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. 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 of the following is NOT a function of proteins?

- **A. Enzymatic activity**
- **B. Insulation**
- **C. Transport**
- **D. Defense**

2. What is the basic unit of life?

- **A. Atom**
- **B. Cell**
- **C. Molecule**
- **D. Tissue**

3. What type of relationship does parasitism illustrate?

- **A. Mutualism**
- **B. Commensalism**
- **C. One species benefits at the expense of another**
- **D. Neutral relationship**

4. What is meant by cellular differentiation?

- **A. The process by which cells form new organisms**
- **B. The process by which a less specialized cell becomes a more specialized cell type**
- **C. The process by which all cells become identical**
- **D. The process of cell division**

5. What is the primary function of DNA in living organisms?

- **A. Transports genetic information**
- **B. Carries genetic information**
- **C. Functions as an energy source**
- **D. Regulates metabolic processes**

6. What is the concept of carrying capacity in an ecosystem?

- **A. The minimum size of a habitat needed for any species**
- **B. The maximum number of species in an ecosystem**
- **C. The maximum number of individuals of a species that an environment can sustain**
- **D. The average birth rate of a population over time**

7. What is a genotype?

A. The expression of physical traits of an organism

B. The genetic constitution of an organism

C. The environment in which an organism lives

D. The average genetic variation in a population

8. Which of the following are the two main stages of cellular respiration?

A. Glycolysis and Fermentation

B. Glycolysis and Oxidative phosphorylation

C. Electron transport chain and Krebs cycle

D. Photosynthesis and Cellular Respiration

9. Which of the following best defines a population in biology?

A. A group of different species living together

B. A group of organisms of one species that interbreed

C. An individual organism and its environment

D. A collection of ecosystems

10. Which component of cell metabolism produces pyruvic acid?

A. Photosynthesis

B. Fermentation

C. Glycolysis

D. Cirtic acid cycle

Answers

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

Explanations

1. Which of the following is NOT a function of proteins?

A. Enzymatic activity

B. Insulation

C. Transport

D. Defense

The correct answer highlights that insulation is not a primary function of proteins. While proteins serve various essential roles in biological systems, including enzymatic activity, transport, and defense, insulation is primarily a function associated with lipids, such as fats and oils. Proteins are involved in catalyzing biochemical reactions (enzymatic activity), carrying molecules throughout the body (transport), and contributing to the immune response (defense). Insulation, on the other hand, is mainly achieved through adipose tissue, which is composed of lipid materials that help maintain body temperature and protect organs, rather than through protein structures. This distinction helps clarify the unique roles of different biomolecules in living organisms.

2. What is the basic unit of life?

A. Atom

B. Cell

C. Molecule

D. Tissue

The basic unit of life is the cell. Cells are the smallest structural and functional units of living organisms, serving as the building blocks from which all living things are constructed. Every organism, whether unicellular or multicellular, is composed of cells. They carry out essential functions necessary for survival, such as metabolism, energy production, and reproduction. In multicellular organisms, cells differentiate into various types to form tissues and organs, but regardless of their complexity, all life relies on cells to maintain biological processes. The study of cells and their interactions is foundational to understanding biology, highlighting the importance of the cell in the context of life itself.

3. What type of relationship does parasitism illustrate?

A. Mutualism

B. Commensalism

C. One species benefits at the expense of another

D. Neutral relationship

Parasitism is characterized by a relationship in which one organism, the parasite, benefits at the expense of another organism, the host. In this type of interaction, the parasite derives nutrients or some benefit while the host experiences harm, which can range from mild discomfort to severe illness or even death. This defines the essential nature of parasitism, clearly illustrating the dynamics where one party gains advantages at the cost of the other. In contrast, mutualism involves interactions where both species benefit, and commensalism describes scenarios where one species benefits while the other is neither helped nor harmed. A neutral relationship would imply that neither species affects the other in any significant way. Thus, parasitism distinctly represents a situation where the interaction is unbalanced, favoring one organism while detrimental to the other.

4. What is meant by cellular differentiation?

A. The process by which cells form new organisms

B. The process by which a less specialized cell becomes a more specialized cell type

C. The process by which all cells become identical

D. The process of cell division

Cellular differentiation refers to the biological process by which a less specialized cell, such as a stem cell, develops into a more specialized type of cell with distinct structural and functional properties. This process allows cells to acquire specific characteristics that enable them to perform unique roles within an organism, such as becoming muscle cells, nerve cells, or blood cells. Differentiation is crucial for development and functionality in multicellular organisms. It allows for the formation of diverse tissue types, each with specialized functions that are essential for the organism's survival and health. During differentiation, various factors, including genetic regulation, environmental signals, and cellular interactions, trigger changes in gene expression, leading to the unique identities of the differentiated cells. In contrast, the other options do not accurately represent the concept of cellular differentiation. The formation of new organisms involves processes like reproduction rather than differentiation. Making all cells identical contradicts the fundamental principle of specialization in multicellular organisms. Lastly, cell division pertains to the process of a cell dividing to form two daughter cells, which is distinct from the process where a cell becomes specialized in function and structure.

5. What is the primary function of DNA in living organisms?

A. Transports genetic information

B. Carries genetic information

C. Functions as an energy source

D. Regulates metabolic processes

The primary function of DNA in living organisms is to carry genetic information. DNA, or deoxyribonucleic acid, serves as the blueprint for the development, functioning, growth, and reproduction of all known living entities. It contains the instructions necessary for producing proteins, which are essential for various biological functions and processes within the cell. DNA sequences, known as genes, encode the information that determines inherited traits and characteristics. When a cell needs to produce a specific protein, it transcribes the relevant DNA sequence into messenger RNA (mRNA), which then guides the synthesis of that protein in a process called translation. This flow of genetic information from DNA to RNA to protein is central to molecular biology and is crucial for the functioning of organisms. While some of the other options mention important biological activities related to genetics or metabolism, they do not capture the fundamental role of DNA in directly carrying and storing genetic information essential for life.

6. What is the concept of carrying capacity in an ecosystem?

A. The minimum size of a habitat needed for any species

B. The maximum number of species in an ecosystem

C. The maximum number of individuals of a species that an environment can sustain

D. The average birth rate of a population over time

Carrying capacity refers to the maximum number of individuals of a particular species that an environment can support sustainably over time. This concept is important in ecology because it encompasses the availability of resources such as food, water, and shelter, which are essential for the survival of the species. When a population exceeds its carrying capacity, it can lead to resource depletion, increased competition, and ultimately negative impacts on the population, such as starvation or disease. Understanding carrying capacity helps in managing wildlife populations, agriculture, and even human populations by ensuring that they remain within the limits of their environment's resources.

7. What is a genotype?

A. The expression of physical traits of an organism

B. The genetic constitution of an organism

C. The environment in which an organism lives

D. The average genetic variation in a population

A genotype refers specifically to the genetic constitution or makeup of an organism. It encompasses the alleles that an individual inherits from its parents, which contribute to the organism's potential to express certain traits. The genotype serves as a blueprint for the traits an organism may display, although the actual traits manifesting, known as the phenotype, may also be influenced by environmental factors. Understanding the genotype is fundamental in genetics as it helps to explain hereditary patterns and the likelihood of certain traits appearing in offspring. It allows researchers and scientists to analyze the genetic basis of diseases, traits, and even behaviors within a population.

8. Which of the following are the two main stages of cellular respiration?

A. Glycolysis and Fermentation

B. Glycolysis and Oxidative phosphorylation

C. Electron transport chain and Krebs cycle

D. Photosynthesis and Cellular Respiration

The two main stages of cellular respiration are glycolysis and oxidative phosphorylation. Glycolysis is the initial stage, occurring in the cytoplasm, where glucose is broken down into pyruvate, resulting in a small yield of ATP and the reduction of NAD+ to NADH. The pyruvate then enters the mitochondria, where oxidative phosphorylation takes place. This process includes the Krebs cycle (also known as the citric acid cycle) and the electron transport chain, which occur in the mitochondria. In oxidative phosphorylation, the energy from NADH and FADH2 (produced during glycolysis and the Krebs cycle) drives the synthesis of a large amount of ATP through the electron transport chain and chemiosmosis. While fermentation does occur in cellular respiration, it is not one of the main stages; instead, it is an alternative pathway that occurs under anaerobic conditions. The option mentioning the electron transport chain and the Krebs cycle describes components within oxidative phosphorylation but does not encompass glycolysis, which is fundamental to initiating cellular respiration. Lastly, the mention of photosynthesis and cellular respiration refers to two different biological processes rather than stages within cellular respiration itself. Thus, glycolysis and oxidative phosphorylation comprehensively represent the two main stages of cellular respiration.

9. Which of the following best defines a population in biology?

A. A group of different species living together

B. A group of organisms of one species that interbreed

C. An individual organism and its environment

D. A collection of ecosystems

A population in biology is best defined as a group of organisms of one species that interbreed. This definition emphasizes the importance of shared genetics and reproductive capabilities among individuals, which is crucial for the continuation of that species. Members of a population live in the same geographical area and interact with one another, increasing the likelihood of mating and producing offspring. The focus on a single species is vital, as populations are typically studied to understand the dynamics of species through factors like birth rates, death rates, and migration patterns. This definition differentiates a population from other ecological concepts, such as communities, which consist of multiple species living together. The emphasis on interbreeding also highlights the ability of a population to maintain genetic diversity and adapt to environmental changes, which is fundamental to evolution and natural selection.

10. Which component of cell metabolism produces pyruvic acid?

A. Photosynthesis

B. Fermentation

C. Glycolysis

D. Cirtic acid cycle

Glycolysis is the metabolic pathway that breaks down glucose into pyruvic acid, making it the correct answer. This process occurs in the cytoplasm of cells and consists of a series of enzymatic reactions that convert glucose, a six-carbon sugar, into two molecules of pyruvate, which are three-carbon compounds. This process generates a small amount of ATP and also produces electron carriers (NADH) that can be utilized in subsequent metabolic pathways. Understanding glycolysis is essential as it serves as the first step in both aerobic and anaerobic respiration. In aerobic conditions, pyruvic acid can be further oxidized in the citric acid cycle, while in anaerobic conditions, it may undergo fermentation to produce lactic acid or ethanol, depending on the organism. This highlights the importance of glycolysis as a central hub in cellular metabolism, leading to different metabolic fates of pyruvic acid based on the presence or absence of oxygen.

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!