

USMLE STEP 1 PATHOLOGY PRACTICE TEST (SAMPLE)

STUDY GUIDE



**SAMPLE STUDY GUIDE
WITH LIMITED QUESTIONS**

**VISIT US ONLINE FOR
THE FULL VERSION STUDY GUIDE**

<https://usmlestep1pathology.examzify.com>



Copyright © 2026 by Examzify - A Kaluba Technologies Inc. product.

ALL RIGHTS RESERVED.

No part of this book may be reproduced or transferred in any form or by any means, graphic, electronic, or mechanical, including photocopying, recording, web distribution, taping, or by any information storage retrieval system, without the written permission of the author.

Notice: Examzify makes every reasonable effort to obtain accurate, complete, and timely information about this product from reliable sources.

SAMPLE

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	16

SAMPLE

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

SAMPLE

- 1. Which condition is characterized by hypogonadism, mental retardation, and unilateral gynecomastia in males?**
 - A. Turner syndrome
 - B. Androgen insensitivity syndrome
 - C. Klinefelter syndrome
 - D. Hematologic malignancy

- 2. What is the appearance of embryonal rhabdomyosarcoma in children?**
 - A. Grape-like mass
 - B. Flat ulcerated lesion
 - C. Firm cystic mass
 - D. Discolored patches on the skin

- 3. What is the classic coenzyme for decarboxylation reactions?**
 - A. Thiamine
 - B. Pyridoxine
 - C. Folate
 - D. Niacin

- 4. What is the primary metabolic fate of glycerol 3-P in the liver?**
 - A. Glucose production
 - B. Fatty acid oxidation
 - C. Triglyceride synthesis
 - D. Ketone body production

- 5. Increased levels of AAT are seen in which type of tumor?**
 - A. Colorectal Carcinoma
 - B. Pulmonary Carcinoma
 - C. Hepatocellular Carcinoma
 - D. Prostate Carcinoma

- 6. Which cytokine is known to mediate granuloma formation in immune responses?**
- A. IL-6
 - B. TNF alpha
 - C. IFN-gamma
 - D. IL-1
- 7. What is a common characteristic of both Beta1 and Beta2 receptors in their signaling pathways?**
- A. Both use Gi proteins
 - B. Both decrease cAMP levels
 - C. Both are coupled with Gs proteins
 - D. Neither is linked to second messengers
- 8. Which medication is used to target HER2/neu-positive breast cancer?**
- A. Tamoxifen
 - B. Trastuzumab
 - C. Letrozole
 - D. Fomepizole
- 9. Which conditions are characterized by elevated hCG levels?**
- A. Choriocarcinoma and hydatidiform mole
 - B. Ghon complex and interstitial fibrosis
 - C. Megaloblastic anemia and DVT
 - D. Bronchial asthma and EBV mononucleosis
- 10. What mechanism does glucose employ to cause peripheral neuropathy?**
- A. Direct nerve injury
 - B. Osmotic damage through sorbitol production
 - C. Inhibition of neuronal growth
 - D. Impairment of blood supply to nerves

Answers

SAMPLE

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

SAMPLE

Explanations

SAMPLE

1. Which condition is characterized by hypogonadism, mental retardation, and unilateral gynecomastia in males?

- A. Turner syndrome
- B. Androgen insensitivity syndrome
- C. Klinefelter syndrome**
- D. Hematologic malignancy

Klinefelter syndrome is characterized by the presence of an extra X chromosome in males, leading to a 47,XXY karyotype in most cases. This chromosomal abnormality results in several clinical features, including hypogonadism, which presents as reduced testosterone levels and underdeveloped secondary sexual characteristics. Mental retardation or learning difficulties are also commonly associated, although they may not be evident in all individuals. Unilateral gynecomastia can occur due to the imbalance between estrogen and testosterone levels; in Klinefelter syndrome, the elevated estrogen levels can lead to breast tissue development. The combination of these features—hypogonadism, potential cognitive impairments, and gynecomastia—strongly points to Klinefelter syndrome as the condition in question. Turner syndrome primarily affects females and is characterized by a missing or incomplete X chromosome, leading to different manifestations such as short stature and ovarian insufficiency. Androgen insensitivity syndrome involves resistance to androgens, which affects males but typically presents with a female phenotype and does not include hypogonadism or gynecomastia. Hematologic malignancy does not fit the specific criteria of hypogonadism, cognitive impairment, and unilateral gynecomastia.

2. What is the appearance of embryonal rhabdomyosarcoma in children?

- A. Grape-like mass**
- B. Flat ulcerated lesion
- C. Firm cystic mass
- D. Discolored patches on the skin

Embryonal rhabdomyosarcoma in children typically presents as a grape-like mass, which is characteristic of this type of soft tissue sarcoma. This neoplasm often arises in sites such as the head and neck (particularly in the nasal cavity), as well as in the genital tract, and can appear as a soft, fleshy, and sometimes protruding mass that resembles grapes. The histological features include the presence of primitive rhabdomyoblasts, and the tumor is known for being aggressive and can grow rapidly, leading to significant local mass effects. The grape-like appearance aids in the clinical recognition of the disease, which is essential for timely diagnosis and treatment. Other options do not accurately reflect the clinical presentation of embryonal rhabdomyosarcoma. Flat ulcerated lesions are more indicative of certain skin cancers or chronic wounds. Firm cystic masses may suggest other types of neoplasms or cystic lesions, and discolored patches on the skin are not representative of rhabdomyosarcoma but could be associated with conditions like dermatitis or melanoma. These distinctions are critical for appropriate clinical assessment and management.

3. What is the classic coenzyme for decarboxylation reactions?

- A. Thiamine**
- B. Pyridoxine
- C. Folate
- D. Niacin

The classic coenzyme for decarboxylation reactions is thiamine, also known as vitamin B1. Thiamine plays a crucial role in several important metabolic processes, especially in the conversion of pyruvate to acetyl-CoA and the metabolism of certain amino acids and carbohydrates. Decarboxylation reactions involve the removal of a carboxyl group from a compound, leading to the formation of carbon dioxide and a corresponding change in the molecule's structure. Thiamine is essential for these reactions because it is a part of the coenzyme thiamine pyrophosphate (TPP). TPP acts as a cofactor for enzymes like pyruvate dehydrogenase and alpha-ketoglutarate dehydrogenase, which participate in critical pathways such as the citric acid cycle and the breakdown of glucose for energy. In contrast, the other options refer to different coenzymes involved in various metabolic processes. Pyridoxine, or vitamin B6, is primarily involved in transamination and decarboxylation of amino acids but does not serve as the classic coenzyme for decarboxylation reactions overall. Folate (vitamin B9) is essential for one-carbon metabolism and nucleotide synthesis.

4. What is the primary metabolic fate of glycerol 3-P in the liver?

- A. Glucose production
- B. Fatty acid oxidation
- C. Triglyceride synthesis**
- D. Ketone body production

Glycerol 3-phosphate (glycerol 3-P) plays a significant role in the metabolic processes within the liver, primarily serving as a precursor for triglyceride synthesis. In the liver, glycerol can be phosphorylated to form glycerol 3-P, which then enters the pathway of lipogenesis. This process involves the esterification of glycerol 3-P with fatty acids to form triglycerides, which can then be stored in adipose tissue or transported as very low-density lipoprotein (VLDL) to other tissues. The synthesis of triglycerides is essential for the storage of energy in the body, as fats provide a more efficient form of energy storage compared to carbohydrates. Additionally, the production of triglycerides from glycerol 3-P is vital in maintaining lipid homeostasis and supporting various metabolic functions, especially when the body is in a fed state. Unlike other metabolic processes, such as glucose production, fatty acid oxidation, or ketone body production, the primary fate of glycerol 3-P in the liver distinctly aligns with its role in triglyceride synthesis, making it the correct answer for this question.

5. Increased levels of AAT are seen in which type of tumor?

- A. Colorectal Carcinoma
- B. Pulmonary Carcinoma
- C. Hepatocellular Carcinoma**
- D. Prostate Carcinoma

Alpha-1 antitrypsin (AAT) is a protein produced by the liver that plays a crucial role in protecting tissues from enzymes of inflammatory cells, particularly elastase. In the context of tumors, AAT levels can serve as a tumor marker and are often elevated in certain liver-related malignancies. Hepatocellular carcinoma, being a primary liver cancer, is notably associated with elevated levels of AAT. Liver tumors can disrupt the normal processing and secretion of proteins, leading to increased synthesis of AAT in response to inflammation or damage within the liver itself. This elevation can occur in various liver diseases, including cirrhosis and chronic hepatic inflammation, and is particularly pronounced in hepatocellular carcinoma due to the increased production by tumor cells and the liver's acute phase response to cancer. In contrast, other types of carcinomas, such as colorectal, pulmonary, and prostate cancers, do not typically show such a significant association with AAT elevation. While they may also lead to changes in various serum proteins, AAT is more specifically linked to liver pathology and hepatocellular carcinoma, making it a relevant marker in this specific context.

6. Which cytokine is known to mediate granuloma formation in immune responses?

- A. IL-6
- B. TNF alpha**
- C. IFN-gamma
- D. IL-1

Granuloma formation is a critical immune response, particularly in defense against persistent pathogens like mycobacteria and in the context of certain autoimmune diseases. The cytokine primarily involved in mediating this process is TNF alpha. TNF alpha is produced by activated macrophages and plays a central role in the immune system by promoting inflammation and activating other immune cells. In the context of granulomas, TNF alpha is crucial for the recruitment and activation of macrophages, which then transform into epithelioid cells and multinucleated giant cells, hallmarks of granulomatous inflammation. This cytokine also helps in maintaining the structure of the granuloma by sustaining the activation of macrophages and ensuring that they continue to respond to ongoing infections or irritants. Although other cytokines like IFN-gamma are involved in the immune response, particularly in promoting the activation of macrophages, it is TNF alpha that is more directly associated with the consolidation and persistence of granulomatous tissue. Thus, it is essential in forming and sustaining granulomas in chronic inflammatory conditions.

7. What is a common characteristic of both Beta1 and Beta2 receptors in their signaling pathways?

- A. Both use Gi proteins
- B. Both decrease cAMP levels
- C. Both are coupled with Gs proteins**
- D. Neither is linked to second messengers

Both Beta1 and Beta2 adrenergic receptors are G protein-coupled receptors (GPCRs) that play critical roles in the sympathetic nervous system. The correct choice highlights their common coupling to Gs proteins, which activates the enzyme adenylate cyclase. This activation leads to an increase in cyclic AMP (cAMP) levels within the cell. cAMP serves as an important second messenger, mediating various physiological responses such as increased heart rate and contraction in the case of Beta1 receptors and bronchodilation in the case of Beta2 receptors. This shared coupling with Gs proteins is integral to their signaling pathways and helps to facilitate the effects of catecholamines like adrenaline and noradrenaline on target tissues. The characteristics of activation pathways highlight how these receptors effectively influence numerous physiological processes through a common mechanism: the stimulation of cAMP production, which can have widespread effects in different types of cells, explaining their critical roles in metabolic and cardiovascular functions.

8. Which medication is used to target HER2/neu-positive breast cancer?

- A. Tamoxifen
- B. Trastuzumab**
- C. Letrozole
- D. Fomepizole

Trastuzumab is a targeted therapy specifically designed to treat breast cancers that overexpress the HER2/neu protein. HER2 is a member of the human epidermal growth factor receptor (HER) family and is involved in cell growth and differentiation. In approximately 20-25% of breast cancers, HER2 is overexpressed, leading to more aggressive disease and a poorer prognosis. By binding to the HER2 receptor, trastuzumab inhibits the proliferation of cells that overexpress this receptor. It also marks these cancer cells for destruction by the immune system and can potentiate the effects of other chemotherapeutic agents when used in combination. This targeted approach has been shown to significantly improve outcomes in patients with HER2-positive breast cancer compared to traditional chemotherapy alone. In contrast, medications like tamoxifen and letrozole are primarily used for hormone receptor-positive breast cancers that express estrogen receptors and target hormonal pathways, not HER2. Fomepizole, on the other hand, is an antidote for methanol and ethylene glycol poisoning and has no relevance in the treatment of breast cancer. Thus, trastuzumab remains the cornerstone of therapy for HER2/neu-positive breast cancer, highlighting its significance in targeted cancer therapy.

9. Which conditions are characterized by elevated hCG levels?

- A. Choriocarcinoma and hydatidiform mole**
- B. Ghon complex and interstitial fibrosis
- C. Megaloblastic anemia and DVT
- D. Bronchial asthma and EBV mononucleosis

Elevated levels of human chorionic gonadotropin (hCG) are primarily associated with conditions involving the placenta or trophoblastic tissue. Choriocarcinoma is a malignant tumor of trophoblastic origin, often arising in the uterus from gestational tissue following a pregnancy, typically marked by significantly increased hCG levels. Hydatidiform mole, or molar pregnancy, is a result of abnormal fertilization leading to the development of a mass of cysts instead of a normal embryo. This condition also results in elevated hCG levels due to the presence of trophoblastic tissue. Both conditions highlight the role of hCG in monitoring and diagnosing gestational trophoblastic diseases. In contrast, the other options listed do not involve the elevation of hCG levels—Ghon complex pertains to tuberculosis, megaloblastic anemia is related to vitamin deficiencies (like B12 and folate), and bronchial asthma along with EBV mononucleosis are not associated with hCG release. Thus, the association of elevated hCG levels is distinctly linked to choriocarcinoma and hydatidiform mole, making this choice the correct answer.

10. What mechanism does glucose employ to cause peripheral neuropathy?

- A. Direct nerve injury
- B. Osmotic damage through sorbitol production**
- C. Inhibition of neuronal growth
- D. Impairment of blood supply to nerves

Glucose can lead to peripheral neuropathy primarily through osmotic damage, which occurs due to the conversion of excess glucose into sorbitol. This process is mediated by the enzyme aldose reductase, which catalyzes the reduction of glucose to sorbitol. Sorbitol, being an alcohol sugar, has different osmotic properties compared to glucose. When there is chronic hyperglycemia, elevated levels of glucose result in increased sorbitol production. Sorbitol is less permeable to nerve membranes, causing it to accumulate within cells, particularly in nerve tissues. This accumulation leads to osmotic and cellular stress, resulting in nerve damage and dysfunction. The increased intracellular sorbitol attracts water, leading to neuronal swelling and ultimately deterioration of nerve function, contributing to peripheral neuropathy. Understanding this mechanism underscores the importance of managing blood glucose levels in patients with diabetes to prevent complications such as peripheral neuropathy. Other mechanisms listed in the choices, such as direct nerve injury or impairment of blood supply, do not specifically explain the underlying process of osmotic damage that is central to the neuropathy seen in the context of elevated glucose levels.

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://usmlestep1pathology.examzify.com>

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

SAMPLE