

Semmelweis Medicine Biology Entrance Practice Exam (Sample)

Study Guide



Everything you need from our exam experts!

This is a sample study guide. To access the full version with hundreds of questions,

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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!

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Questions

- 1. Which element is crucial in converting fibrinogen into fibrin during blood clotting?**
 - A. Prothrombin**
 - B. Thrombin**
 - C. Platelets**
 - D. Clotting factors**

- 2. What distinguishes saturated fatty acids from unsaturated fatty acids?**
 - A. Saturated fatty acids have more hydrogen atoms**
 - B. Unsaturated fatty acids have double bonds**
 - C. Saturated fatty acids can only be found in plants**
 - D. Unsaturated fatty acids are always solid at room temperature**

- 3. How do lipids behave in different solvents?**
 - A. They are polar and soluble in water**
 - B. They are non-polar and insoluble in water**
 - C. They are soluble in both water and organic solvents**
 - D. They are neutral and behave the same in all solvents**

- 4. What phase follows anaphase in mitosis?**
 - A. Metaphase**
 - B. Telophase**
 - C. Prophase**
 - D. Interphase**

- 5. What are the two main types of nucleic acids within the nucleus?**
 - A. DNA and carbohydrates**
 - B. DNA and RNA**
 - C. RNA and proteins**
 - D. DNA and lipids**

- 6. What is produced at the end of mitosis?**
- A. Four genetically unique gametes**
 - B. Two identical diploid daughter cells**
 - C. Two haploid gametes**
 - D. Two diploid cells with mutations**
- 7. Which statement best describes glycogen's role in animals?**
- A. It acts as a structural component**
 - B. It is a primary source of protein**
 - C. It serves as an energy storage molecule**
 - D. It transports oxygen in the bloodstream**
- 8. What is the function of the Golgi apparatus?**
- A. Synthesizes DNA**
 - B. Sorts and modifies proteins**
 - C. Transcribes mRNA**
 - D. Produces energy for the cell**
- 9. What role does tRNA play in protein synthesis?**
- A. It synthesizes ribosomal RNA**
 - B. It carries amino acids to the ribosome during translation**
 - C. It acts as a template for mRNA synthesis**
 - D. It modifies other RNA molecules**
- 10. What are the two basic forms of fatty acids?**
- A. Saturated and trans**
 - B. Unsaturated and semi-saturated**
 - C. Saturated and unsaturated**
 - D. Saturated and simple**

Answers

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

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Explanations

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1. Which element is crucial in converting fibrinogen into fibrin during blood clotting?

- A. Prothrombin**
- B. Thrombin**
- C. Platelets**
- D. Clotting factors**

The conversion of fibrinogen into fibrin during blood clotting is a critical step in the coagulation process, and thrombin plays a key role in this transformation. Thrombin is an enzyme that catalyzes the proteolytic cleavage of fibrinogen, a soluble plasma protein, into insoluble fibrin strands. These fibrin strands then weave together to form a stable network that constitutes the structural framework of a blood clot, effectively sealing wounds and preventing blood loss. Thrombin is produced from its precursor, prothrombin, through a series of enzymatic reactions known as the coagulation cascade. Once formed, thrombin acts quickly and efficiently, making it a crucial component of hemostasis and facilitating the transition from a liquid phase (fibrinogen) to a solid phase (fibrin) in the presence of other cofactors and calcium ions. This key enzymatic activity underscores why thrombin is essential for the clotting process.

2. What distinguishes saturated fatty acids from unsaturated fatty acids?

- A. Saturated fatty acids have more hydrogen atoms**
- B. Unsaturated fatty acids have double bonds**
- C. Saturated fatty acids can only be found in plants**
- D. Unsaturated fatty acids are always solid at room temperature**

Saturated fatty acids and unsaturated fatty acids are distinguished primarily by their chemical structure, particularly with respect to the presence of double bonds between carbon atoms. Saturated fatty acids have no double bonds; instead, all carbon atoms in the fatty acid chain are fully "saturated" with hydrogen atoms. This saturation leads to a linear structure, allowing them to pack tightly together, which is why saturated fats are typically solid at room temperature. In contrast, unsaturated fatty acids have one or more double bonds in their carbon chains. The introduction of these double bonds creates kinks in the fatty acid structure, preventing tight packing and resulting in a generally liquid state at room temperature. The presence of double bonds is characteristic of unsaturated fatty acids, which is a defining feature that distinguishes them from saturated fatty acids. Thus, the correct answer highlights the relationship between the structure of unsaturated fatty acids (the presence of double bonds) and their properties. This fundamental understanding is crucial in fields such as biochemistry and nutrition, as it relates to the physical properties of fats and their roles in biological systems.

3. How do lipids behave in different solvents?

- A. They are polar and soluble in water
- B. They are non-polar and insoluble in water**
- C. They are soluble in both water and organic solvents
- D. They are neutral and behave the same in all solvents

Lipids are primarily non-polar molecules characterized by long hydrocarbon chains, which give them hydrophobic properties. This structure explains their behavior in different solvents. When placed in water, which is a polar solvent, lipids do not dissolve effectively. Instead, they tend to aggregate to minimize their exposure to water, a phenomenon commonly observed in biological membranes where phospholipids form bilayers. In contrast, lipids do dissolve well in non-polar organic solvents, such as hexane or chloroform. In these environments, the non-polar nature of lipids aligns with the non-polar properties of the solvents, allowing for favorable interactions that lead to solubility. This understanding of lipid behavior in solvents is crucial for applications in biochemistry, as it underscores the importance of lipid solubility when studying cellular structures and functions.

4. What phase follows anaphase in mitosis?

- A. Metaphase
- B. Telophase**
- C. Prophase
- D. Interphase

In mitosis, the phase that follows anaphase is known as telophase. During anaphase, the sister chromatids are pulled apart toward opposite poles of the cell. Once this separation is complete, the cell enters telophase, where the separated chromatids, now individual chromosomes, begin to de-condense back into chromatin. Additionally, the nuclear envelope re-forms around each set of chromosomes at both poles, effectively creating two distinct nuclei within the cell. This transition is crucial for ensuring that each daughter cell will have an identical set of chromosomes after the cell divides. Understanding this sequence is essential in comprehending how cells divide and how genetic material is accurately distributed into daughter cells during the cell cycle. The relationship between these phases underscores the organization and regulation of cellular division.

5. What are the two main types of nucleic acids within the nucleus?

A. DNA and carbohydrates

B. DNA and RNA

C. RNA and proteins

D. DNA and lipids

The correct answer identifies the two main types of nucleic acids found within the nucleus as DNA and RNA. DNA, or deoxyribonucleic acid, serves as the hereditary material in almost all living organisms, carrying the genetic instructions essential for growth, development, and reproduction. It is a double-stranded molecule that provides the blueprint for all cellular functions. RNA, or ribonucleic acid, plays several crucial roles in the expression of this genetic information. There are different types of RNA, including mRNA (messenger RNA), which conveys genetic information from DNA to the ribosomes for protein synthesis, and rRNA (ribosomal RNA), which is a core component of ribosomes, aiding in protein production. Additionally, tRNA (transfer RNA) is involved in bringing amino acids to ribosomes to facilitate the assembly of proteins based on the genetic code. Understanding the specific roles of DNA and RNA helps clarify their importance within the nucleus and the overall processes of cellular function and replication. The other options presented do not include the correct nucleic acids; carbohydrates, proteins, and lipids serve different biological functions and are not classified as nucleic acids.

6. What is produced at the end of mitosis?

A. Four genetically unique gametes

B. Two identical diploid daughter cells

C. Two haploid gametes

D. Two diploid cells with mutations

At the end of mitosis, the process yields two identical diploid daughter cells. This is a key characteristic of mitosis, which is a type of cell division responsible for growth, repair, and asexual reproduction in somatic cells. During mitosis, the genetic material is duplicated, and through a series of phases (prophase, metaphase, anaphase, and telophase), the chromosomes are evenly divided between the two new cells. As a result, each daughter cell receives an exact copy of the parent cell's DNA, maintained in a diploid state, meaning they have two sets of chromosomes. This ensures genetic consistency across cells, which is crucial for proper functioning and development within an organism.

7. Which statement best describes glycogen's role in animals?

- A. It acts as a structural component**
- B. It is a primary source of protein**
- C. It serves as an energy storage molecule**
- D. It transports oxygen in the bloodstream**

Glycogen serves as an energy storage molecule in animals, which is crucial for maintaining energy supplies in various physiological activities. It is a polysaccharide composed of glucose units and is predominantly stored in the liver and muscle tissues. When the body requires energy, glycogen can be rapidly broken down into glucose, which can then be used in cellular respiration to generate ATP, the energy currency of the cell. This function of glycogen is essential for sustaining energy during periods of fasting, intense physical exercise, or any situation where immediate energy is required. As the body's energy needs fluctuate, glycogen provides a readily accessible source of glucose, making it a vital component of metabolic processes. The body's ability to store energy in the form of glycogen also allows it to maintain stable blood glucose levels, thus supporting overall metabolic homeostasis.

8. What is the function of the Golgi apparatus?

- A. Synthesizes DNA**
- B. Sorts and modifies proteins**
- C. Transcribes mRNA**
- D. Produces energy for the cell**

The Golgi apparatus is crucial in the post-translational modification, sorting, and packaging of proteins and lipids that have been synthesized in the endoplasmic reticulum. After proteins are produced in the rough endoplasmic reticulum, they are transported to the Golgi apparatus, where they undergo modifications such as glycosylation, phosphorylation, or cleavage. Once these modifications are complete, the Golgi apparatus sorts the proteins and directs them to their appropriate destinations, whether that be secretion outside the cell, incorporation into the cell membrane, or transport to lysosomes. This sorting and modifying function is essential for the proper functioning of the cell, ensuring that proteins are delivered to the right locations and perform their intended roles. In summary, the role of the Golgi apparatus is integral to cellular operations, making the function of sorting and modifying proteins the correct answer.

9. What role does tRNA play in protein synthesis?

- A. It synthesizes ribosomal RNA
- B. It carries amino acids to the ribosome during translation**
- C. It acts as a template for mRNA synthesis
- D. It modifies other RNA molecules

tRNA, or transfer RNA, plays a crucial role in protein synthesis, specifically during the process of translation. Its primary function is to carry amino acids to the ribosome, the cellular machinery where proteins are assembled. Each tRNA molecule has a specific anticodon sequence that is complementary to the codon sequence on the mRNA strand. This ensures that the correct amino acid is added to the growing polypeptide chain in accordance with the genetic instructions carried by the mRNA. By matching the appropriate amino acid to the corresponding codon on the mRNA, tRNA plays an essential role in translating the genetic code into functional proteins. This process is fundamental to cellular function and organism development.

10. What are the two basic forms of fatty acids?

- A. Saturated and trans
- B. Unsaturated and semi-saturated
- C. Saturated and unsaturated**
- D. Saturated and simple

The two basic forms of fatty acids are saturated and unsaturated. Saturated fatty acids contain no double bonds between the carbon atoms in their hydrocarbon chains, which means they are fully "saturated" with hydrogen atoms. This characteristic leads to a solid state at room temperature, commonly found in animal fats. In contrast, unsaturated fatty acids contain one or more double bonds in their structure, which creates kinks in the chain, preventing the molecules from packing tightly together. This results in a liquid state at room temperature, typical of many plant oils. Unsaturated fatty acids can further be categorized into monounsaturated (one double bond) and polyunsaturated (multiple double bonds), but the essential distinction remains that they are fundamentally different from saturated fatty acids. Recognizing these two primary types is crucial for understanding dietary fats, their health implications, and their different properties in food science and nutrition. This classification provides insight into how fatty acids behave in biochemical processes and their effects on human health.

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://semmelweismedbioentrance.examzify.com>

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