PLTW Biomedical Science End of Course (EOC) Practice Test (Sample)

Study Guide

BY EXAMZIFY

Everything you need from our exam experts!

Table of Contents

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. High LDL levels are associated with what condition?

A. Increased bone density

B. Decreased blood pressure

C. Plaque buildup in artery walls

D. Improved oxygen delivery

2. What kind of cancer did Henrietta Lacks have?

A. Breast cancer

B. Lung cancer

C. Cervical cancer

D. Prostate cancer

3. What is the name for white blood cells?

A. leukocytes

B. erythrocytes

C. thrombocytes

D. plasma

4. In type 1 diabetes, what is wrong with the pancreatic beta cells?

A. They do not function properly and do not produce insulin.

B. They overproduce insulin.

C. They become resistant to insulin.

D. They secrete glucagon instead of insulin.

5. Which molecule's sequence is read to determine the amino acid sequence?

A. DNA

B. mRNA

C. tRNA

D. rRNA

6. What is the start codon for protein synthesis?

A. AUG

B. UUU

C. UAA

D. UGA

7. What do alpha cells do?

A. Store glucose

B. Produce glucagon

C. Regulate blood pressure

D. Produce insulin

8. Which molecule stores genetic information in the nucleus?

A. RNA

B. Lipids

C. Proteins

D. DNA

9. Which sequence best describes how an infectious disease establishes itself in a host?

A. Enter the host body, invade and colonize tissues, adhere to host cells, and inflict damage.

B. Enter the host body, adhere to specific host cells, invade and colonize host tissues, and inflict damage.

C. Adhere to host cells, invade tissues, enter the host, and inflict damage.

D. Invade tissues, enter the host, adhere to cells, and cause damage.

10. What are chromosomes?

A. ribosomes

B. complex structures made of DNA and histone proteins in the nucleus of cells

C. circular DNA in mitochondria

D. cytoskeleton

Answers

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

Explanations

1. High LDL levels are associated with what condition?

A. Increased bone density

B. Decreased blood pressure

C. Plaque buildup in artery walls

D. Improved oxygen delivery

High LDL cholesterol is linked to plaque buildup in the arteries, a condition called atherosclerosis. LDL carries cholesterol through the bloodstream, and when there's too much LDL, cholesterol can deposit on the inner walls of arteries. Over time, these deposits grow into plaques that narrow and stiffen the vessels, reducing blood flow and the delivery of oxygen to tissues. If a plaque ruptures, a blood clot can form and block the artery, potentially causing a heart attack or stroke. The other options don't fit because LDL isn't associated with increased bone density or decreased blood pressure, and narrowed arteries actually worsen, not improve, oxygen delivery.

2. What kind of cancer did Henrietta Lacks have?

A. Breast cancer

B. Lung cancer

C. Cervical cancer

D. Prostate cancer

Understanding where a cancer starts helps identify the origin of the cells used in famous research lines. Henrietta Lacks had cervical cancer, and the HeLa cell line was developed from cells taken from her cervical tumor in 1951 at Johns Hopkins. That tissue origin is why the answer is cervical cancer—the cervix is the site of the cancer from which these immortal cells were derived, enabling widespread biomedical research. The other options—breast, lung, and prostate cancers—are cancers of different organs and were not the source of HeLa cells.

3. What is the name for white blood cells?

A. leukocytes

B. erythrocytes

C. thrombocytes

D. plasma

White blood cells, known as leukocytes, are the immune system's defenders that help the body fight infections. They're produced in the bone marrow and travel through the blood and lymphatic system, responding to invaders like bacteria and viruses. Leukocytes come in several types—neutrophils, lymphocytes, monocytes, eosinophils, and basophils—each with specific roles in recognizing pathogens and coordinating immune responses. Erythrocytes are red blood cells that carry oxygen, thrombocytes (platelets) are involved in clotting, and plasma is the liquid portion of blood that transports nutrients, hormones, and waste. That's why the term for white blood cells is leukocytes.

4. In type 1 diabetes, what is wrong with the pancreatic beta cells?

A. They do not function properly and do not produce insulin.

B. They overproduce insulin.

C. They become resistant to insulin.

D. They secrete glucagon instead of insulin.

In type 1 diabetes, autoimmune destruction of pancreatic beta cells leads to little or no insulin production. Insulin is the hormone that allows glucose to enter most cells; without it, blood glucose stays high and cells can't access energy. So the beta cells not producing insulin accurately describes what goes wrong. The other ideas don't fit type 1: overproducing insulin would lower blood glucose and isn't typical here; insulin resistance means cells don't respond to insulin (more common in type 2); and glucagon is secreted by alpha cells, not beta cells, so the issue isn't a switch to secreting glucagon.

5. Which molecule's sequence is read to determine the amino acid sequence?

A. DNA

B. mRNA

C. tRNA

D. rRNA

During protein synthesis, the ribosome reads the messenger RNA sequence to determine the order of amino acids in the protein. Each codon on the mRNA specifies a particular amino acid, and transfer RNA brings that amino acid to the ribosome by matching its anticodon to the codon. DNA serves as the original blueprint and is transcribed into mRNA, but the translation step uses the mRNA sequence, not the DNA, to lay down the amino acids. rRNA is part of the ribosome and helps catalyze the process, but it does not provide the amino acid sequence itself.

6. What is the start codon for protein synthesis?

A. AUG

B. UUU

C. UAA

D. UGA

Protein production begins when the ribosome finds AUG on the mRNA. This signal not only starts translation but also fixes the reading frame for all the following codons. AUG codes for the amino acid methionine and is recognized by the initiator tRNA, which brings methionine to the ribosome to kick off the polypeptide chain. The other codons shown do not initiate translation: one specifies phenylalanine, while the others are stop codons that terminate protein synthesis.

7. What do alpha cells do?

A. Store glucose

B. Produce glucagon

C. Regulate blood pressure

D. Produce insulin

Alpha cells are part of the pancreatic islets and specialize in secreting glucagon. This hormone raises blood glucose levels when you're fasting or have low blood sugar by signaling the liver to break down stored glycogen (glycogenolysis) and to synthesize new glucose from non-carbohydrate sources (gluconeogenesis). It can also promote the breakdown of fats for energy. Glucagon's action is the opposite of insulin, which lowers blood glucose by helping cells take in glucose. So alpha cells don't store glucose, don't directly regulate blood pressure, and don't produce insulin—the latter is the job of beta cells.

8. Which molecule stores genetic information in the nucleus?

A. RNA

B. Lipids

C. Proteins

D. DNA

At the heart of this question is how genetic information is stored in cells. In the nucleus of eukaryotic cells, DNA serves as the long-term repository for the genetic instructions. Its sequence of bases carries the genes, and DNA can be accurately replicated so information is passed to new cells during cell division. RNA, while essential for expressing that information (it acts as a temporary copy used in protein synthesis), is not the storage form itself. Lipids and proteins have many roles, but storing the genetic blueprint in the nucleus is the job of DNA.

9. Which sequence best describes how an infectious disease establishes itself in a host?

A. Enter the host body, invade and colonize tissues, adhere to host cells, and inflict damage.

B. Enter the host body, adhere to specific host cells, invade and colonize host tissues, and inflict damage.

C. Adhere to host cells, invade tissues, enter the host, and inflict damage.

D. Invade tissues, enter the host, adhere to cells, and cause damage.

The sequence starts with the pathogen gaining entry into the body, which is the first step that allows it to access internal tissues. After entry, the pathogen must attach to specific host cells to establish itself and resist being cleared by bodily defenses. This attachment sets up a stable foothold and often determines which tissues the pathogen will infect. Next comes invasion and colonization of the tissues, where the pathogen replicates and spreads within the host. Finally, damage to the host occurs as a result of the pathogen's activities, such as toxin production and the host's immune response causing tissue injury. That makes the chosen sequence the best fit because it follows the logical progression from entry to attachment to tissue invasion, culminating in damage. Other sequences misplace these steps (for example, attempting to adhere before entering or invading before establishing attachment), which doesn't align with how infections are typically established.

10. What are chromosomes?

A. ribosomes

B. complex structures made of DNA and histone proteins in the nucleus of cells

C. circular DNA in mitochondria

D. cytoskeleton

Chromosomes are the organized carriers of genetic information inside the cell nucleus, made of DNA wrapped around histone proteins to form compact, visible structures. This combination allows long DNA molecules to be packaged and organized so genes can be accurately passed on during cell division. In eukaryotic cells, most genetic material exists as chromosomes in the nucleus, and they condense into tightly packed forms when a cell divides to ensure proper separation. Ribosomes, by contrast, are the molecular machines that synthesize proteins. Mitochondrial DNA is circular and located in mitochondria, not organized into chromosomes within the nucleus. The cytoskeleton is the cell's structural framework, not genetic material.

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://pltwbiomedscienceeoc.examzify.com

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