HONORS BIOLOGY (HBIO) EVOLUTION PRACTICE EXAM (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

VISIT US ONLINE FOR THE FULL VERSION STUDY GUIDE

https://hbioevolution.examzify.com

Copyright © 2026 by Examzify - A Kaluba Technologies Inc. product.

ALL RIGHTS RESERVED.

No part of this book may be reproduced or transferred in any form or by any means, graphic, electronic, or mechanical, including photocopying, recording, web distribution, taping, or by any information storage retrieval system, without the written permission of the author.

Notice: Examzify makes every reasonable effort to obtain accurate, complete, and timely information about this product from reliable sources.

SAMPLE

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 15

SAMPLE

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.

SAMPLE

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!

SAMPLE

Questions

SAMPLE

1. Which term describes the reduced viability of hybrids due to genetic incompatibilities?

A. Reduced Hybrid Viability

B. Hybrid Breakdown

C. Phylogeny

D. Reduced Hybrid Fertility

2. Which isolation occurs when species occupy different habitats and rarely meet?

A. Prezygotic Barrier

B. Postzygotic Barrier

C. Mechanical Isolation

D. Ecological Isolation

3. How does biogeography support evolution?

A. It shows that all species arose independently.

B. It suggests no relationship between species.

C. Geographic distributions reflect historical connections and barriers, supporting common ancestry and divergence.

D. It disproves natural selection.

4. If natural selection favors one extreme variant, causing a shift in the population's average phenotype over time, this is called?

A. Directional Selection

B. Stabilizing Selection

C. Disruptive Selection

D. Sexual Selection

5. Which kingdom includes simple, mostly single-celled eukaryotes not classified as plants, animals, or fungi?

A. Plantae

B. Protista

C. Animalia

D. Fungi

SAMPLE

6. What do molecular data such as DNA and protein sequences provide for phylogenetics?

A. They reflect relatedness and can be used with molecular clocks to estimate divergence times.

B. They only indicate current physical appearance.

C. They have no relevance to phylogeny.

D. They replace fossil evidence entirely.

7. Which mechanism can contribute to reproductive isolation without geographic separation?

A. Polyploidy leading to instant reproductive isolation

B. Migration of individuals to a new habitat several miles away

C. A neutral mutation with no effect on mating

D. Random mating within the same population

8. What is the process by which a population splits into two or more reproductively isolated groups?

A. Genetic drift

B. Speciation

C. Natural selection

D. Mutation

9. Which of the following is an example of a prezygotic isolation mechanism?

A. Habitat isolation

B. Hybrid inviability

C. Hybrid sterility

D. Hybrid breakdown

10. Which concept describes a pattern where hybrids are viable and fertile, but their offspring are weak or sterile?

A. Phylogeny

B. Reduced Hybrid Viability

C. Hybrid Breakdown

D. Reduced Hybrid Fertility

SAMPLE

Answers

SAMPLE

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

SAMPLE

Explanations

SAMPLE

1. Which term describes the reduced viability of hybrids due to genetic incompatibilities?

A. Reduced Hybrid Viability

B. Hybrid Breakdown

C. Phylogeny

D. Reduced Hybrid Fertility

When two species mix their genes, incompatible interactions between the different genomes can disrupt development or growth, so the offspring fail to survive to reproductive age. This situation is described as reduced hybrid viability (often called hybrid inviability) and it's a form of postzygotic reproductive isolation. In other terms, the hybrid is unable to reach maturity due to genetic incompatibilities. Other outcomes of reproductive isolation exist: reduced hybrid fertility means hybrids survive but are sterile; hybrid breakdown means first-generation hybrids are viable and fertile, but their offspring have lower fitness; and phylogeny refers to the evolutionary relationships among species, not the viability of hybrids.

2. Which isolation occurs when species occupy different habitats and rarely meet?

A. Prezygotic Barrier

B. Postzygotic Barrier

C. Mechanical Isolation

D. Ecological Isolation

When two species live in different habitats within the same area, they rarely encounter each other and thus rarely mate. This is ecological isolation, a prezygotic barrier that reduces gene flow by limiting encounters before any fertilization can occur. It's more specific than the broader prezygotic category because it focuses on where the organisms live and how that limits mating, rather than on when mating occurs or what happens after fertilization. Other barriers describe different ways isolation can arise—mechanical isolation involves incompatible mating structures, and postzygotic barriers affect the viability or fertility of offspring after mating.

3. How does biogeography support evolution?

A. It shows that all species arose independently.

B. It suggests no relationship between species.

C. Geographic distributions reflect historical connections and barriers, supporting common ancestry and divergence.

D. It disproves natural selection.

Biogeography shows how the layout of Earth over time shapes the distribution of life, revealing how populations that are geographically connected or separated share ancestry and then diverge. When groups are split by barriers or when they colonize new regions, they evolve in different directions while still tracing back to common ancestors. That's why geographic patterns align with evolutionary trees: related species tend to be found in related areas, and isolation leads to divergence driven by local selection and drift. For example, Australia's distinct marsupials reflect a long history of separation from other continents, while placental mammals diversified elsewhere after dispersal. Islands like the Galápagos show lineages radiating after reaching new habitats. So the geographic distribution of organisms supports evolution by linking present-day relationships to the historical connections and barriers that shaped their spread. The other ideas—that species arose independently, that there's no relationship, or that natural selection is disproven—don't fit these patterns, since biogeography consistently points to shared ancestry shaped by geographic history.

SAMPLE

4. If natural selection favors one extreme variant, causing a shift in the population's average phenotype over time, this is called?

A. Directional Selection

B. Stabilizing Selection

C. Disruptive Selection

D. Sexual Selection

Directional selection occurs when natural selection favors individuals at one end of the phenotypic spectrum, so the average trait value in the population shifts in that direction over generations. Those at the favored extreme have higher fitness and leave more offspring, pulling the distribution of phenotypes toward that end. Over time the population's mean changes toward the extreme, and genetic variation may decrease as other variants become less common. Classic examples include the shift in peppered moth coloration during industrial pollution or the rise of antibiotic resistance in bacteria. This differs from stabilizing selection, which keeps the mean around a central value and reduces variation without shifting the average, and from disruptive selection, which favors both extremes and can create a bimodal distribution. Sexual selection involves mate choice and can produce its own distinctive patterns, but the described scenario specifically reflects natural selection acting on survival and reproduction to move the mean toward one extreme.

5. Which kingdom includes simple, mostly single-celled eukaryotes not classified as plants, animals, or fungi?

A. Plantae

B. Protista

C. Animalia

D. Fungi

Recognizing organisms that are eukaryotic, often simple and single-celled, but not part of the plant, animal, or fungal lineages. This is why the group Protista fits: it historically served as a catch-all kingdom for diverse eukaryotes that don't share the defining features of plants (multicellular, photosynthetic, cellulose walls), animals (multicellular, ingestive heterotrophs), or fungi (mostly multicellular, absorptive, with chitin walls). Protists can be unicellular or simple colonies and include a range of modes of life, from photosynthetic algae to slime molds and protozoa that ingest nutrients. The other kingdoms describe more tightly linked traits—plants being predominantly photosynthetic, multicellular organisms with cell walls; animals being multicellular and heterotrophic without cell walls; fungi being mostly multicellular absorbers with chitin walls. Because the question targets those simple, mostly single-celled eukaryotes that don't fit the other groups, Protista is the best match.

SAMPLE

6. What do molecular data such as DNA and protein sequences provide for phylogenetics?

A. They reflect relatedness and can be used with molecular clocks to estimate divergence times.

B. They only indicate current physical appearance.

C. They have no relevance to phylogeny.

D. They replace fossil evidence entirely.

DNA and protein sequences carry heritable information that accumulates mutations over evolutionary time. By comparing homologous sequences across species, we can measure how similar or different they are, which reflects their relatedness. Those similarities help build phylogenetic trees that depict evolutionary relationships. The molecular clock idea assumes a relatively steady rate of sequence change, so with a known rate or fossil calibration points, we can estimate when lineages diverged. This makes molecular data powerful for phylogenetics, giving both the pattern of relatedness and an estimate of divergence times. They're not limited to current appearance, and they don't replace fossil evidence entirely; fossils provide independent calibration points and information about extinct lineages, while molecular data complement that evidence.

7. Which mechanism can contribute to reproductive isolation without geographic separation?

A. Polyploidy leading to instant reproductive isolation

B. Migration of individuals to a new habitat several miles away

C. A neutral mutation with no effect on mating

D. Random mating within the same population

Polyploidy can create reproductive isolation without any geographic separation. When an individual ends up with a chromosome number that is a duplicate or otherwise different from the standard set, its gametes won't pair properly with the normal chromosome complement during meiosis. As a result, offspring formed with the original diploid individuals are often sterile or inviable, while individuals with the same altered chromosome number can mate and produce fertile progeny among themselves. This creates a new, reproductively isolated lineage within the same geographic area—a process known as sympatric speciation. The other scenarios involve geographic separation or no effect on mating, so they don't produce isolation within a single location. Migration to a new habitat introduces physical barriers; a neutral mutation that doesn't affect mating won't prevent interbreeding; random mating within the same population maintains gene flow.

8. What is the process by which a population splits into two or more reproductively isolated groups?

A. Genetic drift

B. Speciation

C. Natural selection

D. Mutation

Speciation is the process by which a population splits into two or more reproductively isolated groups. When gene flow between parts of a population is reduced or blocked—often by geographic barriers, or by differences in ecology or behavior—each group begins to evolve independently. Mutations arise, and natural selection and genetic drift shape the separate groups differently, gradually building barriers to interbreeding even if the populations come back into contact. Over time, these reproductive barriers solidify, and the groups become distinct species. Genetic drift, natural selection, and mutation can all contribute to divergence, but speciation is the overarching process that results in reproductively isolated lineages.

SAMPLE

9. Which of the following is an example of a prezygotic isolation mechanism?

A. Habitat isolation

B. Hybrid inviability

C. Hybrid sterility

D. Hybrid breakdown

Prezygotic isolation is about barriers that prevent mating or fertilization from happening in the first place. Habitat isolation fits this, because the populations occupy different environments and rarely encounter each other to mate, reducing gene flow before any fertilization can occur. The other options involve barriers that act after fertilization: hybrids that die or are unable to reproduce (hybrid inviability and hybrid sterility) or hybrids that are viable but have reduced fitness in later generations (hybrid breakdown). So habitat isolation is the best example of a prezygotic mechanism.

10. Which concept describes a pattern where hybrids are viable and fertile, but their offspring are weak or sterile?

A. Phylogeny

B. Reduced Hybrid Viability

C. Hybrid Breakdown

D. Reduced Hybrid Fertility

Hybrids that are viable and fertile, but their offspring are weak or sterile illustrate hybrid breakdown. This pattern is a postzygotic isolating mechanism: the first-generation hybrids can survive and reproduce, but when they mate with each other or backcross to the parent species, the next generation shows reduced viability or infertility. The problems arise from genetic incompatibilities that don't appear in the F1 but show up in F2 or later generations as new allele combinations come together. This helps keep species separate because gene flow is limited by the poor performance of the hybrids' offspring.

SAMPLE

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://hbioevolution.examzify.com

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

SAMPLE