

HUMBER ADMISSIONS PRACTICE TEST (SAMPLE)

STUDY GUIDE



Prepare with structure. Pass with confidence



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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. Which of the following accurately describes prophase in mitosis?**
 - A. Chromosomes condense and become visible
 - B. Chromosomes separate and move to opposite poles
 - C. Chromosomes are replicated
 - D. Formation of the nuclear envelope

- 2. What type of chemical reaction occurs when two compounds exchange ions or atoms resulting in the formation of a gas, solid precipitate, or molecular compound?**
 - A. Oxidation Reaction
 - B. Double-Displacement Reaction
 - C. Combustion Reaction
 - D. Synthesis Reaction

- 3. What is activation energy?**
 - A. Energy released during a reaction
 - B. Energy required for bond formation
 - C. Energy needed to get a reaction started
 - D. Energy that prevents reactions

- 4. What type of membrane is the plasma membrane considered to be?**
 - A. Endoplasmic membrane
 - B. Phospholipid bilayer
 - C. Simple layer
 - D. Complex structure

- 5. What defines a compound?**
 - A. A combination of elements physically mixed
 - B. Two or more elements chemically combined
 - C. A single element in a pure form
 - D. A mixture of metals only

6. What is a nucleotide?

- A. A basic structural unit of proteins
- B. A building block of DNA comprising a sugar, base, and phosphate
- C. A type of RNA molecule
- D. A complex carbohydrate

7. What does the nucleus contain that is crucial for cell growth and reproduction?

- A. Ribosomes
- B. DNA and RNA
- C. Enzymes
- D. Proteins

8. What defines a saturated solution?

- A. A solution that can dissolve additional solute
- B. A solution that contains no solute
- C. A solution that cannot dissolve any more solute under the given conditions
- D. A solution with an equimolar concentration of solute and solvent

9. What is active transport?

- A. The movement of materials from high to low concentration
- B. The use of energy to move materials from low to high concentration
- C. Transport of molecules without energy usage
- D. The exchange of gases across a membrane

10. What is the primary function of flagella in one-celled organisms?

- A. Reproduction
- B. Movement
- C. Feeding
- D. Cell division

Answers

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

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Explanations

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1. Which of the following accurately describes prophase in mitosis?

- A. Chromosomes condense and become visible**
- B. Chromosomes separate and move to opposite poles
- C. Chromosomes are replicated
- D. Formation of the nuclear envelope

Prophase is the stage of mitosis where several critical changes occur in the cell's structure. During this phase, chromosomes undergo condensation and become visible under a microscope. This visibility is pivotal because it marks the transition from the loosely organized chromatin found in interphase to the tightly packed chromosome structure necessary for the subsequent phases of mitosis. In prophase, the nucleolus disappears, and the mitotic spindle begins to form from the centrosomes. The spindle fibers play an essential role in later stages of mitosis where they will help in the alignment and separation of chromosomes. However, it is specifically the condensation of chromosomes into distinct and observable entities that defines this phase. The other options provided refer to different phases of mitosis. Chromosomes separating and moving to opposite poles occurs during anaphase, chromosome replication takes place during the S phase of interphase before mitosis begins, and the formation of the nuclear envelope occurs in the final stage of mitosis, known as telophase. By focusing on the unique characteristic of prophase, it is clear why the selection accurately describes this crucial step in the mitotic process.

2. What type of chemical reaction occurs when two compounds exchange ions or atoms resulting in the formation of a gas, solid precipitate, or molecular compound?

- A. Oxidation Reaction
- B. Double-Displacement Reaction**
- C. Combustion Reaction
- D. Synthesis Reaction

The process described involves two compounds undergoing a transformation where they exchange ions or atoms. This type of reaction is characteristic of double-displacement reactions, which are also known as metathesis reactions. During these reactions, the components of the reactants switch partners, leading to a new arrangement of ions. A defining feature of double-displacement reactions is their potential to produce a gas, a solid precipitate, or a molecular compound as one of the products. For instance, when an aqueous solution of silver nitrate reacts with sodium chloride, they exchange ions to form sodium nitrate and solid silver chloride, which precipitates out of the solution. This distinguishes double-displacement reactions from other types, such as oxidation reactions, which involve the transfer of electrons and changes in oxidation states, or combustion reactions, which primarily involve the rapid reaction of a substance with oxygen to produce heat and light. Synthesis reactions, on the other hand, typically involve the combination of simpler substances to form a more complex compound, rather than exchanging components between two compounds. Thus, the correct identification of double-displacement reactions is key to understanding the dynamics of chemical interactions involving ionic compounds.

3. What is activation energy?

- A. Energy released during a reaction
- B. Energy required for bond formation
- C. Energy needed to get a reaction started**
- D. Energy that prevents reactions

Activation energy is defined as the minimum amount of energy required to initiate a chemical reaction. This energy is necessary to overcome the energy barrier that prevents reactants from converting into products. During a reaction, molecules must collide with sufficient energy to break existing bonds and allow for the reconfiguration of atoms to form new bonds, leading to products. The option that states activation energy is the energy needed to get a reaction started effectively captures the essence of this concept. It underscores the requirement for energy input in order to initiate the process of transformation from reactants to products. The other choices do not accurately represent activation energy. The notion of energy being released during a reaction pertains to the energy changes that occur after the reaction has commenced, rather than the energy needed to start it. Similarly, energy required for bond formation relates to the energy changes involved in creating new bonds in products, which happens after the activation energy has been provided. Lastly, the concept of energy that prevents reactions does not align with activation energy, as activation energy is about providing the necessary energy to overcome the barriers rather than preventing reactions.

4. What type of membrane is the plasma membrane considered to be?

- A. Endoplasmic membrane
- B. Phospholipid bilayer**
- C. Simple layer
- D. Complex structure

The plasma membrane is best described as a phospholipid bilayer. This structure is fundamental to the function of the membrane, as it consists of two layers of phospholipids arranged tail-to-tail. The hydrophobic (water-fearing) tails face inward, away from water, while the hydrophilic (water-attracting) heads face outward towards the intracellular and extracellular fluids. This arrangement allows the plasma membrane to form a barrier that separates the internal environment of the cell from the outside environment while still being semi-permeable, meaning it can regulate which substances enter and leave the cell. The phospholipid bilayer is crucial for various cellular functions such as protecting the cell, facilitating communication with other cells, and enabling the transport of materials in and out of the cell. Furthermore, it interacts with various proteins and cholesterol, which are embedded within or associated with it, providing additional functionality and stability. In contrast, the terms used in the other options do not accurately describe the plasma membrane in the same fundamental way. While membranes may be part of the endoplasmic reticulum, a simple layer does not capture the complexity or structure of the plasma membrane, and calling it a complex structure is overly general without specifying the bilayer nature essential to

5. What defines a compound?

- A. A combination of elements physically mixed
- B. Two or more elements chemically combined**
- C. A single element in a pure form
- D. A mixture of metals only

A compound is defined as a substance formed when two or more elements are chemically combined in a fixed ratio. This chemical combination involves the formation of chemical bonds, which distinguishes compounds from mixtures. For example, when hydrogen and oxygen chemically combine to form water, they create a compound with distinct properties that are different from those of the individual elements. The focus on chemical bonding is crucial here; unlike a physical mixture where elements maintain their individual properties, a compound exhibits new characteristics that arise from its unique molecular structure. This is why the definition emphasizing chemical combination is the correct understanding of what constitutes a compound. In contrast, options describing physical mixtures or referring exclusively to single elements do not capture the essence of compounds, which are fundamentally about chemical interactions, not mere physical proximity or elemental purity.

6. What is a nucleotide?

- A. A basic structural unit of proteins
- B. A building block of DNA comprising a sugar, base, and phosphate**
- C. A type of RNA molecule
- D. A complex carbohydrate

A nucleotide serves as the fundamental building block of DNA and is composed of three essential components: a sugar molecule, a nitrogenous base, and a phosphate group. This structure is critical in encoding genetic information and allows for the formation of the DNA double helix. Each nucleotide connects to others through covalent bonds, forming long chains that make up the DNA strand. In DNA, the sugar is specifically deoxyribose, the nitrogenous bases are adenine, thymine, cytosine, and guanine, and the phosphate group links the sugar of one nucleotide to the sugar of the next, creating a backbone for the DNA structure. This tripartite structure is pivotal for processes such as DNA replication and transcription, enabling the precise transfer of genetic information during cell division and protein synthesis. Other options present different biological concepts that do not accurately describe a nucleotide. For instance, although proteins are made up of amino acids, they are not structurally constructed from nucleotides. Similarly, RNA molecules consist of nucleotides, but they are distinct from nucleotides themselves. Complex carbohydrates refer to larger molecules made of sugar units and are also unrelated to the composition of nucleotides.

7. What does the nucleus contain that is crucial for cell growth and reproduction?

- A. Ribosomes
- B. DNA and RNA**
- C. Enzymes
- D. Proteins

The nucleus plays a critical role in cell growth and reproduction because it houses the cell's genetic material, primarily in the form of DNA. This DNA contains the instructions necessary for synthesizing proteins, which are essential for various cellular functions and processes. During cell division, the replication of DNA ensures that each new cell receives an identical set of genetic information, allowing for the continuation of life and proper functioning of the organism. While RNA is also present in the nucleus, its primary function is to aid in protein synthesis, acting as a messenger that carries the information from DNA to ribosomes where proteins are made. Thus, the combination of DNA and RNA in the nucleus supports both the growth of the cell and its ability to reproduce by facilitating the flow of genetic information necessary to create proteins and other vital molecules.

8. What defines a saturated solution?

- A. A solution that can dissolve additional solute
- B. A solution that contains no solute
- C. A solution that cannot dissolve any more solute under the given conditions**
- D. A solution with an equimolar concentration of solute and solvent

A saturated solution is defined as one that has dissolved the maximum amount of solute possible at a specific temperature and pressure. This means that under the existing conditions, the solution cannot take on any more solute, as it has reached equilibrium. Any additional solute added will not dissolve and may settle at the bottom or remain undissolved in the solution. This concept is critical in chemistry because the degree of saturation will change with temperature and pressure. For instance, heating a saturated solution might allow more solute to dissolve, making it unsaturated until it reaches a new saturation point. Understanding this foundation helps in grasping broader chemical principles and applications. The other options do not capture the essential characteristics of a saturated solution as precisely. For instance, a solution that can dissolve additional solute does not reflect saturation, while the presence or absence of solute itself does not define saturation either. An equimolar concentration of solute and solvent is also not a defining characteristic of saturation, as saturation pertains more to the solute's capacity to dissolve rather than the specific ratio between solute and solvent.

9. What is active transport?

- A. The movement of materials from high to low concentration
- B. The use of energy to move materials from low to high concentration**
- C. Transport of molecules without energy usage
- D. The exchange of gases across a membrane

Active transport is the process in which substances are moved across a cell membrane against their concentration gradient, from an area of lower concentration to an area of higher concentration. This movement requires the input of energy, usually in the form of ATP, because it is working against the natural tendency for substances to move from areas of high concentration to areas of low concentration. Understanding that active transport is energy-dependent distinguishes it from passive transport mechanisms, which do not require energy and involve movement down a concentration gradient. This is why the use of energy to facilitate the movement of materials from low to high concentration is the defining feature of active transport. The other options describe different transport mechanisms or processes that do not accurately reflect the characteristics of active transport.

10. What is the primary function of flagella in one-celled organisms?

A. Reproduction

B. Movement

C. Feeding

D. Cell division

Flagella are long, whip-like structures that protrude from the cell body of one-celled organisms, such as protozoa and some bacteria. The primary function of flagella is to facilitate movement. They create a propelling force that allows these organisms to swim through liquid environments, such as water or bodily fluids. The rotational motion of flagella can enable the organism to change direction, navigate towards nutrients, or escape from harmful substances. In contrast, reproduction, feeding, and cell division are not direct functions of flagella. While some organisms may reproduce through methods that involve movement, flagella themselves do not contribute directly to the reproductive process. Similarly, while cells may rely on movement to locate food, feeding mechanisms typically involve different structures or processes, such as cilia or specialized organelles for engulfing nutrients. Lastly, cell division is a complex process separate from movement, involving the replication of genetic material and the structuring of cellular components into two new cells. Thus, the role of flagella is primarily focused on enabling mobility in one-celled organisms.

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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://humberadmissions.examzify.com>

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

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