NBEO 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. Basal cell carcinomas occur in which layer of the epidermis?

A. Stratum basale

B. Stratum spinosum

C. Stratum granulosum

D. Stratum lucidum

2. Where is rRNA produced?

A. Nucleolus

B. Nucleoplasm

C. Cytoplasm

D. Ribosome

3. Which organelle contains its own DNA and is inherited maternally?

A. Mitochondrion

B. Nucleus

C. Golgi apparatus

D. Ribosome

4. Which organ houses the progenitors that give rise to B lymphocytes?

A. Thymus

B. Bone marrow

C. Spleen

D. Lymph node

5. Which cells in the alveoli are specialized for gas exchange and secrete surfactant?

A. Pneumocytes

B. Alveolar macrophages

C. Goblet cells

D. Ciliated cells

6. Gigantism and Acromegaly are both caused by excess Growth Hormone.

A. True

B. False

C. Only Gigantism

D. Only Acromegaly

7. Which of the following does NOT occur during anaphylactic shock?

A. Itching

B. Redness

C. Wheezing

D. Hypertension

8. Which hormone increases osteoclast activity?

A. Calcitonin

B. Parathyroid hormone

C. Growth hormone

D. Estrogen

9. Which statement is NOT a major function of the liver?

A. Removes and stores fat soluble vitamins

B. Produces renin

C. Regulation of glucose levels

D. Produces bile

10. What is the most common type of white blood cell found in the body?

A. Neutrophils

B. Lymphocytes

C. Monocytes

D. Eosinophils

Answers

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

Explanations

1. Basal cell carcinomas occur in which layer of the epidermis?

A. Stratum basale

B. Stratum spinosum

C. Stratum granulosum

D. Stratum lucidum

Basal cell carcinomas originate from the cells at the bottom of the epidermis—the basal cells in the stratum basale, which rest on the basement membrane between the epidermis and dermis. These basal cells are the proliferative, stem-like cells that constantly divide to replenish the epidermis and produce keratinocytes that migrate upward to form the other layers. Because the cancer starts in this deepest, regenerative layer, the tumor cells resemble normal basal cells and tend to grow along the dermal-epidermal junction. The other epidermal layers—spinosum, granulosum, and lucidum—represent more differentiated keratinocytes and are not the source of basal cell carcinomas (lucidum is only present in thick skin). So the correct layer is the stratum basale.

2. Where is rRNA produced?

A. Nucleolus

B. Nucleoplasm

C. Cytoplasm

D. Ribosome

rRNA is produced in the nucleolus. This region within the nucleus contains the ribosomal RNA genes arranged in chromosomal clusters (the nucleolar organizer regions) and hosts the transcription of the 45S pre-rRNA by RNA polymerase I. The pre-rRNA is then processed and combined with ribosomal proteins brought in from the cytoplasm to begin assembling the ribosomal subunits. The nucleolus is essentially the ribosome biogenesis hub, so it's the site where rRNA transcription and early processing occur. The nucleoplasm is the general interior of the nucleus where DNA resides and much transcription happens, but rRNA transcription specifically happens in the nucleolus. The cytoplasm is where translation occurs, and the ribosome is the complex that carries out translation, not the site of rRNA production.

3. Which organelle contains its own DNA and is inherited maternally?

A. Mitochondrion

B. Nucleus

C. Golgi apparatus

D. Ribosome

The important idea here is that mitochondria carry their own genetic material and are passed on from mother to offspring. Mitochondrial DNA is circular and resides inside the organelle, separate from the cell's nuclear DNA, and mitochondria replicate within the cell. In fertilization, the egg supplies most of the cytoplasm and its mitochondria, while sperm mitochondria are typically not transmitted, so mitochondrial DNA shows maternal inheritance. The nucleus contains DNA inherited from both parents, and the Golgi apparatus and ribosomes do not contain DNA.

4. Which organ houses the progenitors that give rise to B lymphocytes?

A. Thymus

B. Bone marrow

C. Spleen

D. Lymph node

B lymphocyte progenitors originate and mature in the bone marrow. Hematopoietic stem cells give rise to common lymphoid progenitors that commit to the B cell lineage and progress through pro-B, pre-B, and immature B stages within the marrow. This development relies on the marrow microenvironment and signals like IL-7 from stromal cells. Once B cells reach the immature stage and express surface IgM, they exit to the periphery as naive B cells and seed secondary lymphoid tissues, such as the spleen and lymph nodes, where they can encounter antigen and become activated. The thymus is where T cell precursors mature, not B cell progenitors, while the spleen and lymph nodes are sites for mature B cell residence and immune activation rather than primary sites of B cell development.

5. Which cells in the alveoli are specialized for gas exchange and secrete surfactant?

A. Pneumocytes

B. Alveolar macrophages

C. Goblet cells

D. Ciliated cells

In the alveoli, the lining cells are called pneumocytes. Gas exchange is carried out mainly by the very thin Type I pneumocytes that form the walls of the alveoli, allowing oxygen and carbon dioxide to diffuse between air and blood. Surfactant, which lowers surface tension to prevent collapse, is produced by the other alveolar epithelial cells, the Type II pneumocytes. So, while no single cell does both jobs, the broad category of pneumocytes includes the cells responsible for both functions, making it the best answer for identifying alveolar epithelial cells. In contrast, alveolar macrophages handle debris cleanup, and goblet or ciliated cells belong to the conducting airways rather than the alveolar lining.

6. Gigantism and Acromegaly are both caused by excess Growth Hormone.

A. True

B. False

C. Only Gigantism

D. Only Acromegaly

Excess growth hormone drives overgrowth of size and tissues. In children, growth plates are still open, so too much GH pushes linear bone growth and results in gigantism with tall stature. In adults, the bones can no longer lengthen, but GH still stimulates soft tissue and organ growth, producing acromegaly with enlarged hands, feet, facial features, and organomegaly. Both conditions stem from too much GH, most commonly from a GH-secreting pituitary adenoma. The key difference is timing: before epiphyseal closure leads to gigantism, after closure leads to acromegaly.

7. Which of the following does NOT occur during anaphylactic shock?

A. Itching

B. Redness

C. Wheezing

D. Hypertension

During anaphylactic shock, mast cell and basophil mediators cause widespread vasodilation and increased vascular permeability, plus bronchoconstriction. This combination leads to skin symptoms like itching and redness, and to respiratory symptoms such as wheezing. The same mediators reduce intravascular volume and cause the blood pressure to drop, producing hypotension. Hypertension would not be expected in this process, so it does not occur.

8. Which hormone increases osteoclast activity?

A. Calcitonin

B. Parathyroid hormone

C. Growth hormone

D. Estrogen

Rising parathyroid hormone signals bone to release calcium by boosting osteoclast activity. It acts on osteoblast lineage cells to shift the RANKL/OPG balance toward more RANKL and less OPG, which promotes differentiation and activation of osteoclasts. The result is increased bone resorption and calcium release into the bloodstream, helping restore calcium levels after a drop. Calcitonin directly inhibits osteoclasts, reducing resorption; estrogen lowers osteoclast lifespan and activity; growth hormone mainly promotes bone formation and remodeling with anabolic effects rather than increasing osteoclast activity. So the hormone that increases osteoclast activity is the parathyroid hormone.

9. Which statement is NOT a major function of the liver?

A. Removes and stores fat soluble vitamins

B. Produces renin

C. Regulation of glucose levels

D. Produces bile

Renin is an enzyme released by kidney cells to start the RAAS cascade, converting angiotensinogen from the liver into angiotensin I. The liver supports several major roles, such as storing and metabolizing fat-soluble vitamins (A, D, E, K), helping regulate blood glucose through glycogen storage and glucose production, and producing bile for digestion. While the liver does synthesize angiotensinogen, it does not secrete renin. Therefore, producing renin is not a major hepatic function.

10. What is the most common type of white blood cell found in the body?

A. Neutrophils

B. Lymphocytes

C. Monocytes

D. Eosinophils

Neutrophils are the most abundant white blood cells in normal circulation. They make up the largest share of leukocytes and act as the body's first responders to bacterial infection. They rush to sites of injury or infection, engulf and destroy bacteria through phagocytosis, and release antimicrobial enzymes to kill pathogens. This rapid, frontline role explains why neutrophils are the dominant white blood cell type. Lymphocytes, while crucial for adaptive immunity, are not as numerous in the blood under resting conditions and are more prominent in lymphoid tissues. Monocytes are fewer in number and become macrophages in tissues, where they help with longer-term clean-up and antigen presentation. Eosinophils are the least abundant and specialize in parasitic infections and allergic responses.

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://nbeohistology.examzify.com

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