NBME Histology Practice Test (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

1. A subepidermal blister with autoantibodies directed against which proteins?

A. Intracellular adhesion molecule-1

B. Desmosomal proteins

C. Collagen type IV

D. Hemidesmosomal proteins

2. Which cells synthesize and secrete pulmonary surfactant to reduce alveolar surface tension?

A. Type I pneumocytes

B. Alveolar macrophages

C. Type II pneumocytes

D. Clara cells

3. If third pharyngeal pouches fail to form, which organ will fail to develop?

A. Thymus

B. Tonsils

C. Salivary glands

D. Thyroid gland

4. Progressive thirst and urinary frequency suggest dysfunction of which endocrine structure?

A. Adrenal cortex

B. Thyroid follicular cells

C. Posterior pituitary gland

D. Anterior pituitary gland

5. Which hormone most likely provoked the current epigastric pain after a fatty meal by stimulating gallbladder contraction?

A. Motilin

B. Cholecystokinin

C. Gastrin

D. Secretin

6. Which liver cell resides within sinusoids and performs phagocytosis?

A. Ito cells

B. Kupffer cells

C. Hepatocytes

D. Endothelial cells

7. Germinal centers within lymph nodes are located in which region?

A. Paracortex

B. Cortex with lymphoid follicles

C. Medulla

D. Subcapsular sinus

8. In a lymph node, which zones predominantly contain B cells and which contain T cells?

A. Cortex contains T cells; Paracortex contains B cells; Medullary cords contain plasma cells and macrophages.

B. Cortex contains B cells; Paracortex contains T cells; Medullary cords contain plasma cells and macrophages.

C. Cortex contains B cells; Paracortex contains plasma cells; Medullary cords contain T cells.

D. Cortex contains plasma cells; Paracortex contains macrophages; Medullary cords contain B cells.

9. Which cell type is most likely involved in initiating the lesion in Paget disease of bone?

A. Osteoclasts

B. Osteoblasts

C. Fibroblasts

D. Endothelial cells

10. In the lymph node, where are plasma cells predominantly located?

A. Plasma cells predominantly located in medullary cords.

B. Plasma cells in cortex.

C. Plasma cells in paracortex.

D. Plasma cells in capsule.

Answers

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

Explanations

1. A subepidermal blister with autoantibodies directed against which proteins?

A. Intracellular adhesion molecule-1

B. Desmosomal proteins

C. Collagen type IV

D. Hemidesmosomal proteins

Blisters that occur just above the dermis arise when autoantibodies target components that anchor the epidermis to the underlying dermis. In this classic subepidermal blister, the targets are hemidesmosomal proteins, such as BP180 (collagen XVII) and BP230, which hold basal keratinocytes to the basement membrane. When these proteins are attacked, the junction between epidermis and dermis weakens, and a clear, tense blister forms beneath the epidermis. Desmosomal proteins, in contrast, are involved in adhesion between keratinocytes within the epidermis; autoantibodies against them cause pemphigus, which produces intraepidermal blisters. Collagen type IV is a basement membrane component, but the typical target for this subepidermal blister scenario is the hemidesmosomal complex rather than collagen IV. ICAM-1 is an adhesion molecule related to inflammatory cell interactions, not the blistering target here.

2. Which cells synthesize and secrete pulmonary surfactant to reduce alveolar surface tension?

A. Type I pneumocytes

B. Alveolar macrophages

C. Type II pneumocytes

D. Clara cells

Pulmonary surfactant is produced by specialized alveolar cells called type II pneumocytes. These cells store surfactant in lamellar bodies and secrete phospholipids (primarily DPPC) along with specific surfactant proteins that line the alveolar surface. This coating lowers surface tension at the air–liquid interface inside the alveoli, preventing collapse during expiration and increasing lung compliance. Type I pneumocytes line most of the alveolar surface and handle gas exchange, but they do not synthesize surfactant. Alveolar macrophages reside in the air spaces to clear debris and pathogens, not to produce surfactant. Clara cells, located in the bronchioles, secrete protective substances and participate in detoxification, but they do not synthesize pulmonary surfactant.

3. If third pharyngeal pouches fail to form, which organ will fail to develop?

A. Thymus

B. Tonsils

C. Salivary glands

D. Thyroid gland

Third pharyngeal pouch derivatives include the thymus and the inferior parathyroid glands. If that pouch fails to form, those structures don't develop, with the thymus being the organ affected among the options. The tonsils come from the second pouch, salivary glands arise from oral epithelium rather than a pharyngeal pouch, and the thyroid gland forms from the floor of the primitive pharynx, not from a pouch. So the thymus is the organ that would fail to develop.

4. Progressive thirst and urinary frequency suggest dysfunction of which endocrine structure?

A. Adrenal cortex

B. Thyroid follicular cells

C. Posterior pituitary gland

D. Anterior pituitary gland

Regulation of water balance hinges on antidiuretic hormone (ADH) release from the posterior pituitary. ADH acts on the kidney collecting ducts to increase water reabsorption; when ADH release is impaired, you get dilute urine and compensatory thirst—classic diabetes insipidus. ADH is made in the hypothalamus but stored and released from the posterior pituitary, so dysfunction of this gland directly disrupts ADH release. The other glands listed regulate different hormones (metabolism, stress response, etc.) and do not explain the polyuria and polydipsia seen with ADH dysfunction.

5. Which hormone most likely provoked the current epigastric pain after a fatty meal by stimulating gallbladder contraction?

A. Motilin

B. Cholecystokinin

C. Gastrin

D. Secretin

Cholecystokinin is released from intestinal I cells in response to fats in the duodenum. It stimulates the gallbladder to contract and also relaxes the sphincter of Oddi, enabling bile to flow into the duodenum to emulsify fats. This mechanism explains why a fatty meal often prompts gallbladder contraction and can provoke epigastric pain if the gallbladder is irritated. Motilin mainly regulates interdigestive motility, not meal-induced gallbladder contraction; gastrin mainly increases gastric acid secretion; secretin promotes pancreatic bicarbonate secretion and slows gastric emptying. Hence the hormone most likely responsible for the gallbladder contraction after a fatty meal is cholecystokinin.

6. Which liver cell resides within sinusoids and performs phagocytosis?

A. Ito cells

B. Kupffer cells

C. Hepatocytes

D. Endothelial cells

Kupffer cells are the liver's resident macrophages that line the sinusoids. They sit along the luminal side of the fenestrated sinusoidal endothelium and actively phagocytose bacteria, debris, and aging blood cells as blood flows through the liver. This phagocytic role is a key part of the liver's reticuloendothelial system, helping to clean the blood before it returns to systemic circulation. Ito (stellate) cells, by contrast, reside in the space of Disse and store vitamin A (and can contribute to fibrosis when activated). Hepatocytes are the main parenchymal cells of the liver, performing metabolic, synthetic, and detoxification tasks and are organized in plates, not inside the sinusoidal lumen. Endothelial cells line the sinusoids and form their vascular barrier, but they do not perform phagocytosis.

7. Germinal centers within lymph nodes are located in which region?

A. Paracortex

B. Cortex with lymphoid follicles

C. Medulla

D. Subcapsular sinus

Germinal centers are the sites of active B-cell proliferation and maturation in response to antigen, and they form within the cortex of a lymph node, specifically inside the lymphoid follicles. The outer cortex contains these B-cell–rich follicles; when they become activated, a secondary follicle with a germinal center develops, appearing as a pale center within the follicle on histology. The paracortex is the T-cell region, the medulla houses plasma cells and medullary cords/sinuses, and the subcapsular sinus is a lymphatic channel just beneath the capsule. Since germinal centers arise from B cells in the cortical follicles during an immune response, the correct location is the cortex with lymphoid follicles.

8. In a lymph node, which zones predominantly contain B cells and which contain T cells?

A. Cortex contains T cells; Paracortex contains B cells; Medullary cords contain plasma cells and macrophages.

B. Cortex contains B cells; Paracortex contains T cells; Medullary cords contain plasma cells and macrophages.

C. Cortex contains B cells; Paracortex contains plasma cells; Medullary cords contain T cells.

D. Cortex contains plasma cells; Paracortex contains macrophages; Medullary cords contain B cells.

Lymph node organization reflects which lymphocytes are most active in each region. B cells are concentrated in the cortex, especially in the lymphoid follicles that may develop germinal centers when B cells are activated. T cells reside mainly in the paracortex, the zone just beneath the cortex, where they interact with antigen-presenting cells and pass through high endothelial venules to enter the node. The medullary cords in the medulla contain plasma cells (differentiated B cells) and macrophages, forming part of the efferent side of the node's immune filtering. So, the cortex is rich in B cells, the paracortex houses T cells, and the medullary cords contain plasma cells and macrophages.

9. Which cell type is most likely involved in initiating the lesion in Paget disease of bone?

A. Osteoclasts

B. Osteoblasts

C. Fibroblasts

D. Endothelial cells

Paget disease of bone starts with overactive osteoclasts. These large, multinucleated cells aggressively resorb bone surfaces, initiating an accelerated remodeling cycle. In response, osteoblasts overcompensate and lay down new bone rapidly, but in a disorganized way, creating the characteristic mosaic pattern of woven and lamellar bone. Thus, osteoclasts are the primary initiating force behind the lesion. Fibroblasts and endothelial cells play supportive roles in the tissue environment but do not initiate the process, and osteoblasts drive the subsequent, excessive bone formation rather than starting the lesion.

10. In the lymph node, where are plasma cells predominantly located?

A. Plasma cells predominantly located in medullary cords.

B. Plasma cells in cortex.

C. Plasma cells in paracortex.

D. Plasma cells in capsule.

Plasma cells are antibody-secreting descendants of B lymphocytes, and in the lymph node they predominantly localize in the medullary cords. After activated B cells proliferate in the cortex's follicles and some differentiate in germinal centers, many mature into plasma cells and migrate toward the medulla. There they reside in the medullary cords, forming a network with reticular cells and macrophages, and they secrete antibodies into the lymph and blood. The cortex houses B-cell follicles and germinal centers, the paracortex is the T-cell zone, and the capsule is just connective tissue surrounding the node, so those areas are not the main sites of mature plasma cells.

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://nbmehistology.examzify.com

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