

# ONRAMPS BIOLOGY PRACTICE TEST (SAMPLE)

## STUDY GUIDE



## SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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THE FULL VERSION STUDY GUIDE

<https://onrampsbiology.examzify.com>



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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 best summarizes the main cellular difference between prokaryotes and eukaryotes?**

- A. Prokaryotes have a nucleus; eukaryotes do not.
- B. Eukaryotes lack ribosomes.
- C. Prokaryotes lack a nucleus and membrane-bound organelles, while eukaryotes have both.
- D. Both types have mitochondria.

**2. Which scenario best illustrates rotational kinetic energy?**

- A. A wheel spinning
- B. A car driving in a straight line
- C. A ball rolling
- D. A person running

**3. Polysaccharides are which of the following?**

- A. Carbohydrate polymers formed by dehydration synthesis that attach many monosaccharides together
- B. Single sugar molecules
- C. Enzymes that break down fats
- D. A type of lipid

**4. Which statement best distinguishes genotype from phenotype?**

- A. Genotype is the observable traits; phenotype is the genetic makeup.
- B. Genotype is the genetic makeup; phenotype is the observable traits resulting from genotype and environment.
- C. Both refer to environmental effects.
- D. Genotype is the set of proteins; phenotype is the set of lipids.

**5. Which of the following is a type of kinetic energy?**

- A. Elastic
- B. Gravitational
- C. Translational
- D. Chemical

**6. Which statement best describes diffusion in the respiratory system?**

- A. Oxygen diffuses from blood into alveoli due to higher PO<sub>2</sub> in blood.
- B. Oxygen diffuses from alveoli into blood due to higher PO<sub>2</sub> in alveoli.
- C. Diffusion is not involved; active transport drives gas exchange.
- D. Carbon dioxide diffuses from alveoli into blood because CO<sub>2</sub> is more abundant there.

**7. What determines bond polarity?**

- A. The number of electrons in the bond
- B. Difference in electronegativity
- C. The molecular geometry
- D. The atomic mass of the atoms

**8. In the carbon cycle, carbon dioxide is removed from the atmosphere primarily by which process?**

- A. Photosynthesis
- B. Respiration
- C. Combustion of fossil fuels
- D. Decomposition

**9. Which polymer stores energy in plants?**

- A. Starch
- B. Glycogen
- C. Cellulose
- D. Chitin

**10. Explain ecological succession and differentiate primary versus secondary succession with examples.**

- A. Primary begins with bare substrate; Secondary begins after a disturbance that leaves soil.
- B. Secondary begins on bare rock with no soil; Primary begins on soil.
- C. Secondary succession occurs after a disturbance with soil and seeds present.
- D. Primary and secondary succession occur in the same environmental conditions.

## **Answers**

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

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## **Explanations**

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**1. What best summarizes the main cellular difference between prokaryotes and eukaryotes?**

- A. Prokaryotes have a nucleus; eukaryotes do not.
- B. Eukaryotes lack ribosomes.
- C. Prokaryotes lack a nucleus and membrane-bound organelles, while eukaryotes have both.**
- D. Both types have mitochondria.

*The key difference is how the cell organizes its interior: eukaryotic cells keep their DNA in a nucleus and have membrane-bound organelles that compartmentalize different functions, while prokaryotic cells lack a nucleus and membrane-bound compartments. Prokaryotes still have DNA, but it's not enclosed in a nucleus, and their internal structure isn't divided by membranes the way eukaryotes are. Both types have ribosomes to make proteins, but only eukaryotes have the nucleus and other membrane-bound organelles like mitochondria. So the best summary is that prokaryotes lack a nucleus and membrane-bound organelles, while eukaryotes have both.*

**2. Which scenario best illustrates rotational kinetic energy?**

- A. A wheel spinning**
- B. A car driving in a straight line
- C. A ball rolling
- D. A person running

*Rotational kinetic energy is the energy an object has due to spinning around an axis, depending on how fast it spins and how its mass is distributed. A wheel spinning in place shows energy stored purely in rotation about its axis, with no need for forward motion. The wheel's angular velocity and its moment of inertia determine how much energy is in that rotation. In contrast, a car moving straight primarily has translational kinetic energy from linear motion; a ball rolling has both rotational and translational energy because it spins while moving forward; a person running mainly involves translational energy of the body's movement. So the wheel spinning best illustrates rotational kinetic energy.*

**3. Polysaccharides are which of the following?**

- A. Carbohydrate polymers formed by dehydration synthesis that attach many monosaccharides together**
- B. Single sugar molecules
- C. Enzymes that break down fats
- D. A type of lipid

*Polysaccharides are carbohydrate polymers formed by dehydration synthesis that attach many monosaccharides together. In this process, sugar units are linked by covalent bonds called glycosidic bonds, with a water molecule removed each time a new unit joins the chain. This long, repeating sugar backbone explains their functions: they can store energy, as starch in plants or glycogen in animals, or provide structural support, as cellulose in plants and chitin in some animals. They're not single sugar units—that would be monosaccharides—nor enzymes that break down fats, and they aren't lipids.*

#### 4. Which statement best distinguishes genotype from phenotype?

- A. Genotype is the observable traits; phenotype is the genetic makeup.
- B. Genotype is the genetic makeup; phenotype is the observable traits resulting from genotype and environment.
- C. Both refer to environmental effects.**
- D. Genotype is the set of proteins; phenotype is the set of lipids.

*Genotype is the genetic makeup—the specific alleles an organism carries. Phenotype is what you can observe—the traits that result from how those genes are expressed, which is influenced by the environment. So the best statement captures that distinction: genotype = genetic information, phenotype = observable traits shaped by both genes and environment. For example, the same genetic potential for height can be realized differently depending on nutrition and health during development. The idea that both refer to environmental effects, or that genotype means observable traits, or that genotype is a set of proteins, doesn't fit how genotype and phenotype are defined.*

#### 5. Which of the following is a type of kinetic energy?

- A. Elastic
- B. Gravitational
- C. Translational**
- D. Chemical

*Kinetic energy is the energy of motion. When an object moves through space, its motion of the entire body, or the translation of its center of mass, constitutes translational kinetic energy. This form of energy increases with both mass and speed, shown by the formula  $\frac{1}{2} m v^2$ . The other terms describe stored or potential energy: elastic energy comes from deforming a material, gravitational energy (often called gravitational potential energy) depends on height in a gravitational field, and chemical energy is stored in bonds within molecules. So the energy tied directly to motion through space is translational kinetic energy.*

#### 6. Which statement best describes diffusion in the respiratory system?

- A. Oxygen diffuses from blood into alveoli due to higher PO<sub>2</sub> in blood.
- B. Oxygen diffuses from alveoli into blood due to higher PO<sub>2</sub> in alveoli.**
- C. Diffusion is not involved; active transport drives gas exchange.
- D. Carbon dioxide diffuses from alveoli into blood because CO<sub>2</sub> is more abundant there.

*Gas exchange in the lungs happens by diffusion across the thin respiratory membrane, driven by differences in partial pressures. In the alveoli, the oxygen partial pressure is higher than in the blood arriving in the pulmonary capillaries, so oxygen moves down its gradient from alveoli into the blood. That's why the statement describing oxygen diffusing from alveoli into blood because the alveolar PO<sub>2</sub> is higher is the best description. The process is passive—not active transport—and carbon dioxide, which is more abundant in blood than in alveolar air, diffuses in the opposite direction (from blood into the alveoli) to be exhaled. The other options misstate the direction of the gradient or claim diffusion is not involved.*

## 7. What determines bond polarity?

- A. The number of electrons in the bond
- B. Difference in electronegativity**
- C. The molecular geometry
- D. The atomic mass of the atoms

*Bond polarity comes from how differently two atoms attract bonding electrons. The key idea is electronegativity—the tendency of an atom to pull shared electrons toward itself. When two atoms in a bond have different electronegativities, the more electronegative atom hogs the electron density a bit, creating a dipole with a partial negative charge on that atom and a partial positive charge on the other. That unequal sharing makes the bond polar. If the atoms have similar electronegativities, the electrons are shared more evenly, giving a nonpolar bond. If the difference is very large, the bond can be treated as ionic, with electrons effectively transferred rather than shared. So the deciding factor for bond polarity is the difference in electronegativity, not the number of electrons in the bond, the molecule's shape, or the atoms' masses.*

## 8. In the carbon cycle, carbon dioxide is removed from the atmosphere primarily by which process?

- A. Photosynthesis**
- B. Respiration
- C. Combustion of fossil fuels
- D. Decomposition

*Photosynthesis pulls carbon dioxide out of the air by using light energy to convert CO<sub>2</sub> and water into organic sugars in plants and algae. This locks carbon into plant biomass and soil, acting as a major removal (or sink) of atmospheric CO<sub>2</sub> in the carbon cycle. The other processes add CO<sub>2</sub> back to the atmosphere: respiration releases CO<sub>2</sub> when organisms metabolize sugars, combustion of fossil fuels releases stored carbon as CO<sub>2</sub>, and decomposition returns carbon to the air as CO<sub>2</sub> (and methane) as organisms break down. So the primary way atmospheric CO<sub>2</sub> is removed is through photosynthesis.*

## 9. Which polymer stores energy in plants?

- A. Starch**
- B. Glycogen
- C. Cellulose
- D. Chitin

*Plants store energy as starch, a glucose polymer kept in plastids like amyloplasts. When energy is needed, enzymes break starch into glucose to fuel cellular processes. Starch is made of two types of glucose links: mostly linear amylose and branched amylopectin, which lets plants pack energy efficiently in seeds, roots, and storage organs. This contrasts with cellulose, which uses different bonds to form rigid fibers for strong cell walls and isn't an energy reserve, or with chitin, a structural polymer in fungi and arthropods. Glycogen, on the other hand, serves as the storage form of glucose in animals and fungi, not plants. So starch is the appropriate energy-storage polymer in plants.*

**10. Explain ecological succession and differentiate primary versus secondary succession with examples.**

- A. Primary begins with bare substrate; Secondary begins after a disturbance that leaves soil.
- B. Secondary begins on bare rock with no soil; Primary begins on soil.
- C. Secondary succession occurs after a disturbance with soil and seeds present.
- D. Primary and secondary succession occur in the same environmental conditions.

*Ecological succession is the gradual change in which species colonize and modify an environment over time, leading to a more complex and stable ecosystem. Primary succession starts on bare substrate with no soil, like newly formed lava rock or ground exposed by retreating glaciers. Pioneer organisms such as lichens and mosses are the first to colonize, begin the process of soil formation from weathering and organic material, and over time grasses, shrubs, and then trees establish. Secondary succession happens after a disturbance that leaves soil (and often some seed bank or roots) in place, such as a forest fire, flood, hurricane, or abandoned farmland. Because soil remains, recolonization proceeds more quickly, with grasses and herbaceous plants appearing first, followed by shrubs and then a more mature forest. The main difference is the starting condition: primary begins on bare ground without soil, while secondary follows a disturbance that leaves soil intact. They describe the same broad process, just beginning under different substrate conditions.*

## 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://onrampsbiology.examzify.com>

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

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