

# AC-HPAT 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

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- 1. What type of interaction is characterized by one organism benefiting while the other is harmed?**
  - A. Mutualism**
  - B. Commensalism**
  - C. Parasitism**
  - D. Symbiosis**
  
- 2. In eukaryotic organisms, the term haploid refers to what?**
  - A. A cell with two sets of chromosomes**
  - B. A cell with half the usual number of chromosomes**
  - C. A dominant genetic trait**
  - D. A cell undergoing mitosis**
  
- 3. What is a carcinogen?**
  - A. A substance that promotes cellular repair**
  - B. A substance that can cause cancer**
  - C. A chemical that enhances photosynthesis**
  - D. A substance that aids in digestion**
  
- 4. Which type of transport allows substances to move down their concentration gradient without energy?**
  - A. Active transport**
  - B. Facilitated diffusion**
  - C. Osmosis**
  - D. Passive transport**
  
- 5. What is the role of the cell membrane?**
  - A. Protein synthesis**
  - B. Control the movement of substances in and out of cells**
  - C. Storage of genetic material**
  - D. Energy production**

- 6. During which process is water used to provide electrons in photosynthesis?**
- A. Calvin cycle**
  - B. Light dependent reactions**
  - C. Nitrogen fixation**
  - D. Germination**
- 7. What is a gastric ulcer?**
- A. An ulcer located in the esophagus**
  - B. A peptic ulcer that develops in the stomach**
  - C. An ulcer in the small intestine**
  - D. An ulcer that occurs in the colon**
- 8. What type of molecule is primarily broken down during glycolysis?**
- A. Amino acids**
  - B. Nucleic acids**
  - C. Glucose**
  - D. Fatty acids**
- 9. Which component of the blood constitutes the largest volume?**
- A. Erythrocytes**
  - B. Leukocytes**
  - C. Plasma**
  - D. Thrombocytes**
- 10. Which organ helps fight certain bacteria that cause pneumonia?**
- A. Kidney**
  - B. Spleen**
  - C. Heart**
  - D. Liver**

## Answers

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

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## **Explanations**

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**1. What type of interaction is characterized by one organism benefiting while the other is harmed?**

- A. Mutualism**
- B. Commensalism**
- C. Parasitism**
- D. Symbiosis**

Parasitism is understood as a type of ecological interaction where one organism, known as the parasite, benefits at the expense of another organism, known as the host. In this relationship, the parasite derives nutrients or some form of advantage from the host, which often experiences detrimental effects as a result. This harm can manifest in various ways, such as reduced fitness, disease, or even death in extreme cases. In contrast, mutualism describes interactions where both organisms benefit, while commensalism involves one organism benefiting without affecting the other. Symbiosis broadly encompasses a variety of long-term interactions between two species, including mutualism, commensalism, and parasitism, but does not imply harm to one of the parties involved in every instance. Therefore, parasitism is specifically defined by the asymmetrical nature of the benefit and harm, making it the precise answer to the question regarding interactions where one organism benefits while the other is harmed.

**2. In eukaryotic organisms, the term haploid refers to what?**

- A. A cell with two sets of chromosomes**
- B. A cell with half the usual number of chromosomes**
- C. A dominant genetic trait**
- D. A cell undergoing mitosis**

In eukaryotic organisms, the term haploid specifically refers to a cell that contains half the usual number of chromosomes. This is especially significant during sexual reproduction, where haploid cells, such as gametes (sperm and egg cells), are produced through the process of meiosis. In humans and many other eukaryotes, diploid cells typically have two sets of chromosomes (one set from each parent). When these diploid cells undergo meiosis, they generate haploid cells, which are essential for maintaining the stability of chromosome number across generations once fertilization occurs. This context highlights the importance of haploidy in reproduction and genetic diversity, setting it apart from diploid cells, dominant genetic traits, or the processes involved in mitosis, which deal with the replication and division of cells without changing their chromosome number.

### 3. What is a carcinogen?

- A. A substance that promotes cellular repair
- B. A substance that can cause cancer**
- C. A chemical that enhances photosynthesis
- D. A substance that aids in digestion

A carcinogen is defined as a substance that can lead to the development of cancer in living tissue. These substances alter cellular metabolism or damage the genetic material within cells, which can result in uncontrolled cell growth, ultimately leading to tumor formation. Knowing this, it is clear that the correct answer accurately captures the nature and role of carcinogens in biological systems. The other options focus on unrelated biological functions; for example, promoting cellular repair refers to factors that help the body recover from damage, while enhancing photosynthesis pertains to processes in plants that use sunlight to convert carbon dioxide and water into glucose and oxygen. Aiding in digestion involves substances that help break down food into nutrients but does not pertain to cancer risk. Thus, the specificity of a carcinogen as a cancer-causing agent makes the second choice the only appropriate selection.

### 4. Which type of transport allows substances to move down their concentration gradient without energy?

- A. Active transport
- B. Facilitated diffusion
- C. Osmosis
- D. Passive transport**

The type of transport that allows substances to move down their concentration gradient without the expenditure of energy is passive transport. This process relies on the natural tendency of molecules to move from areas of higher concentration to areas of lower concentration, striving for equilibrium. In passive transport, the movement occurs spontaneously, driven solely by the concentration gradient. This encompasses several modes of transport, including osmosis, which is the movement of water across a selectively permeable membrane, and facilitated diffusion, which is the movement of specific molecules across a biological membrane via protein channels. The term "passive transport" serves as an umbrella concept that includes these specific processes, emphasizing that no energy input is required. The lack of energy expenditure distinguishes passive transport from active transport, where substances move against their concentration gradient necessitating energy consumption, usually in the form of ATP. Understanding the differences between these transport mechanisms is crucial for grasping how substances move in and out of cells, which is fundamental to many biological processes.

## 5. What is the role of the cell membrane?

- A. Protein synthesis
- B. Control the movement of substances in and out of cells**
- C. Storage of genetic material
- D. Energy production

The role of the cell membrane is primarily to control the movement of substances in and out of cells. This crucial function is achieved through its structure, which is composed of a phospholipid bilayer with embedded proteins. This arrangement allows the membrane to be selectively permeable, meaning it can regulate what enters and exits the cell based on factors like size, charge, and solubility. The proteins in the membrane facilitate transport processes, such as passive transport (diffusion and osmosis) and active transport (requiring energy), enabling the cell to maintain homeostasis. By controlling the internal environment of the cell, the membrane plays a significant role in communication, nutrient uptake, and waste elimination, which are vital for the cell's survival and function. In contrast to the other functions listed, protein synthesis, storage of genetic material, and energy production are carried out by different cellular structures and processes. Ribosomes and the endoplasmic reticulum are involved in protein synthesis, the nucleus houses the genetic material, and mitochondria are primarily responsible for energy production. Therefore, option B accurately reflects the essential function of the cell membrane.

## 6. During which process is water used to provide electrons in photosynthesis?

- A. Calvin cycle
- B. Light dependent reactions**
- C. Nitrogen fixation
- D. Germination

In photosynthesis, the process that uses water to provide electrons is the light-dependent reactions. During these reactions, which occur in the thylakoid membranes of chloroplasts, water molecules are split through a process called photolysis. This reaction is driven by light energy absorbed by chlorophyll. The splitting of water releases oxygen as a byproduct and provides electrons that are crucial for the photosynthetic electron transport chain. These electrons ultimately contribute to the formation of energy-rich molecules such as ATP and NADPH, which are then utilized in the subsequent stage of photosynthesis, the Calvin cycle. The light-dependent reactions are essential for harnessing solar energy and converting it to chemical energy, making them a key component of the photosynthetic process.

## 7. What is a gastric ulcer?

- A. An ulcer located in the esophagus
- B. A peptic ulcer that develops in the stomach**
- C. An ulcer in the small intestine
- D. An ulcer that occurs in the colon

A gastric ulcer is specifically defined as a peptic ulcer that develops in the stomach lining. It occurs when the protective mucus layer in the stomach is compromised, allowing stomach acid to damage the tissue. This can lead to various symptoms, including pain, vomiting, and indigestion. The term "peptic ulcer" encompasses both gastric ulcers, which occur in the stomach, and duodenal ulcers, which occur in the first part of the small intestine. Therefore, the focus on the stomach lining is crucial in understanding what constitutes a gastric ulcer. In contrast, ulcers located in the esophagus or small intestine are classified differently and have distinct characteristics and causes. Similarly, an ulcer that occurs in the colon would not fall under the category of a gastric ulcer, as it refers to a different part of the gastrointestinal tract entirely. Understanding the specific location and type of ulcer is essential for appropriate diagnosis and treatment.

## 8. What type of molecule is primarily broken down during glycolysis?

- A. Amino acids
- B. Nucleic acids
- C. Glucose**
- D. Fatty acids

Glycolysis is a fundamental metabolic pathway that primarily involves the breakdown of glucose molecules to produce energy. This process occurs in the cytoplasm of cells and is anaerobic, meaning it does not require oxygen. During glycolysis, one molecule of glucose, which is a six-carbon sugar, is converted into two molecules of pyruvate, a three-carbon compound. This conversion not only helps in the production of pyruvate, which can further enter the mitochondria for additional energy production through the Krebs cycle, but it also generates a small amount of ATP (adenosine triphosphate) and NADH (nicotinamide adenine dinucleotide) as energy carriers. Other types of molecules, such as amino acids, nucleic acids, and fatty acids, do not primarily undergo glycolysis. Amino acids are generally involved in protein metabolism and can enter the energy production pathways at various steps, but they do not serve as the primary substrate in glycolysis. Similarly, nucleic acids are involved in the storage and transfer of genetic information and are broken down in different metabolic pathways. Fatty acids undergo a different process known as beta-oxidation for energy production, which occurs in the mitochondria. Thus, glucose is the correct and

**9. Which component of the blood constitutes the largest volume?**

- A. Erythrocytes
- B. Leukocytes
- C. Plasma**
- D. Thrombocytes

Plasma constitutes the largest volume of blood, making up about 55% of its total composition. It is a straw-colored liquid that serves several vital functions, including transporting nutrients, hormones, and proteins throughout the body. Plasma is primarily composed of water, but it also contains electrolytes, dissolved gases, nutrients, and waste products, which contribute to its volume and functionality. In contrast, erythrocytes, or red blood cells, while crucial for oxygen transport, only account for about 40-45% of blood volume. Leukocytes, or white blood cells, are involved in immune function and constitute a much smaller fraction of blood, typically less than 1%. Thrombocytes, or platelets, are essential for blood clotting but also make up a minor volume when compared to plasma. Hence, plasma's predominance in blood volume underscores its role in maintaining homeostasis and facilitating essential physiological processes.

**10. Which organ helps fight certain bacteria that cause pneumonia?**

- A. Kidney
- B. Spleen**
- C. Heart
- D. Liver

The spleen plays a significant role in the immune system, particularly in the defense against certain bacterial infections, including those that can lead to pneumonia. It is responsible for filtering the blood and helps in the production of lymphocytes, which are crucial for the adaptive immune response. The spleen acts as a reservoir for immune cells and reacts to infections by producing antibodies and activating T-cells to fight off pathogens. When bacteria such as *Streptococcus pneumoniae* enter the bloodstream, the spleen can identify and respond to these invaders. In addition to directly attacking pathogens, the spleen also helps clear the body of old or damaged blood cells, which can enhance overall immune function. Given its functions, the spleen is especially important in recognizing and responding to encapsulated bacteria — a category that includes some types of bacteria that cause pneumonia.

## 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](mailto:hello@examzify.com).**

**Or visit your dedicated course page for more study tools and resources:**

**<https://achpatbiology.examzify.com>**

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

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