Biology Marking Period 2 Test Practice (Sample)

Study Guide

Everything you need from our exam experts!

Table of Contents

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. Which organelle is responsible for carrying out photosynthesis in plant cells?

A. Mitochondria

B. Nucleus

C. Ribosomes

D. Chloroplasts

2. What does biodiversity mean?

A. The number of ecosystems in a region.

B. The rate of photosynthesis in a forest.

C. The variety of life in an area, including variability within species and between species.

D. The growth rate of a population.

3. Three stages of cellular respiration and which yields the most ATP?

A. Glycolysis, Krebs cycle, and electron transport chain; the electron transport chain yields the most ATP.

B. Fermentation, glycolysis, and photosynthesis; glycolysis yields the most ATP.

C. Glycolysis, beta-oxidation, and electron transport chain; beta-oxidation yields the most ATP.

D. Glycolysis, Krebs cycle, and fermentation; Krebs cycle yields the most ATP.

4. Which macromolecule contains the most C-C bonds?

A. Lipids

B. Carbohydrates

C. Proteins

D. Nucleic Acids

5. What is a polar covalent bond?

A. A polar covalent bond forms when electrons are shared unequally between two atoms due to different electronegativities.

B. A polar covalent bond is formed when electrons are transferred from one atom to another.

C. A polar covalent bond involves sharing electrons equally.

D. A polar covalent bond only occurs between hydrogen atoms.

6. Which statement best differentiates polar covalent bonds from nonpolar covalent bonds?

A. Polar covalent bonds have equal electron attraction; nonpolar have unequal.

B. Polar covalent bonds have unequal electron attraction; nonpolar have equal.

C. Polar covalent bonds involve electron transfer; nonpolar involve sharing only.

D. Polar covalent bonds are always stronger than ionic bonds.

7. Which statement best defines parasitism?

A. Neither organism benefits

B. One organism benefits and the other is harmed

C. One organism benefits, the other unaffected

D. Both organisms benefit

8. What is the function of DNA polymerase?

A. It synthesizes new DNA strands by adding nucleotides and also proofreads.

B. It unzips the DNA double helix.

C. It transcribes RNA from DNA.

D. It degrades damaged DNA.

9. Fill in the blank: Energy is _____ causing a bond.

A. introduced

B. released

C. consumed

D. stored

10. What adaptations do herbivores receive for their diet?

A. Complex and long intestines and large cecum

B. Short intestines

C. Small stomach

D. No cecum

Answers

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

Explanations

1. Which organelle is responsible for carrying out photosynthesis in plant cells?

A. Mitochondria

B. Nucleus

C. Ribosomes

D. Chloroplasts

Photosynthesis is carried out by chloroplasts, the green organelles in plant cells that contain chlorophyll to capture light energy. Inside chloroplasts, light energy is used in the thylakoid membranes to generate ATP and NADPH, which then power the Calvin cycle in the stroma to fix carbon dioxide into sugars. This ability to convert light energy into chemical energy is what makes chloroplasts the site of photosynthesis. Mitochondria are the energy producers through cellular respiration, the nucleus houses genetic information and controls activities, and ribosomes synthesize proteins—none of these perform photosynthesis.

2. What does biodiversity mean?

A. The number of ecosystems in a region.

B. The rate of photosynthesis in a forest.

C. The variety of life in an area, including variability within species and between species.

D. The growth rate of a population.

Biodiversity refers to the variety of life in an area, spanning genetic diversity within species, the number of different species, and the variety of ecosystems. This means it includes genetic variation in a population, how many species are present, and the range of habitats that support different communities. If you focus only on how many ecosystems exist, you're looking at ecosystem diversity, which is part of biodiversity but not the whole idea. The rate of photosynthesis is about a plant's energy conversion, not how many kinds of life exist. The growth rate of a population is about how a single population changes over time, not the overall diversity of life. So the best description is the variety of life in an area, including variability within species and between species.

3. Three stages of cellular respiration and which yields the most ATP?

A. Glycolysis, Krebs cycle, and electron transport chain; the electron transport chain yields the most ATP.

B. Fermentation, glycolysis, and photosynthesis; glycolysis yields the most ATP.

C. Glycolysis, beta-oxidation, and electron transport chain; beta-oxidation yields the most ATP.

D. Glycolysis, Krebs cycle, and fermentation; Krebs cycle yields the most ATP.

Energy production across cellular respiration happens in three stages: glycolysis, the Krebs cycle, and the electron transport chain. Among these, the electron transport chain yields the most ATP. Glycolysis occurs in the cytoplasm and makes a small amount of ATP plus NADH. The Krebs cycle, inside mitochondria, generates a bit more ATP and additional NADH and FADH2. The heavy lifting comes from the electron transport chain, where NADH and FADH2 donate electrons to pumps that build a proton gradient. ATP synthase uses that gradient to produce a large amount of ATP—roughly 26–28 ATP from NADH/FADH2, adding up to around 30–32 ATP per glucose in many cells. So, while the first two stages contribute energy, the electron transport chain is the main source of ATP. The other processes mentioned aren't stages of cellular respiration. Fermentation happens when oxygen is scarce and yields far less ATP. Photosynthesis is the process of building sugars using light, not energy production in respiration. Beta-oxidation feeds fatty acids into metabolism but isn't listed as one of the three respiration stages.

4. Which macromolecule contains the most C-C bonds?

A. Lipids

B. Carbohydrates

C. Proteins

D. Nucleic Acids

Carbon–carbon bonds are most abundant in molecules that have long chains of carbon atoms. Lipids, especially triglycerides with three long fatty acid tails, contain extensive hydrocarbon chains where carbon atoms are connected primarily by C–C bonds. Those chains contribute a huge number of C–C bonds to a single molecule. Carbohydrates are built from sugar units that bring many C–O–C linkages in the repeating units, and while their rings do include C–C bonds within the carbon skeleton, the backbone is interspersed with oxygen linkages, so the overall count of C–C bonds is not as high as in lipids. Proteins have a backbone with peptide bonds (C–N) and side chains that add some C–C bonds, but they don't feature the lengthy hydrocarbon tails that lipids do. Nucleic acids have a sugar-phosphate backbone with several heteroatom connections (oxygen and phosphorus) and the bases add other bonds, so the dominant C–C bonding is less extensive than in lipids. Thus, lipids contain the most C–C bonds due to their long hydrocarbon chains.

5. What is a polar covalent bond?

A. A polar covalent bond forms when electrons are shared unequally between two atoms due to different electronegativities.

B. A polar covalent bond is formed when electrons are transferred from one atom to another.

C. A polar covalent bond involves sharing electrons equally.

D. A polar covalent bond only occurs between hydrogen atoms.

A polar covalent bond happens when two atoms share electrons, but not equally. One atom has a stronger pull on the shared electrons because of a higher electronegativity, so the electrons spend more time near that atom. This creates a partial negative charge on the more electronegative atom and a partial positive charge on the other, giving the bond a dipole. This is different from an ionic bond, where electrons are transferred from one atom to another, creating charged ions. It's also different from a nonpolar covalent bond, where the electrons are shared evenly because the atoms have similar electronegativities. Polar covalent bonds can form between many different elements, not just hydrogen.

6. Which statement best differentiates polar covalent bonds from nonpolar covalent bonds?

A. Polar covalent bonds have equal electron attraction; nonpolar have unequal.

B. Polar covalent bonds have unequal electron attraction; nonpolar have equal.

C. Polar covalent bonds involve electron transfer; nonpolar involve sharing only.

D. Polar covalent bonds are always stronger than ionic bonds.

Electrons shared in covalent bonds can be shared equally or unequally depending on the atoms' electronegativities. When the two atoms have similar electronegativities, the shared electrons spend roughly the same time around each nucleus, producing a nonpolar covalent bond with no significant charge separation. When the atoms have different electronegativities, the more electronegative atom pulls the shared electrons closer, creating a polar covalent bond with a partial negative charge on that atom and a partial positive charge on the other. The statement that polar covalent bonds involve unequal electron sharing while nonpolar covalent bonds involve equal sharing captures this distinction. The other options mix in concepts that don't differentiate these two types: one suggests electron transfer (that would describe ionic bonds, not covalent sharing), and another claims polar covalent bonds are always stronger than ionic bonds (bond strength varies and isn't the defining difference between polar and nonpolar covalent bonds). Examples help: H–Cl is polar because Cl pulls electron density toward itself; O2 or N2 are nonpolar because the atoms share electrons evenly.

7. Which statement best defines parasitism?

A. Neither organism benefits

B. One organism benefits and the other is harmed

C. One organism benefits, the other unaffected

D. Both organisms benefit

Parasitism is a relationship in which one organism gains resources or benefits at the expense of another organism. The parasite relies on the host for things like nutrients, shelter, or transport, and the host is harmed in the process, which can range from mild to serious disease or reduced fitness. This concept is different from mutualism, where both organisms benefit (like pollinators and flowers), and from commensalism, where one benefits while the other is largely unaffected. So the statement that best defines parasitism is that one organism benefits and the other is harmed. For example, a tapeworm living in the intestines steals nutrients from the host, causing harm to the host.

8. What is the function of DNA polymerase?

A. It synthesizes new DNA strands by adding nucleotides and also proofreads.

B. It unzips the DNA double helix.

C. It transcribes RNA from DNA.

D. It degrades damaged DNA.

DNA polymerase builds new DNA strands by adding nucleotides to a growing chain using the template strand, and it also proofreads to correct mistakes. It works in the 5' to 3' direction, extending the new strand from a primer and ensuring high fidelity through a 3' to 5' exonuclease proofreading activity. This combination of synthesis and error-correction is why it's the enzyme responsible for accurate genome replication. It doesn't unzip the DNA double helix (that's helicase), it doesn't transcribe RNA from DNA (that's RNA polymerase), and it doesn't degrade damaged DNA (that role is filled by repair enzymes).

9. Fill in the blank: Energy is _____ causing a bond.

A. introduced

B. released

C. consumed

D. stored

When atoms bond, they settle into a lower-energy, more stable arrangement. That decrease in potential energy is released to the surroundings as heat or light, which is why forming bonds is exothermic. So energy is released causing a bond. The other ideas—adding energy to form the bond, consuming energy, or storing it—don't describe how bond formation typically works, where the system gives off energy as the new bond is created.

10. What adaptations do herbivores receive for their diet?

A. Complex and long intestines and large cecum

B. Short intestines

C. Small stomach

D. No cecum

Herbivores rely on microbes in their gut to break down the tough cellulose found in plant material. That microbial fermentation happens best when the digestive tract is long and complex, giving microbes more time and surface area to work and allowing the animal to absorb the resulting fatty acids for energy. A large cecum (and, in some herbivores, a multi-chambered stomach) serves as a dedicated fermentation chamber, enabling efficient fiber digestion. Short intestines, a small stomach, or lacking a cecum would limit the capacity for this microbial fermentation and fiber breakdown, making it harder for herbivores to extract energy from plants.

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://biologymarkingperiod2.examzify.com

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