PLTW BIOMEDICAL SCIENCE END OF COURSE (EOC) PRACTICE TEST (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED 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.

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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!

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Questions

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1. What do most viruses have?

A. DNA
B. Proteins
C. RNA
D. Lipids

2. How many times on average does your heart beat a day?

A. 60,000 times a day.
B. 80,000 times a day.
C. 120,000 times a day.
D. 100,000 times a day.

3. In homozygous dominant FH, LDL levels are typically?

A. 100-200 mg/dL
B. Over 600 mg/dL
C. 200-300 mg/dL
D. 400-500 mg/dL

4. What is a gram negative peptidoglycan like?

A. Very thick
B. Absent
C. Very thin
D. Moderately thick

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

A. DNA
B. mRNA
C. tRNA
D. rRNA

6. What is lividity?

A. Stiffening of the muscles
B. Cooling of the body
C. Pooling of the blood after death
D. Loss of ATP

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7. Minutiae are?

A. Specific Ridge Marks in the Fingertips
B. DNA Sequences
C. Hair Follicle Patterns
D. Platelets

8. Which statement about blood composition is most accurate?

A. Liquid Plasma plus Red Blood Cells, White Blood Cells, and Platelets
B. Blood is composed only of Plasma
C. Blood contains no Antibodies
D. Blood is primarily water with no solids

9. The polymerase chain reaction is used to

A. Amplify a specific DNA sequence to produce many copies
B. Sequence an entire genome
C. Digest DNA into smaller fragments
D. Convert RNA into DNA

10. What are exons?

A. The DNA nucleotides that code for the protein.
B. Noncoding regions of DNA.
C. Segments of DNA that regulate gene expression.
D. Introns that are removed during RNA processing.

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Answers

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

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Explanations

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1. What do most viruses have?

A. DNA

B. Proteins

C. RNA

D. Lipids

Most viruses use RNA as their genetic material. Viruses are tiny particles with a protein shell that encases either RNA or DNA. Among known viruses, RNA genomes are more common, including many different families, while DNA genomes are present but fewer in number. Some viruses have a lipid envelope, but not all do, so lipids aren't universal to most viruses. Proteins are essential to all viruses, but their presence isn't what distinguishes the majority; the defining difference for many viruses is their RNA genome. So, RNA is the best answer.

2. How many times on average does your heart beat a day?

A. 60,000 times a day.

B. 80,000 times a day.

C. 120,000 times a day.

D. 100,000 times a day.

The amount the heart beats in a day comes from its rate per minute and the length of a day. A day has 1,440 minutes. If the average heart rate over the day is about 70 beats per minute, then daily beats ≈ 70 × 1,440 = 100,800, which is about 100,000. This estimate fits common teaching that the heart races up and down with activity but averages roughly around 70 bpm across a whole day, yielding about 100,000 heartbeats daily. The other numbers would require daily averages far from typical heart rates (much slower or much faster), so they don't align with what a healthy person experiences most days.

3. In homozygous dominant FH, LDL levels are typically?

A. 100-200 mg/dL

B. Over 600 mg/dL

C. 200-300 mg/dL

D. 400-500 mg/dL

Homozygous familial hypercholesterolemia causes extremely high LDL because both copies of the LDL receptor gene are defective, so the body can't clear LDL from the blood effectively. This impairment starts early, so LDL cholesterol levels rise to very high values, typically well above 600 mg/dL. That dramatic height of LDL is a hallmark of the condition, far exceeding normal ranges and those seen with milder or single-gene forms.

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4. What is a gram negative peptidoglycan like?

A. Very thick

B. Absent

C. Very thin

D. Moderately thick

The main idea here is the thickness of the peptidoglycan layer in Gram-negative bacteria. They have a very thin peptidoglycan layer, situated in the periplasmic space between the inner cytoplasmic membrane and the outer membrane that contains lipopolysaccharides. This thin layer contrasts with Gram-positive bacteria, which have a much thicker peptidoglycan wall. Because the peptidoglycan is so thin, the crystal violet stain is washed out more easily during Gram staining, and the cells take up the counterstain, appearing pink. So describing the peptidoglycan as very thin accurately reflects the structure of Gram-negative bacteria. The other descriptions don't fit: a very thick layer is characteristic of Gram-positive bacteria, an absent wall would be incorrect since Gram-negative cells do have peptidoglycan, and a moderately thick description isn't the standard portrayal for Gram-negative organisms.

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 lividity?

A. Stiffening of the muscles

B. Cooling of the body

C. Pooling of the blood after death

D. Loss of ATP

Lividity is the pooling of blood after death due to gravity once circulation stops. Blood settles in the lowest parts of the body, causing a dark, purplish discoloration of the skin that can help estimate time since death and indicate whether the body has been moved. This is different from cooling of the body (algor mortis) and from the stiffening of muscles (rigor mortis), which results from biochemical changes after the body stops producing ATP. The pooling described here is the defining feature of lividity.

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7. Minutiae are?

A. Specific Ridge Marks in the Fingertips

B. DNA Sequences

C. Hair Follicle Patterns

D. Platelets

Minutiae are the tiny ridge details in a fingerprint that investigators use to compare prints. They include features like ridge endings and bifurcations, as well as dots and short ridge segments. These small features occur in unique spatial arrangements on each finger, so matching many minutiae between two prints supports that they came from the same finger. The other options describe DNA sequences, hair follicle patterns, or platelets, which are not fingerprint minutiae and do not serve the same purpose in fingerprint comparison.

8. Which statement about blood composition is most accurate?

A. Liquid Plasma plus Red Blood Cells, White Blood Cells, and Platelets

B. Blood is composed only of Plasma

C. Blood contains no Antibodies

D. Blood is primarily water with no solids

Blood is a mixture of a liquid phase called plasma and solid components—the formed elements. The formed elements include red blood cells, white blood cells, and platelets, all suspended in the plasma. Plasma itself is a water-based solution that carries proteins (like antibodies), nutrients, and other substances. So describing blood as liquid plasma plus the three types of cells captures its actual composition, making that option the most accurate. The other statements miss the presence of formed elements or antibodies or mischaracterize blood as lacking solids or being composed only of plasma.

9. The polymerase chain reaction is used to

A. Amplify a specific DNA sequence to produce many copies

B. Sequence an entire genome

C. Digest DNA into smaller fragments

D. Convert RNA into DNA

PCR is used to amplify a specific DNA sequence, producing many copies from a small starting amount. It does this through repeated cycles of denaturation, primer binding, and extension with a DNA polymerase, with the primers defining exactly which DNA segment is copied. Because each cycle doubles the amount of the target sequence, the region of interest grows exponentially and becomes available for analysis, cloning, or sequencing. This is different from sequencing an entire genome, which reads the order of bases across all of the DNA, from digesting DNA into smaller fragments with restriction enzymes, or from converting RNA into DNA (which is done by reverse transcription before a PCR step in RT-PCR).

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10. What are exons?

A. The DNA nucleotides that code for the protein.

B. Noncoding regions of DNA.

C. Segments of DNA that regulate gene expression.

D. Introns that are removed during RNA processing.

Exons are the portions of a gene that are kept in the RNA and ultimately used to make a protein. When a gene is transcribed, the initial transcript includes both coding segments (exons) and noncoding segments (introns). The introns are removed during RNA processing, and the exons are joined together to form mature messenger RNA. This mature mRNA carries the coding sequence that determines the amino acid sequence of the protein, so the DNA nucleotides in exons are the parts that code for the protein. Noncoding regions of DNA include introns and other sequences, segments that regulate gene expression refer to promoters and enhancers, and introns are the parts removed during RNA processing.

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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://pltwbiomedscienceeoc.examzify.com

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

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