Western Governors University (WGU) BIO1010 C190 Introduction to Biology Practice Exam (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 incomplete dominance in genetics?

- **A. One allele is expressed completely over another**
- **B. Both alleles are completely dominant**
- **C. Neither allele is expressed fully, resulting in a blended phenotype**
- **D. Only one trait is expressed in the heterozygote**

2. What does the metaphase plate describe in the context of cell division?

- **A. Chromatids separating and moving apart**
- **B. DNA aligning itself in the middle**
- **C. Cells elongating and forming a cleavage furrow**
- **D. Independent assortment of chromosomes**

3. Which statement accurately describes aerobic respiration?

- **A. It generates energy using glucose and occurs without oxygen**
- **B. It produces more energy compared to anaerobic respiration and requires oxygen**
- **C. It occurs only in plants during photosynthesis**
- **D. It is the primary method of respiration for all organisms**

4. In which type of cell division does Mitosis occur?

- **A. Cell Replication**
- **B. Sex Cell division**
- **C. Gene Editing**
- **D. Protein Synthesis**

5. What role do lipids play in biological organisms?

- **A. Only for structural support**
- **B. Energy storage and cell signaling**
- **C. Forming genetic material**
- **D. Only used in cellular respiration**

6. How is cellular respiration defined?

A. A process that converts light energy into glucose

B. A method of photosynthesis in plants

C. A process to convert glucose into usable energy

D. A way to synthesize proteins in cells

7. What term is used for animals that primarily consume plants or plant-like organisms?

A. Carnivores

B. Herbivores

C. Omnivores

D. Detritivores

8. Define symbiosis.

A. A mutual exclusion of species

B. A close interaction between two different biological species

C. A competition for resources between species

D. A gradual evolution of species over time

9. What is the process of protein synthesis?

A. The conversion of DNA into RNA only

B. The creation of proteins from amino acids only

C. The translation of genetic information into proteins

D. The process of cellular respiration

10. During which phase do the chromosomes become attached to the mitotic spindle?

A. Prophase

B. Prometaphase

C. Metaphase

D. Telophase

Answers

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

Explanations

1. What is incomplete dominance in genetics?

A. One allele is expressed completely over another

B. Both alleles are completely dominant

C. Neither allele is expressed fully, resulting in a blended phenotype

D. Only one trait is expressed in the heterozygote

Incomplete dominance is a genetic scenario where neither allele is fully dominant over the other, leading to a blending of traits in the phenotype of the organism. In this condition, when an individual is heterozygous for a trait, the resulting phenotype is an intermediate expression of the two alleles. For example, if one allele codes for red flower color and another for white flower color, the offspring may display a pink color, demonstrating that both alleles contribute to the resulting trait without either completely overshadowing the other. This phenomenon illustrates how genetic information can interact in ways that produce a third, distinct phenotype rather than one that simply shows the dominance of one allele over another.

2. What does the metaphase plate describe in the context of cell division?

A. Chromatids separating and moving apart

B. DNA aligning itself in the middle

C. Cells elongating and forming a cleavage furrow

D. Independent assortment of chromosomes

The metaphase plate refers to the imaginary plane that is formed during metaphase of cell division, particularly during mitosis and meiosis. At this stage, the chromosomes, which have already been replicated and condensed into distinct structures, align themselves along this central plane. This alignment is crucial for ensuring that each daughter cell receives an equal and accurate distribution of chromosomes during the subsequent phases of cell division. The process of DNA aligning in the middle facilitates the orderly segregation of genetic material. The chromosomes, each consisting of two sister chromatids, are positioned so that they can be pulled apart efficiently during the next stage of cell division, known as anaphase. Proper alignment at the metaphase plate helps prevent errors that could lead to unequal distribution of chromosomes, which is critical for maintaining genetic stability in the resulting cells.

3. Which statement accurately describes aerobic respiration?

A. It generates energy using glucose and occurs without oxygen

B. It produces more energy compared to anaerobic respiration and requires oxygen

C. It occurs only in plants during photosynthesis

D. It is the primary method of respiration for all organisms

Aerobic respiration is a metabolic process that takes place in the presence of oxygen and utilizes glucose as a primary energy source. It is characterized by a series of biochemical reactions that occur in the mitochondria of cells. The process involves glycolysis, the citric acid cycle, and the electron transport chain, ultimately leading to the production of adenosine triphosphate (ATP), the energy currency of the cell. The statement that it produces more energy compared to anaerobic respiration is accurate; aerobic respiration generates significantly more ATP—up to approximately 36-38 ATP molecules per glucose molecule—while anaerobic respiration yields only 2 ATP molecules. This efficiency is due to the complete oxidation of glucose in the presence of oxygen, unlike anaerobic processes that only partially metabolize glucose and produce byproducts like lactic acid or ethanol. The requirement of oxygen is crucial, as it serves as the final electron acceptor in the electron transport chain, allowing the process to proceed efficiently. Thus, the correct characterization of aerobic respiration includes both the necessity for oxygen and its higher energy yield compared to anaerobic processes.

4. In which type of cell division does Mitosis occur?

A. Cell Replication

B. Sex Cell division

C. Gene Editing

D. Protein Synthesis

Mitosis is a fundamental process of cell division that leads to the formation of two genetically identical daughter cells from a single parent cell. This type of cell division is primarily involved in growth, development, and tissue repair in organisms. When referring to "cell replication," it accurately describes the function of mitosis, which is to replicate the genetic material and ensure that each new cell carries the same genetic information as the original cell. In contrast, sex cell division, also known as meiosis, is involved in the production of gametes (sperm and eggs) and results in cells that have half the number of chromosomes, which is not what occurs during mitosis. Gene editing refers to techniques that involve altering the DNA of organisms and does not pertain directly to the process of cell division. Protein synthesis deals with the creation of proteins from amino acids based on genetic instructions, an entirely different biological process from mitosis. Therefore, "cell replication" is the most accurate option to associate with mitosis, emphasizing its role in the duplication and distribution of nuclear material during cell division.

5. What role do lipids play in biological organisms?

A. Only for structural support

B. Energy storage and cell signaling

C. Forming genetic material

D. Only used in cellular respiration

Lipids play a critical role in biological organisms that extends well beyond just one function. One of their primary roles is energy storage; lipids, particularly in the form of fats and oils, provide a concentrated source of energy. When the body requires energy, lipids can be broken down through metabolic processes, releasing stored energy for various cellular functions. Additionally, lipids are involved in cell signaling, which is essential for cellular communication and regulation of biochemical pathways. Various types of lipids, such as phospholipids, form the structural basis of cell membranes, while other lipids, like steroid hormones, play key roles in signaling pathways that influence growth, metabolism, and reproductive processes. In contrast, structural support, while important, does not encapsulate the full spectrum of lipid functionality, nor do lipids form genetic material—that role is specifically designated to nucleic acids like DNA and RNA. The mention of cellular respiration also does not encompass how lipids are utilized, as they are primarily connected to energy storage and signaling rather than being solely used in the respiration process.

6. How is cellular respiration defined?

A. A process that converts light energy into glucose

B. A method of photosynthesis in plants

C. A process to convert glucose into usable energy

D. A way to synthesize proteins in cells

Cellular respiration is defined as a process through which cells convert glucose, a simple sugar, into usable energy in the form of adenosine triphosphate (ATP). This process involves a series of metabolic reactions that facilitate the breakdown of glucose, allowing for the release of energy stored in its chemical bonds. This energy is essential for various cellular activities, including growth, repair, and maintenance of cell functions. The significance of this process lies in its role in providing energy to support life. Using glucose as the primary substrate, cellular respiration can take place aerobically (in the presence of oxygen) or anaerobically (without oxygen), leading to different energy yields and byproducts, such as carbon dioxide and water in aerobic respiration. In contrast, the other choices do not accurately describe cellular respiration. The conversion of light energy into glucose relates to photosynthesis, which is the process plants use to produce their own food. Additionally, synthesizing proteins involves a different set of biological processes known as translation, which is distinct from the energy production function of cellular respiration.

7. What term is used for animals that primarily consume plants or plant-like organisms?

A. Carnivores

B. Herbivores

C. Omnivores

D. Detritivores

Herbivores are defined as animals that primarily consume plants or plant-like organisms. This classification reflects their dietary habit of feeding on leaves, stems, roots, flowers, and fruits, which are all derived from plants. Herbivores play a crucial role in ecosystems as they are primary consumers that convert plant energy into a form that can be used by higher trophic levels, such as carnivores. They often have specialized adaptations, such as flat molars for grinding plant material and longer digestive tracts to aid in the breakdown of tough plant fibers. This specialization is essential for efficiently extracting nutrients from their plant-based diets. In contrast, carnivores primarily consume other animals, omnivores eat a combination of both plants and animals, and detritivores feed on decomposing organic matter. Each of these groups occupies different roles within the ecosystem, highlighting the diverse ways that organisms can obtain energy and nutrients.

8. Define symbiosis.

A. A mutual exclusion of species

B. A close interaction between two different biological species

C. A competition for resources between species

D. A gradual evolution of species over time

Symbiosis is defined as a close interaction between two different biological species, and this definition encompasses a range of relationships that can exist between organisms. This interaction can take various forms, including mutualism, commensalism, and parasitism. In mutualism, both species benefit, while in commensalism, one species benefits and the other is neither helped nor harmed. In parasitism, one species benefits at the expense of the other. The essence of symbiosis lies in the sustained interactions between different species, which can significantly influence their behavior, health, growth, and ecological roles. Therefore, this definition captures the complexity and the variety of relationships in nature that fall under the umbrella of symbiotic interactions.

9. What is the process of protein synthesis?

A. The conversion of DNA into RNA only

B. The creation of proteins from amino acids only

C. The translation of genetic information into proteins

D. The process of cellular respiration

The process of protein synthesis involves translating genetic information into proteins, making it a fundamental aspect of molecular biology. This process consists of two primary stages: transcription and translation. During transcription, the DNA sequence of a gene is copied into messenger RNA (mRNA) in the nucleus. This mRNA then carries the genetic code from the DNA to the ribosomes in the cytoplasm, where translation occurs. Translation is the stage where ribosomes read the mRNA sequence and synthesize a specific protein by linking together the appropriate amino acids in the correct order, which corresponds to the information encoded in the mRNA. This option accurately captures the entire process of protein synthesis, encompassing both the transcription of DNA to mRNA and the subsequent translation of that mRNA into a functional protein. Understanding this process is essential for grasping how genes express themselves as proteins, which perform a myriad of functions within living organisms.

10. During which phase do the chromosomes become attached to the mitotic spindle?

A. Prophase

B. Prometaphase

C. Metaphase

D. Telophase

The correct phase during which chromosomes become attached to the mitotic spindle is prometaphase. During this stage, the nuclear envelope breaks down, allowing the spindle fibers to access the chromosomes. The spindle fibers, which are microtubules, extend from the centrosomes and begin to attach to the kinetochores, which are protein structures on the centromeres of the chromosomes. This attachment is critical for the proper alignment and movement of chromosomes toward the center of the cell in preparation for separation. Prometaphase is essential in ensuring that each chromosome is correctly attached to spindle fibers coming from opposite poles of the cell, which is necessary for the accurate distribution of genetic material to the daughter cells during later stages of mitosis. Without this attachment, chromosomes could be misaligned or segregated improperly, leading to errors in cell division.

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://wgu-bio1010-c190.examzify.com

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