Ontario Grade 11 University Biology Practice Text (Sample)

Study Guide

Everything you need from our exam experts!

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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. Don't worry about getting everything right, 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, and take breaks to retain information better.

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.

7. Use Other Tools

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. What is the smallest blood vessel in the human body?

A. Artery

B. Vein

C. Capillary

D. Venule

2. What term describes a situation where neither allele is dominant?

A. Codominance

B. Genetic Drift

C. Mutation

D. Epistasis

3. What muscular structure plays a key role in the process of breathing?

A. Lungs

B. Diaphragm

C. Sternum

D. Trachea

4. What is referred to as a chromosome that is not a sex chromosome?

A. Autosome

B. Sex chromosome

C. Gamete

D. Chromatid

5. Which term describes a polysaccharide made entirely of glucose units?

A. Cellulose

B. Starch

C. Glycogen

D. Sucrose

6. In asexual reproduction, offspring are typically...

A. Clones of the parent organism

B. Diverse and unique

C. Created through fertilization

D. Dependent on two parent organisms

7. What is the term for the substance upon which an enzyme acts?

A. Reactant

B. Substrate

C. Product

D. Inhibitor

8. What theory explains the evolution of eukaryotic cells from a symbiotic relationship?

A. Mutualism theory

B. Endosymbiosis

C. Cellular evolution theory

D. Genetic drift theory

9. What is the defining characteristic of prokaryotic cells?

A. Large and complex

B. Contains membrane-bound organelles

C. Lacks a membrane-bound nucleus

D. Multicellular organisms

10. Alfred Wallace is recognized for his contributions to which concept in biology?

A. Inheritance of Acquired Characteristics

B. Natural Selection

C. Uniformitarianism

D. Genetic Variation

Answers

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

Explanations

1. What is the smallest blood vessel in the human body?

A. Artery

B. Vein

C. Capillary

D. Venule

The smallest blood vessels in the human body are capillaries. These tiny, thin-walled vessels are crucial for the exchange of substances between the blood and surrounding tissues. Capillaries connect arterioles (small arteries) to venules (small veins), facilitating the delivery of oxygen and nutrients to cells while also allowing for the removal of carbon dioxide and waste products. The key characteristic that defines capillaries is their microscopic size, which allows them to penetrate tissues and form networks, thereby maximizing surface area for efficient exchange. Their walls are composed of a single layer of endothelial cells, making them highly permeable and ideal for diffusion. This structural feature distinguishes them from arteries, veins, and venules, which are generally larger and have more complex structures to accommodate higher blood pressures and volumes.

2. What term describes a situation where neither allele is dominant?

A. Codominance

B. Genetic Drift

C. Mutation

D. Epistasis

The term that describes a situation where neither allele is dominant is codominance. In codominance, both alleles in a heterozygous individual are fully expressed, resulting in a phenotype that is distinct and represents both alleles simultaneously. This can often be seen in cases like blood type AB, where both the A and B alleles contribute to the phenotype of the individual, displaying characteristics of both without blending. Genetic drift, on the other hand, refers to random changes in allele frequencies in a population, often due to chance events, and does not involve the dominance relationship between alleles. Mutation is the process through which changes to the DNA sequence occur, leading to new alleles, but does not specifically address dominance. Epistasis involves the interaction between different genes, where the effect of one gene is masked or modified by another gene, and again does not relate to dominance between alleles.

3. What muscular structure plays a key role in the process of breathing?

A. Lungs

B. Diaphragm

C. Sternum

D. Trachea

The diaphragm is a crucial muscular structure in the process of breathing. It is a dome-shaped muscle located beneath the rib cage that separates the thoracic cavity from the abdominal cavity. When you inhale, the diaphragm contracts and moves downward, increasing the volume of the thoracic cavity and decreasing the pressure inside the lungs. This pressure change allows air to flow into the lungs. Upon exhalation, the diaphragm relaxes and moves back to its original position, which decreases the volume of the thoracic cavity and increases the pressure in the lungs, forcing air out. This cyclic contraction and relaxation of the diaphragm is fundamental to the mechanics of breathing. In contrast, the lungs are the organs where gas exchange occurs but do not have muscular properties to control airflow. The sternum is a bone that serves as an attachment point for ribs but does not contribute directly to the action of breathing. The trachea is a rigid airway that conducts air to and from the lungs but does not play an active role in the breathing process itself like the diaphragm does.

4. What is referred to as a chromosome that is not a sex chromosome?

A. Autosome

B. Sex chromosome

C. Gamete

D. Chromatid

A chromosome that is not a sex chromosome is referred to as an autosome. In humans, autosomes are the 22 pairs of chromosomes that are not involved in determining an individual's sex; they carry the bulk of genetic information and traits. The remaining pair of chromosomes are the sex chromosomes, which determine an individual's sex. In most mammals, these are labeled as X and Y chromosomes. Understanding the distinction between autosomes and sex chromosomes is crucial in genetics. Autosomes play a role in various genetic traits, while sex chromosomes are central to sexual development and reproduction. Thus, identifying autosomes is key in exploring inheritance and genetic variation across populations, emphasizing how they differ from sex chromosomes.

5. Which term describes a polysaccharide made entirely of glucose units?

A. Cellulose

B. Starch

C. Glycogen

D. Sucrose

The term that describes a polysaccharide made entirely of glucose units is glycogen. Glycogen serves as a form of energy storage in animals and is composed of numerous glucose molecules linked together. It is highly branched, which allows for rapid release of glucose when the body needs energy. This characteristic structure makes glycogen an efficient way for organisms to manage and use energy reserves. Cellulose, although a polysaccharide made of glucose units, has a different arrangement and is primarily found in plant cell walls, contributing to structural support rather than energy storage. Starch, like glycogen, is also a polysaccharide made of glucose units, but it is primarily found in plants as an energy reserve. Sucrose, on the other hand, is a disaccharide composed of one glucose unit and one fructose unit, not a polysaccharide. Thus, glycogen is the most accurate term to describe the polysaccharide that consists entirely of glucose units.

6. In asexual reproduction, offspring are typically...

A. Clones of the parent organism

B. Diverse and unique

C. Created through fertilization

D. Dependent on two parent organisms

In asexual reproduction, offspring are typically clones of the parent organism because this form of reproduction involves a single parent that replicates its genetic material to produce new individuals. The offspring inherit the exact genetic makeup of the parent, resulting in individuals that are genetically identical. This process can occur through various methods, such as binary fission, budding, or vegetative propagation, all of which ensure that the traits of the parent are preserved in the offspring. The other options suggest processes or outcomes that do not align with the nature of asexual reproduction. For example, diversity and uniqueness are characteristic of sexual reproduction, which involves the combination of genetic material from two distinct parent organisms leading to varied offspring. Fertilization, which involves the merging of male and female gametes, is another hallmark of sexual reproduction, making it irrelevant to asexual processes. Lastly, asexual reproduction does not depend on two parent organisms; it relies solely on one parent to produce clones.

7. What is the term for the substance upon which an enzyme acts?

A. Reactant

B. Substrate

C. Product

D. Inhibitor

The term for the substance upon which an enzyme acts is "substrate." Enzymes are biological catalysts that speed up chemical reactions in living organisms, and they do this by binding to specific molecules called substrates. When an enzyme and its substrate interact, they form an enzyme-substrate complex. This complex facilitates the conversion of the substrate into products of the reaction. The precise interaction between an enzyme and its substrate is crucial for the enzyme's function, as enzymes are designed to recognize specific substrates based on their shape and chemical properties. Understanding the role of the substrate is fundamental to biochemistry and is essential when studying metabolic pathways and enzyme kinetics. The other terms refer to different aspects of enzymatic reactions: reactants are the starting materials in a chemical reaction, products are the substances produced as a result of the reaction, and inhibitors are molecules that decrease or prevent enzyme activity.

8. What theory explains the evolution of eukaryotic cells from a symbiotic relationship?

A. Mutualism theory

B. Endosymbiosis

C. Cellular evolution theory

D. Genetic drift theory

The theory that explains the evolution of eukaryotic cells from a symbiotic relationship is the endosymbiosis theory. This theory postulates that eukaryotic cells, which are more complex than prokaryotic cells, originated through a process whereby certain prokaryotic cells began living inside larger host cells in a mutually beneficial arrangement. Over time, these engulfed prokaryotes evolved into organelles such as mitochondria and chloroplasts, which are essential for the function of eukaryotic cells. Endosymbiosis is supported by various lines of evidence, including the presence of their own DNA in mitochondria and chloroplasts, which is similar to prokaryotic DNA, as well as similarities in the size and structure of these organelles to certain prokaryotic cells. This underscores the idea that complex life forms arose from simpler organisms living in close association with one another, leading to increased complexity and functionality in cells. The other options do not adequately describe the specific mechanism by which eukaryotic cells originated. Mutualism focuses on interactions between species that are mutually beneficial but does not address the cellular evolution aspect. Cellular evolution theory is more general and does not specifically entail the process by which e

9. What is the defining characteristic of prokaryotic cells?

A. Large and complex

B. Contains membrane-bound organelles

C. Lacks a membrane-bound nucleus

D. Multicellular organisms

Prokaryotic cells are characterized primarily by the absence of a membrane-bound nucleus. Instead of having their genetic material enclosed within a nucleus, prokaryotic cells have a nucleoid region where the DNA is located. This is a fundamental distinction between prokaryotic and eukaryotic cells, the latter of which do have membrane-bound organelles and a defined nucleus. The absence of a membrane-bound nucleus is significant because it influences various cellular functions and organization. Prokaryotic cells tend to be simpler and smaller compared to eukaryotic cells, allowing them to reproduce quickly and adapt efficiently to various environments. This characteristic aids in understanding the evolutionary differences and biological functions of prokaryotes, such as bacteria and archaea. The other options describe features that are either characteristics of eukaryotic cells, which are more complex, or describe multicellularity, which is not a feature of prokaryotes. Thus, the defining characteristic of prokaryotic cells is specifically their lack of a membrane-bound nucleus.

10. Alfred Wallace is recognized for his contributions to which concept in biology?

A. Inheritance of Acquired Characteristics

B. Natural Selection

C. Uniformitarianism

D. Genetic Variation

Alfred Wallace is best known for his contributions to the concept of natural selection, a foundational idea in evolutionary biology. In the 19th century, Wallace independently developed a theory of evolution that emphasized how organisms adapt to their environments through a process driven by the struggle for existence. He articulated that those individuals with traits better suited to their environments are more likely to survive and reproduce, passing on those advantageous traits to the next generation. This idea parallels Charles Darwin's findings, and both scientists are credited with formulating the theory of evolution by natural selection. Wallace's work was critical in providing extensive evidence for the theory, including his observations of species variation in different geographic locations, particularly in the Amazon and the Malay Archipelago. His insights helped solidify the understanding that natural selection is a primary mechanism of evolution, leading to the diversity of life we see today.

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://ontariograde11bio.examzify.com

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