of cells**
  - D. The smallest unit of a compound**



## **Answers**

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

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## **Explanations**

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## 1. Where can keratin be found in humans?

- A. In blood plasma
- B. In hair and fingernails**
- C. In bones and muscles
- D. In the respiratory system

Keratin is a type of fibrous protein that plays a crucial role in providing structure and protection to various tissues in the body. It is most notably found in hair, nails, and the outer layer of skin. This protein is responsible for the strength and resilience of these structures, making option B the correct choice. Keratin helps form the protective barrier that prevents damage from environmental factors, such as physical abrasion and pathogens. In hair, keratin provides the necessary strength and flexibility, while in fingernails, it contributes to their hardness and durability. The other options do not appropriately represent locations where keratin is found. Blood plasma contains a variety of proteins, but keratin is not one of them. Bones and muscles consist primarily of collagen and other proteins, rather than keratin. Lastly, while the respiratory system has various proteins and tissues, it does not typically involve keratin in its structures. This makes the identification of hair and fingernails as the primary sites of keratin accumulation accurate and supported by its biological function.

## 2. What is taxonomy?

- A. The science of animal behavior
- B. The scientific study of how living things are classified**
- C. The study of biochemical processes in living organisms
- D. The examination of ecosystems and their components

Taxonomy is the scientific study of how living things are classified, which is vital for organizing the vast diversity of life on Earth. This classification system helps scientists communicate about different species and understand the evolutionary relationships among them. Taxonomy involves the identification, naming, and categorization of organisms into a systematic framework, allowing for easier study and understanding of biological relationships. For example, through taxonomy, organisms are grouped into hierarchical categories such as domain, kingdom, phylum, class, order, family, genus, and species. This classification is based on shared characteristics, genetic information, and evolutionary history, which makes it foundational for various biological sciences. By contrast, the other options refer to different fields of study. Animal behavior focuses on the interactions and behaviors of animals; biochemical processes relate to the chemical reactions and molecular mechanisms within living organisms, and ecosystem examination pertains to the study of interactions within ecological communities and their environments.

**3. What is the correct order of classification categories from least to most inclusive?**

- A. Species, Genus, Family, Order, Class, Phylum, Kingdom, Domain**
- B. Kingdom, Phylum, Class, Order, Family, Genus, Species**
- C. Domain, Kingdom, Phylum, Class, Order, Family, Genus, Species**
- D. Species, Class, Phylum, Order, Kingdom, Family, Genus, Domain**

The correct order of classification categories from least to most inclusive is Domain, Kingdom, Phylum, Class, Order, Family, Genus, Species. This hierarchy reflects the levels of biological classification that are used to organize living organisms based on their evolutionary relationships and characteristics. In this classification system, species represent the most specific and least inclusive category, referring to individual organisms that can interbreed. As you move up the hierarchy, each successive category encompasses a broader range of organisms. For example, a genus includes multiple species that share common characteristics, while a family groups together related genera. This trend continues all the way up to domain, which is the highest, most inclusive level that categorizes life into three main domains: Archaea, Bacteria, and Eukarya. The other options list categories in incorrect sequences or mix levels of classification that do not follow the established hierarchy. Understanding this classification system is crucial for studying biology, as it helps scientists communicate about organisms and understand their relationships within the tree of life.

**4. What does the structure of the cell wall provide?**

- A. Energy production**
- B. Support and shape to the cell**
- C. Movement of substances**
- D. Protein synthesis**

The structure of the cell wall primarily provides support and shape to the cell. In plant cells, fungi, and many prokaryotes, the cell wall is a rigid exterior that surrounds the cell membrane, helping to maintain the integrity and stability of the cell. This rigidity helps the cell withstand internal pressure, preventing it from bursting in hypotonic environments, and also gives cells their characteristic shapes, which can be crucial for the overall architecture of tissues in multicellular organisms. This structural function is fundamental to the organism's ability to optimize its biological functions and interact with its environment.

## 5. What is the function of ribosomes in a cell?

- A. Synthesis of lipids
- B. Production of ATP
- C. Production of proteins**
- D. Modification of DNA

Ribosomes play a crucial role in the cellular process known as protein synthesis. They are the sites where the translation of messenger RNA (mRNA) occurs, leading to the assembly of amino acids into polypeptide chains, which then fold into functional proteins. This process is fundamental for a variety of cellular functions, including the formation of enzymes, structural components, and signaling molecules that are vital for cell operations and overall functioning of an organism. Synthesis of lipids and production of ATP are typically carried out by other specific cellular structures, such as the smooth endoplasmic reticulum for lipids and mitochondria for ATP. Modifying DNA is primarily the role of various enzymes during processes like replication and transcription, which occurs in the nucleus. Thus, the production of proteins is distinctly identified as the primary function of ribosomes.

## 6. What role does density variation play in aquatic environments?

- A. It allows different species to access food
- B. It affects the layering of water bodies, influencing temperature and oxygen distribution**
- C. It determines the salt concentration
- D. It affects the movement of aquatic animals

Density variation in aquatic environments is crucial for influencing the layering of water bodies, which, in turn, affects temperature and oxygen distribution. In aquatic systems, denser water tends to sink, while less dense water remains above it. This phenomenon leads to the establishment of various layers, known as stratification, where different physical and chemical conditions prevail in each layer due to varying temperatures and solute concentrations. For instance, in a stratified lake, the surface layer (epilimnion) is usually warmer and less dense, while the deeper layer (hypolimnion) is colder and denser. This temperature gradient results in differences in oxygen levels, with the surface layer generally being more oxygen-rich due to direct exposure to the atmosphere and photosynthesis by aquatic plants. In contrast, the bottom layer may become depleted in oxygen over time, especially if decomposition processes are taking place. This stratification significantly impacts aquatic life, as different organisms might prefer specific temperature ranges and oxygen levels, thereby influencing their distribution and behavior within the ecosystem. Hence, understanding density variation is vital for grasping how energy flows and nutrients circulate in aquatic environments, ultimately contributing to the health and balance of these ecosystems.

## 7. What process converts glucose into pyruvate?

- A. Photolysis
- B. Glycolysis**
- C. Cellular respiration
- D. Krebs cycle

The process that converts glucose into pyruvate is glycolysis. Glycolysis is a series of enzymatic reactions that occur in the cytoplasm of the cell, where one molecule of glucose (a six-carbon sugar) is broken down into two molecules of pyruvate (a three-carbon compound). This process is anaerobic, meaning it does not require oxygen, and is the first step in both aerobic and anaerobic respiration. During glycolysis, glucose undergoes a series of transformations, requiring an investment of energy (in the form of ATP) in the initial steps, followed by subsequent steps that generate a net gain of ATP and NADH (involved in further energy production). As a result, glycolysis is a critical pathway for cellular energy production and metabolic processes. The other processes mentioned are distinct from glycolysis. Photolysis refers to the breakdown of molecules using light energy, often seen in photosynthesis. Cellular respiration encompasses the entire process of breaking down glucose for energy, which includes glycolysis as its first step, followed by the Krebs cycle and oxidative phosphorylation. The Krebs cycle specifically occurs after glycolysis and further processes acetyl-CoA derived from pyruvate, but it does not convert glucose into pyruvate directly. Thus,

## 8. What is the primary function of a flagellum?

- A. Absorption of nutrients
- B. Propulsion of the cell**
- C. Formation of cellular structures
- D. Replicating DNA

The primary function of a flagellum is propulsion of the cell. Flagella are long, whip-like structures that extend from the cell body and are used by many types of cells, including sperm cells and certain bacteria, to move through liquid environments. The movement generated by the flagellum allows these cells to swim, facilitating processes such as finding food, escaping predators, or reaching specific environments necessary for survival and reproduction. In contrast, the other options pertain to different cellular functions not associated with the role of flagella. Absorption of nutrients involves cellular structures such as membranes and specialized transport proteins. Formation of cellular structures can refer to processes involving the cytoskeleton or organelles, which build and maintain the physical structure of the cell. Replicating DNA is a process carried out by enzymes during cell division and does not involve flagella. Therefore, the propulsion function of flagella is distinctive and essential for the motility of various cell types.

**9. What structure selectively allows substances to pass into and out of the cell?**

- A. Cell wall
- B. Nucleus
- C. Ribosome
- D. Cell membrane**

The cell membrane, also known as the plasma membrane, plays a critical role in maintaining the internal environment of the cell by selectively allowing substances to pass in and out. This structure is primarily composed of a phospholipid bilayer embedded with proteins that facilitate various functions, including transport. The selective permeability of the cell membrane is essential for regulating the movement of ions, nutrients, and waste products, ensuring that the cell maintains homeostasis. The proteins within the cell membrane serve as channels or carriers that facilitate the movement of specific molecules, while the lipid bilayer acts as a barrier to most water-soluble substances. This selective nature ensures that essential compounds can enter the cell while preventing harmful substances from entering and allowing waste products to exit efficiently. In contrast, the cell wall, found in plants, fungi, and bacteria, provides structural support and protection but is not involved in selective transport. The nucleus houses genetic material and is not involved in transport functions. Ribosomes are responsible for protein synthesis and also do not play a role in substance transport across the cell membrane. Thus, the cell membrane is the correct answer as it is responsible for the selective passage of substances in and out of the cell.

**10. How is a molecule defined in biology?**

- A. A single atom of an element
- B. The union of two or more atoms of the same or different elements**
- C. A structure made up of cells
- D. The smallest unit of a compound

In biology, a molecule is defined as the union of two or more atoms, which can be of the same element or different elements. This definition is critical because molecules are the fundamental building blocks of biological compounds, including proteins, lipids, carbohydrates, and nucleic acids. These molecules define the chemical properties and functions of biological systems. For instance, water is a molecule consisting of two hydrogen atoms and one oxygen atom, while glucose is made up of carbon, hydrogen, and oxygen atoms. The interactions and arrangements of these atoms within a molecule dictate its behavior in biological processes, such as metabolism, genetics, and cellular structure. Understanding this definition helps students grasp the molecular composition of living organisms and the biochemical reactions that support life. In contrast, a single atom describes an individual unit of an element, while a structure made up of cells pertains to larger biological entities, such as tissues and organs, and the smallest unit of a compound may not encapsulate the broader union of different atomic structures that define molecules.



## 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://pennfosterbiothecell.examzify.com>**

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