

# NBEO Histology Practice Test (Sample)

## Study Guide



**Everything you need from our exam experts!**

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# Table of Contents

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

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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. Normal triglycerides are below what value?**
  - A. < 100**
  - B. < 150**
  - C. < 200**
  - D. < 250**
  
- 2. Which statement is true about osteoclasts?**
  - A. They resorb bone**
  - B. They form new bone matrix**
  - C. They become osteoblasts**
  - D. They originate from chondrocytes**
  
- 3. Zonula occludens are located in which epidermal layer?**
  - A. Stratum corneum**
  - B. Stratum granulosum**
  - C. Stratum spinosum**
  - D. Stratum basal**
  
- 4. Which organ is primarily responsible for removing and storing fat-soluble vitamins?**
  - A. Liver**
  - B. Kidney**
  - C. Stomach**
  - D. Lungs**
  
- 5. Which type of pneumocytes are specialized for producing surfactant and are able to regenerate?**
  - A. Type 1**
  - B. Type 2**
  - C. Both**
  - D. None**
  
- 6. Glands of Moll secrete by which mechanism?**
  - A. Holocrine**
  - B. Apocrine**
  - C. Merocrine**
  - D. Cytocrine**

- 7. The main tissue origin of skeletal muscle is which germ layer?**
- A. Neural ectoderm**
  - B. Surface ectoderm**
  - C. Mesoderm**
  - D. Neural crest cells**
- 8. Where do T lymphocytes mature?**
- A. Bone marrow**
  - B. Thymus**
  - C. Spleen**
  - D. Lymph node**
- 9. Platelets produce which enzyme that converts prothrombin to thrombin?**
- A. Thromboplastin**
  - B. Prothrombinase**
  - C. Fibrinogen**
  - D. Platelet factor 4**
- 10. Squamous cell carcinomas occur in which layer of the epidermis?**
- A. Stratum spinosum**
  - B. Stratum basale**
  - C. Stratum granulosum**
  - D. Stratum lucidum**

## **Answers**

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

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## **Explanations**

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### 1. Normal triglycerides are below what value?

- A. < 100
- B. < 150**
- C. < 200
- D. < 250

Normal fasting triglycerides are less than 150 mg/dL. This threshold comes from standard lipid guidelines used to define a normal range; values below indicate a typical metabolic state. Triglycerides are measured after a 9-12 hour fast to reflect baseline lipoprotein triglyceride content, mainly in VLDL. When levels exceed 150 mg/dL, they're considered higher than normal and can indicate increased cardiovascular risk, with progressively higher ranges carrying greater risk and, at very high levels, risk of pancreatitis. Therefore, the value that defines normal is below 150 mg/dL.

### 2. Which statement is true about osteoclasts?

- A. They resorb bone**
- B. They form new bone matrix
- C. They become osteoblasts
- D. They originate from chondrocytes

Bone remodeling hinges on osteoclasts removing old or damaged bone while osteoblasts lay down new bone. Osteoclasts are large, multinucleated cells that come from the hematopoietic lineage (monocyte/macrophage precursors) and form by fusing these precursors. Their primary job is to resorb bone: they attach to the mineralized surface, create a sealed specialized area, and secrete hydrogen ions to dissolve the mineral component and proteolytic enzymes like cathepsin K to break down the organic matrix. This activity forms Howship's lacunae and releases calcium and phosphate into circulation, balancing bone formation by osteoblasts. In contrast, forming new bone matrix is the function of osteoblasts, not osteoclasts, and osteoclasts do not originate from chondrocytes (cartilage cells); chondrocytes are involved in cartilage, not the origin of bone-resorbing cells.

### 3. Zonula occludens are located in which epidermal layer?

- A. Stratum corneum
- B. Stratum granulosum**
- C. Stratum spinosum
- D. Stratum basal

Zonula occludens are tight junctions that seal the space between neighboring cells to control paracellular diffusion and water loss. In the epidermis, these seals are formed mainly in the stratum granulosum, the layer where keratinocytes are differentiating and releasing lipid-rich lamellar bodies to build the skin's waterproof barrier. This placement aligns with the need to create a robust barrier just before cells become the dead, keratin-filled cells of the stratum corneum. The other layers differ in the junction types they primarily use: the basal layer relies on hemidesmosomes to attach to the basement membrane, the spinous layer uses desmosomes for strong cell-cell adhesion, and the corneum consists of dead cells with a lipid matrix rather than active junctions.

**4. Which organ is primarily responsible for removing and storing fat-soluble vitamins?**

- A. Liver**
- B. Kidney**
- C. Stomach**
- D. Lungs**

Fat-soluble vitamins A, D, E, and K rely on fat for absorption and are stored in the body for longer periods. The liver acts as the primary hub where these vitamins are taken up from the bloodstream, metabolized, and stored for later use (for example, retinol stores in the liver and vitamin D precursors are handled there). This storage helps maintain a reservoir of these nutrients since they aren't easily excreted and can be mobilized when the body needs them. The kidneys mainly handle water-soluble vitamins and their excretion, not storage, while the stomach is involved in digestion and the lungs have no role in vitamin storage. Thus, the liver is the key organ responsible for removing excess fat-soluble vitamins from circulation and storing them.

**5. Which type of pneumocytes are specialized for producing surfactant and are able to regenerate?**

- A. Type 1**
- B. Type 2**
- C. Both**
- D. None**

Two main pneumocyte types line the alveoli. The cell type that makes surfactant and can replenish the lining is the Type II pneumocyte. They are cuboidal cells that produce and store surfactant in lamellar bodies and secrete it to reduce surface tension, preventing alveolar collapse. Importantly, they also serve as progenitor cells: after injury they can proliferate and differentiate into Type I cells to restore the gas-exchange surface. Type I cells are thin and optimized for gas exchange but do not produce surfactant and have limited regenerative capacity. So the combination of surfactant production and the ability to regenerate points to Type II pneumocytes.

**6. Glands of Moll secrete by which mechanism?**

- A. Holocrine**
- B. Apocrine**
- C. Merocrine**
- D. Cytocrine**

Glands of Moll are modified apocrine sweat glands located at the eyelid margin. They secrete by apocrine mechanism, meaning the secretory product is released together with a portion of the cell's apical cytoplasm in a membrane-bound bleb that pinches off. The secretory cell then regenerates to continue producing more secretion. This differs from merocrine secretion, which releases product by simple exocytosis without cytoplasm loss, and holocrine secretion, where the entire cell disintegrates to release its contents. Cytocrine isn't a typical exocrine secretion mechanism for these glands. So, Moll's glands use apocrine secretion.

**7. The main tissue origin of skeletal muscle is which germ layer?**

- A. Neural ectoderm
- B. Surface ectoderm
- C. Mesoderm**
- D. Neural crest cells

Skeletal muscle comes from the mesoderm. In early development, the paraxial mesoderm forms somites, and the myotome portion of each somite differentiates into skeletal muscle precursors (myoblasts). These myoblasts proliferate and fuse to create the multinucleated muscle fibers that make up skeletal muscle in the limbs and trunk (and, in the head region, from cranial mesoderm as well). This mesodermal origin distinguishes skeletal muscle from tissues derived from other germ layers: neural ectoderm builds the brain and spinal cord; surface ectoderm forms the epidermis and related structures; neural crest cells contribute to peripheral nerves and many craniofacial tissues but not the main source of skeletal muscle.

**8. Where do T lymphocytes mature?**

- A. Bone marrow
- B. Thymus**
- C. Spleen
- D. Lymph node

T lymphocyte maturation occurs in the thymus, where precursor cells from the bone marrow complete their development and undergo selection to ensure they recognize self-MHC molecules with appropriate affinity and do not react strongly to self. The cortex supports positive selection, teaching thymocytes to recognize self-MHC, while the medulla handles negative selection to weed out self-reactive cells. The surviving cells become naive T cells that enter the circulation and migrate to secondary lymphoid organs to encounter antigens. In contrast, B lymphocytes mature in the bone marrow, and the spleen and lymph nodes are sites for antigen encounter and immune activation, not maturation. The thymus is especially prominent in children and gradually involutes with age, though it can continue to produce T cells for some time.

**9. Platelets produce which enzyme that converts prothrombin to thrombin?**

- A. Thromboplastin**
- B. Prothrombinase
- C. Fibrinogen
- D. Platelet factor 4

Platelets provide the surface where the prothrombinase complex forms, and that complex is the enzyme that converts prothrombin to thrombin. Prothrombinase consists of factor Xa and factor Va, with calcium and platelet phospholipids on the platelet membrane. Platelets don't produce thromboplastin; thromboplastin (tissue factor) initiates the extrinsic pathway and comes from damaged tissue, not platelets. Fibrinogen is the thrombin substrate, cleaved to form fibrin, and platelet factor 4 is a platelet granule protein with other roles, not the enzyme that activates prothrombin.

**10. Squamous cell carcinomas occur in which layer of the epidermis?**

- A. Stratum spinosum**
- B. Stratum basale**
- C. Stratum granulosum**
- D. Stratum lucidum**

Squamous cell carcinoma arises from squamous keratinocytes in the epidermis, most classically the cells in the stratum spinosum. This layer sits above the basal layer and contains keratinocytes that have started to differentiate into squamous cells and are connected by desmosomes, giving the characteristic spiny appearance. Basal cell carcinoma comes from the basal layer (stratum basale), while the stratum lucidum is present only in thick skin and is not the usual origin for this cancer; the granulosum is a differentiation stage, not the typical site of origin. Therefore, the best answer is the stratum spinosum.

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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](mailto:hello@examzify.com).**

**Or visit your dedicated course page for more study tools and resources:**

**<https://nbeohistology.examzify.com>**

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

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