

TEXAS A&M UNIVERSITY (TAMU) PHLT 301 BIOMEDICAL SCIENCES STUDY ABROAD EXAM 1 PRACTICE (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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Table of Contents

Copyright	1
Table of Contents	2
Introduction	3
How to Use This Guide	4
Questions	5
Answers	8
Explanations	10
Next Steps	15

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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 is an essential service under the core function of assessment?**
 - A. Assess and monitor population health
 - B. Create champions, and implement policies, laws, and plans
 - C. Enable equitable access
 - D. Build a diverse and skilled workforce
- 2. First-pass metabolism reduces oral drug bioavailability; how does the liver detoxify compounds?**
 - A. First-pass metabolism increases oral drug bioavailability.
 - B. Liver detoxifies via Phase III enzymes.
 - C. First-pass metabolism occurs in the kidneys.
 - D. First-pass metabolism reduces oral drug bioavailability via hepatic metabolism; the liver detoxifies via Phase I/II enzymes converting lipophilic compounds to hydrophilic for excretion.
- 3. Which pairing correctly matches a primary tissue type with a typical example?**
 - A. Nervous tissue – Neurons
 - B. Epithelial tissue – Neurons
 - C. Muscle tissue – Chondrocytes
 - D. Connective tissue – Blood
- 4. Which hormone raises blood glucose via glycogenolysis and gluconeogenesis?**
 - A. Insulin.
 - B. Amylin.
 - C. Somatostatin.
 - D. Glucagon.
- 5. Late-stage epidemiologic transition is defined as the predominance of which types of diseases?**
 - A. Degenerative and man-made diseases
 - B. Receding pandemics
 - C. Pestilence and famine
 - D. Delayed degenerative diseases and emerging infections

- 6. What is an example of building a diverse and skilled workforce?**
- A. Having only graduates from a single university
 - B. Having people from different backgrounds who are all qualified and trained for the job
 - C. Hiring based on seniority alone
 - D. Limiting candidate pool to a specific gender
- 7. In epidemiology, which measure estimates the risk of developing disease during an outbreak?**
- A. Case Fatality Rate
 - B. Incidence
 - C. Prevalence
 - D. Mortality rate
- 8. What is the leading cause of death for people ages 65 and older?**
- A. Stroke
 - B. Chronic obstructive pulmonary disease
 - C. Heart disease
 - D. Malignant neoplasms
- 9. Which part of a neuron conducts impulses away from the cell body?**
- A. Dendrites
 - B. Soma
 - C. Axon
 - D. Synapse
- 10. Which statement correctly describes how CO₂ relates to acid-base balance?**
- A. CO₂ reacts with water to form carbonic acid, which dissociates to bicarbonate and hydrogen ions, helping regulate pH.
 - B. CO₂ accumulation increases blood pH.
 - C. CO₂ is not involved in acid-base balance.
 - D. CO₂ removal reduces bicarbonate levels.

Answers

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

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Explanations

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1. Which is an essential service under the core function of assessment?

- A. Assess and monitor population health**
- B. Create champions, and implement policies, laws, and plans
- C. Enable equitable access
- D. Build a diverse and skilled workforce

Assessing and monitoring the health of the population is the activity that defines the assessment function in public health. This involves gathering data on health indicators, watching trends over time, and identifying problems or needs so the health system can respond. That direct focus on measuring and tracking health status to identify community health problems is why this option is the best fit for the assessment essential service. The other options align with different functions. Creating champions and implementing policies, laws, and plans relates to policy development and building partnerships to address health issues. Enabling equitable access and building a diverse, skilled workforce are about ensuring access and capacity, which fall under other essential services such as assurance.

2. First-pass metabolism reduces oral drug bioavailability; how does the liver detoxify compounds?

- A. First-pass metabolism increases oral drug bioavailability.
- B. Liver detoxifies via Phase III enzymes.
- C. First-pass metabolism occurs in the kidneys.**
- D. First-pass metabolism reduces oral drug bioavailability via hepatic metabolism; the liver detoxifies via Phase I/II enzymes converting lipophilic compounds to hydrophilic for excretion.

First-pass metabolism reduces oral bioavailability because the liver processes much of what is absorbed from the gut before it reaches systemic circulation. In the liver, detoxification mainly occurs through Phase I reactions that introduce or expose functional groups (often via cytochrome P450 enzymes) and Phase II reactions that attach polar groups (such as glucuronide or sulfate) to make the compound more water-soluble. This makes the drug easier to excrete, either in urine or bile. The option that describes hepatic metabolism via Phase I/II enzymes converting lipophilic compounds to hydrophilic forms for excretion aligns with this mechanism. The other statements don't fit: first-pass does not increase bioavailability; the liver, not the kidneys, handles first-pass metabolism; and Phase III involves transporters rather than the catalytic detoxification steps of Phase I and II.

3. Which pairing correctly matches a primary tissue type with a typical example?

- A. Nervous tissue – Neurons**
- B. Epithelial tissue – Neurons
- C. Muscle tissue – Chondrocytes
- D. Connective tissue – Blood

Nervous tissue is built around specialized signaling cells called neurons, which are the primary cells responsible for transmitting electrical impulses. A typical example that defines nervous tissue is neurons, since they carry out the key function of communication within the nervous system. Epithelial tissue is made up of epithelial cells that line surfaces, not neurons. Muscle tissue consists of muscle fibers (myocytes) that contract, not chondrocytes. Chondrocytes are cartilage cells found in cartilage, a type of connective tissue, not muscle tissue. While blood is indeed a connective tissue, the pairing here highlights how the neuron is the defining cell type of nervous tissue, making nervous tissue – neurons the best match.

4. Which hormone raises blood glucose via glycogenolysis and gluconeogenesis?

- A. Insulin.
- B. Amylin.
- C. Somatostatin.
- D. Glucagon.**

Glucagon raises blood glucose by stimulating glycogen breakdown and glucose production in the liver. When blood sugar drops, pancreatic alpha cells release glucagon, which binds to receptors on liver cells and activates a cascade via cAMP. This turns on glycogenolysis through glycogen phosphorylase and inhibits glycogen synthase, releasing glucose from stored glycogen. It also promotes gluconeogenesis by increasing activity of enzymes like PEPCK and fructose-1,6-bisphosphatase, driving the production of new glucose for release into the bloodstream. Insulin lowers blood glucose by promoting uptake and storage; amylin mainly slows gastric emptying and suppresses glucagon; somatostatin inhibits several hormones, including glucagon, so none of these raise glucose like glucagon does.

5. Late-stage epidemiologic transition is defined as the predominance of which types of diseases?

- A. Degenerative and man-made diseases**
- B. Receding pandemics
- C. Pestilence and famine
- D. Delayed degenerative diseases and emerging infections

In the later stage of the epidemiologic transition, the disease burden shifts from infectious, acute illnesses to chronic, long-lasting conditions and injuries. As sanitation, vaccines, and medical care improve, people live longer, so degenerative diseases such as heart disease, cancer, stroke, and other chronic conditions become the dominant health problems. Injuries and other man-made health issues also rise in importance as lifestyle and environmental factors influence risk. So the best description is degenerative and man-made diseases. The other options describe earlier or different patterns: pestilence and famine are characteristic of the initial stage, and while pandemics may recede over time, that option doesn't specify the disease types. Delayed degenerative diseases and emerging infections mix concepts that aren't the standard predominant pattern for the late stage.

6. What is an example of building a diverse and skilled workforce?

- A. Having only graduates from a single university
- B. Having people from different backgrounds who are all qualified and trained for the job**
- C. Hiring based on seniority alone
- D. Limiting candidate pool to a specific gender

Building a diverse and skilled workforce means bringing in people from varied backgrounds who are all qualified and trained for the job. When everyone considered for the role meets the required standards and the team includes different experiences and perspectives, the organization gains both capability and innovation. This combination leads to better problem solving, broader insights, and a more inclusive culture. The strongest example is having people from different backgrounds who are all qualified and trained for the job because it simultaneously values diversity and competence. Choosing options that rely on a single university limits background variety, while hiring based on seniority alone can overlook current skills and merit. Limiting the candidate pool to a specific gender excludes qualified individuals and reduces diversity.

7. In epidemiology, which measure estimates the risk of developing disease during an outbreak?

- A. Case Fatality Rate
- B. Incidence**
- C. Prevalence
- D. Mortality rate

The measure being tested is incidence, which counts new disease events in a defined population over a specific time period. This directly reflects the risk of developing the disease during an outbreak because it tracks who is newly getting the illness, not who already has it or has recovered. Think of it this way: incidence answers the question of how likely it is for a person to become ill in a given period. If 50 new cases arise among 1,000 people who were disease-free at the start of the outbreak, the cumulative incidence is 50/1000, or 5% for that period. This contrasts with prevalence, which counts all existing cases at a point or over a period and includes people who are already sick or who have recovered, not the risk of new disease. Mortality rate focuses on deaths in the population, not new disease onset, and the case fatality rate looks at the proportion who die among those with the disease, not the chance of getting the disease itself. So incidence is the best measure for estimating the risk of developing disease during an outbreak.

8. What is the leading cause of death for people ages 65 and older?

- A. Stroke
- B. Chronic obstructive pulmonary disease
- C. Heart disease**
- D. Malignant neoplasms

The main idea here is that cardiovascular disease is the most common cause of death in people aged 65 and older. As people get older, risk factors like high blood pressure, high cholesterol, and a buildup of plaque in the arteries increase the likelihood of heart problems such as coronary artery disease and heart failure. These conditions affect the heart's ability to pump blood effectively, leading to a higher number of deaths compared to other major illnesses in this age group. Stroke is a major cause of death as well, but it falls behind heart disease in this age bracket because heart-related conditions cover a broader range of fatal events (heart attacks, heart failure, and other cardiac complications) that collectively cause more deaths. COPD and cancers are significant causes too, but the overall death toll from heart disease remains higher in those 65 and older.

9. Which part of a neuron conducts impulses away from the cell body?

- A. Dendrites
- B. Soma
- C. Axon**
- D. Synapse

The axon is the part that carries impulses away from the cell body. In a neuron, dendrites receive signals and relay them to the cell body, which integrates these inputs. If the integrated signal reaches threshold, an action potential is generated at the axon hillock and travels along the axon to the axon terminals, where neurotransmitters are released at the synapse to communicate with the next cell. The synapse itself is the connection point for communication, not the conduit for the impulse away from the cell body. This way, the axon serves as the outbound pathway for neural signals.

10. Which statement correctly describes how CO₂ relates to acid-base balance?

- A. CO₂ reacts with water to form carbonic acid, which dissociates to bicarbonate and hydrogen ions, helping regulate pH.
- B. CO₂ accumulation increases blood pH.
- C. CO₂ is not involved in acid-base balance.
- D. CO₂ removal reduces bicarbonate levels.

CO₂ is central to acid-base balance because it enters the carbonic acid–bicarbonate buffering system. When CO₂ mixes with water, it forms carbonic acid, which quickly dissociates into bicarbonate and hydrogen ions. This reaction, helped along by the enzyme carbonic anhydrase, links CO₂ levels to pH: more CO₂ pushes the reaction toward more H⁺ ions, making the blood more acidic, while less CO₂ shifts the balance toward less H⁺ and a higher pH. This mechanism is why respiratory changes can rapidly influence pH to maintain homeostasis. That's why the statement about CO₂ reacting with water to form carbonic acid, which then dissociates into bicarbonate and hydrogen ions to help regulate pH is the correct description. The other options misstate the relationship: accumulating CO₂ actually lowers pH, CO₂ is indeed involved in acid-base balance, and removing CO₂ doesn't straightforwardly reduce bicarbonate levels in a way that would negate the buffering relationship.

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:

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

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