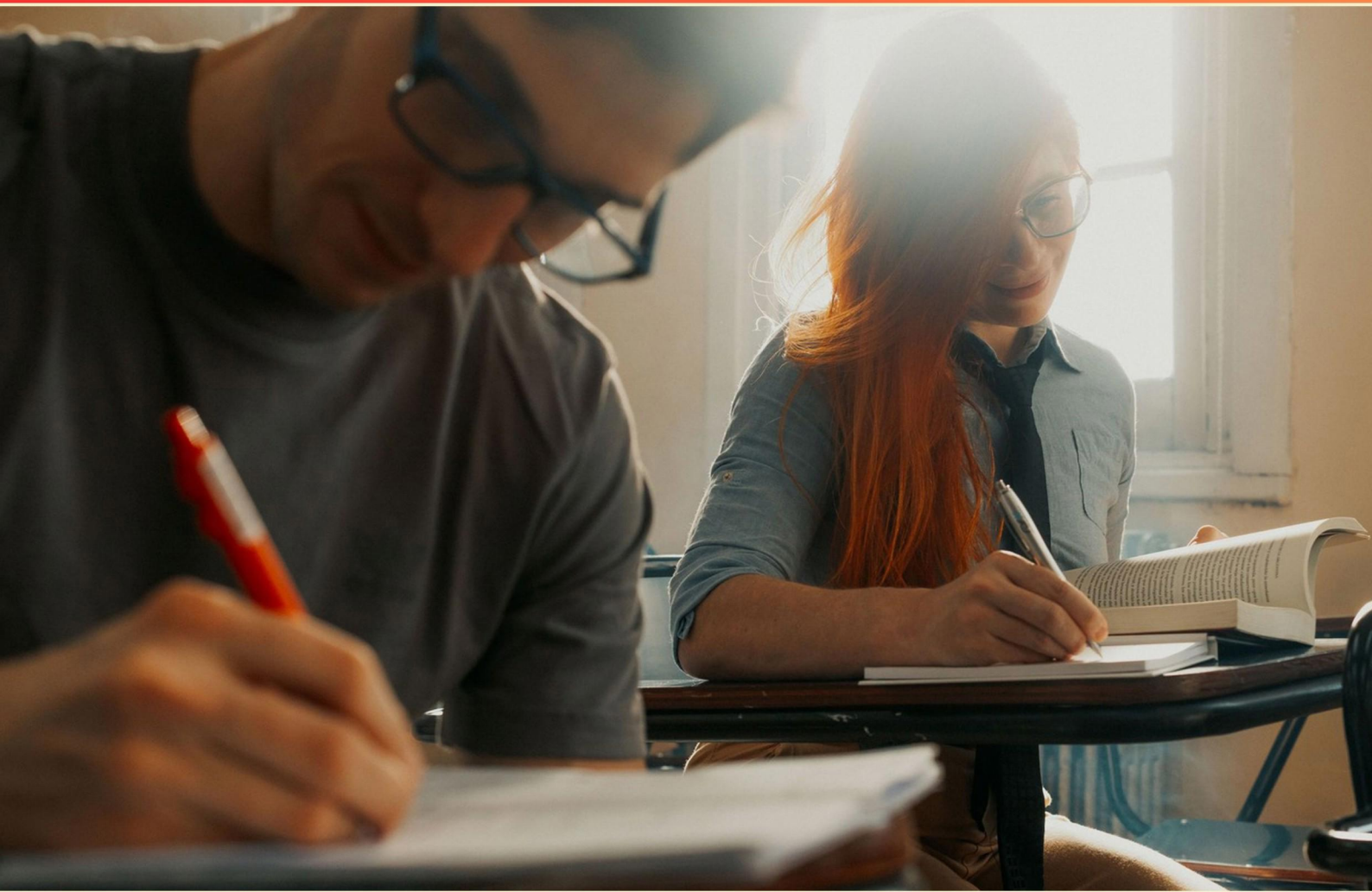


SEMMELWEIS MEDICINE BIOLOGY ENTRANCE PRACTICE EXAM (SAMPLE)

STUDY GUIDE



**SAMPLE STUDY GUIDE
WITH LIMITED QUESTIONS**

**VISIT US ONLINE FOR
THE FULL VERSION STUDY GUIDE**

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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

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- 1. How does a nonsense mutation ultimately affect protein synthesis?**
 - A. Increases the protein length
 - B. Leads to an early termination of translation
 - C. Has no effect on protein synthesis
 - D. Increases the variety of protein products
- 2. What release occurs during the formation of a disaccharide?**
 - A. Oxygen
 - B. Carbon dioxide
 - C. Water (H₂O)
 - D. Hydrogen gas
- 3. Which of the following is NOT a part of the digestive system?**
 - A. Esophagus
 - B. Stomach
 - C. Liver
 - D. Kidney
- 4. Why is DNA structured in an antiparallel manner?**
 - A. To facilitate hydrogen bonding between base pairs
 - B. To enhance the stability of the double helix
 - C. So that the paired bases can face each other
 - D. To allow for easier replication of DNA
- 5. What are the major types of cells in living organisms?**
 - A. Prokaryotic and Eukaryotic cells
 - B. Red and white blood cells
 - C. Muscle and nerve cells
 - D. Plant and animal cells
- 6. What type of bonds hold the two strands of a double helix together?**
 - A. Ionic bonds
 - B. Covalent bonds
 - C. Hydrogen bonds
 - D. Disulfide bridges

- 7. What term describes the areas where two or more bones join together?**
- A. Ligaments
 - B. Cartilage
 - C. Joints
 - D. Tendons
- 8. What distinguishes the roles of different polysaccharides made from the same monomer?**
- A. They vary in their temperature dependency
 - B. They function in distinct biological pathways
 - C. They differ in molecular weight
 - D. They are structured and linked differently
- 9. Which component in blood is primarily responsible for immune responses?**
- A. Red blood cells
 - B. Platelets
 - C. Plasma
 - D. White blood cells
- 10. Monoploidy is best defined as which of the following?**
- A. Having an extra chromosome in a set
 - B. Having three sets of chromosomes
 - C. Missing a chromosome in a set of chromosomes
 - D. Having the normal diploid number of chromosomes

Answers

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

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Explanations

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1. How does a nonsense mutation ultimately affect protein synthesis?

- A. Increases the protein length
- B. Leads to an early termination of translation**
- C. Has no effect on protein synthesis
- D. Increases the variety of protein products

A nonsense mutation is a specific type of point mutation in which a single nucleotide change results in a premature stop codon within the coding sequence of a gene. This premature stop codon signals the ribosome to halt translation before the full-length, functional protein can be produced. As a result, the protein synthesized is significantly shorter than intended, leading to a loss of function or an entirely nonfunctional protein, which can have significant consequences for the organism. This alteration in the protein product illustrates how critical codons are in determining the final outcome of protein synthesis. The impact of a nonsense mutation is direct and profound because it disrupts the normal process of elongation during translation, stopping the synthesis of the polypeptide chain before it can achieve its proper structure and function.

2. What release occurs during the formation of a disaccharide?

- A. Oxygen
- B. Carbon dioxide
- C. Water (H₂O)**
- D. Hydrogen gas

The correct response highlights the biochemical process known as dehydration synthesis (or condensation reaction) that occurs during the formation of a disaccharide. When two monosaccharides combine to form a disaccharide, a molecule of water (H₂O) is released as a byproduct. This reaction involves the removal of a hydroxyl group (-OH) from one monosaccharide and a hydrogen atom (-H) from the other, leading to the formation of a glycosidic bond between the two sugar units. The release of water is fundamental to the process, as it is a characteristic aspect of condensation reactions where smaller molecules join to form larger ones, accompanied by the loss of water. Understanding this relationship is crucial, particularly in the context of carbohydrate chemistry, as it illustrates not only how disaccharides are formed but also the significance of water in metabolic reactions. Each execution of this process contributes to the overall diversity and complexity of polysaccharides in biological systems.

3. Which of the following is NOT a part of the digestive system?

- A. Esophagus
- B. Stomach
- C. Liver
- D. Kidney**

The kidney is not a part of the digestive system; instead, it is a crucial component of the urinary system. The digestive system is responsible for the breakdown of food, nutrient absorption, and waste elimination related to the gastrointestinal tract, which includes organs such as the esophagus, stomach, liver, intestines, and others that facilitate the digestion and processing of food. The esophagus is a muscular tube that carries food from the mouth to the stomach. The stomach further breaks down food through mechanical and chemical means, preparing it for absorption in the intestines. The liver plays a vital role in digestion as well by producing bile, which is essential for the emulsification and digestion of fats. In contrast, the kidney's main functions involve filtering blood to remove waste products and excess substances, thereby maintaining fluid and electrolyte balance in the body rather than being involved in the digestion of food.

4. Why is DNA structured in an antiparallel manner?

- A. To facilitate hydrogen bonding between base pairs
- B. To enhance the stability of the double helix
- C. So that the paired bases can face each other**
- D. To allow for easier replication of DNA

The structure of DNA is indeed antiparallel, meaning that the two strands run in opposite directions. This orientation is crucial for several reasons, particularly in the context of base pairing and the overall stability of the DNA molecule. When DNA strands are arranged antiparallel, the nitrogenous bases on one strand can effectively pair with those on the opposite strand. This arrangement facilitates the formation of hydrogen bonds between complementary bases—adenine pairs with thymine, and cytosine pairs with guanine. These hydrogen bonds help stabilize the DNA molecule and ensure accurate pairing, which is fundamental for processes like replication and transcription. The antiparallel structure also contributes to the overall stability of the double helix. The complementary base pairing, combined with the hydrogen bonds formed between pairs, provides a necessary level of structural integrity. This architectural design supports the helical formation, allowing the DNA to maintain its shape and function efficiently. In contrast, if the strands were not oriented in an antiparallel fashion, the bases would be misaligned, leading to ineffective pairing and compromising the stability and function of the genetic material. The antiparallel orientation is, therefore, essential for both the integrity of the DNA structure and the biological processes it undergoes.

5. What are the major types of cells in living organisms?

- A. Prokaryotic and Eukaryotic cells**
- B. Red and white blood cells
- C. Muscle and nerve cells
- D. Plant and animal cells

The major types of cells in living organisms are primarily categorized as prokaryotic and eukaryotic cells. Prokaryotic cells, which include bacteria and archaea, are characterized by their simpler structure. They lack a true nucleus and membrane-bound organelles, and their genetic material is typically found in a single circular chromosome located in a region called the nucleoid. In contrast, eukaryotic cells, which comprise animals, plants, fungi, and protists, have a more complex structure. They possess a true nucleus containing their genetic material, as well as various membrane-bound organelles, such as the mitochondria, endoplasmic reticulum, and Golgi apparatus, which perform specialized functions. This classification into prokaryotic and eukaryotic cells is foundational for understanding the diversity of life and the functional differences between organisms. Other choices may refer to specific types of cells or categorization within eukaryotic cells, but they do not capture the overarching structural distinction that defines all living organisms.

6. What type of bonds hold the two strands of a double helix together?

- A. Ionic bonds
- B. Covalent bonds
- C. Hydrogen bonds**
- D. Disulfide bridges

The strands of a double helix, such as that found in DNA, are held together primarily by hydrogen bonds. These bonds form between the nitrogenous bases of the two strands, where adenine pairs with thymine and guanine pairs with cytosine. The specific pairing allows for the stabilization of the structure while maintaining the flexibility necessary for biological functions such as replication and transcription. Hydrogen bonds are relatively weak compared to other types of bonds; however, the cumulative effect of many such interactions across the length of the DNA molecule contributes to the overall stability of the double helix. This allows the strands to separate easily during processes like DNA replication—crucial for the hereditary transmission of genetic information. While ionic bonds and covalent bonds play significant roles in the DNA structure (for instance, covalent bonds link the sugar and phosphate backbone of each strand), they do not hold the two strands together. Disulfide bridges are relevant in certain protein structures, but they do not pertain to the stability of the DNA double helix.

7. What term describes the areas where two or more bones join together?

- A. Ligaments
- B. Cartilage
- C. Joints**
- D. Tendons

The term that describes the areas where two or more bones join together is "joints." Joints are critical components of the skeletal system, allowing bones to move relative to one another, providing the body with flexibility and stability. They can be categorized into different types based on their structure and the movements they allow, such as hinge joints, ball-and-socket joints, and pivot joints. The importance of joints lies in their role in facilitating movement, absorbing shock, and bearing weight. In contrast, ligaments are tough bands of connective tissue that connect bones to other bones at joints, providing stability and support. Cartilage is a flexible connective tissue found in various parts of the body, including joints, where it covers the ends of bones to reduce friction and absorb shock. Tendons are also connective tissues, but they attach muscles to bones, enabling the transfer of force from muscles to bones, which results in movement. Thus, the correct term for the area where bones meet is indeed "joints."

8. What distinguishes the roles of different polysaccharides made from the same monomer?

- A. They vary in their temperature dependency
- B. They function in distinct biological pathways
- C. They differ in molecular weight
- D. They are structured and linked differently**

The distinction among different polysaccharides made from the same monomer largely arises from variations in their structure and the way the monomer units are linked together. This structural difference affects several properties of the polysaccharides, including their function, solubility, and biological roles. For instance, while glucose is the monomer for both starch and cellulose, starch is composed of branched chains of glucose units, leading to a structure that is more soluble and serves as an energy storage molecule in plants. In contrast, cellulose is composed of straight, unbranched chains of glucose that form strong fibrils, providing structural support in plant cell walls. These differences in linkage (such as the type of glycosidic bonds formed) and overall architecture of the molecules account for their distinct characteristics and functions despite having the same monomer. Thus, understanding the specific structural arrangements allows for a better grasp of how these polysaccharides fulfill various roles in biological systems.

9. Which component in blood is primarily responsible for immune responses?

- A. Red blood cells
- B. Platelets
- C. Plasma
- D. White blood cells**

The primary component in blood responsible for immune responses is white blood cells. These cells, also known as leukocytes, play a critical role in the body's defense mechanism against pathogens such as bacteria, viruses, and other foreign invaders. White blood cells can be further categorized into several types, including lymphocytes, monocytes, neutrophils, eosinophils, and basophils, each with specific functions in the immune response. Lymphocytes, for instance, are key players in the adaptive immune response, recognizing specific antigens and generating a targeted attack, while neutrophils and monocytes are integral to the innate immune system, providing quick responses to infection and aiding in the destruction of pathogens. This specialized functionality positions white blood cells as essential to maintaining immunological health and effectively responding to infections or other immune challenges.

10. Monoploidy is best defined as which of the following?

- A. Having an extra chromosome in a set
- B. Having three sets of chromosomes
- C. Missing a chromosome in a set of chromosomes**
- D. Having the normal diploid number of chromosomes

Monoploidy is best defined as the presence of only one complete set of chromosomes, which means that it can be characterized by missing chromosomes from what would typically be classified as a diploid cell. In other words, in organisms that are normally diploid, this means that they typically have two sets of chromosomes—one from each parent. If an organism is monoploid, it has only one of these sets, indicating that it is missing the second copy found in diploids. This concept is particularly relevant in certain species during specific stages of development, such as gametes in sexually reproducing organisms, where each gamete is monoploid. Understanding monoploidy is important in various fields, including genetics and agriculture, where it can influence traits like fertility and the expression of certain genetic characteristics.

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:

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

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