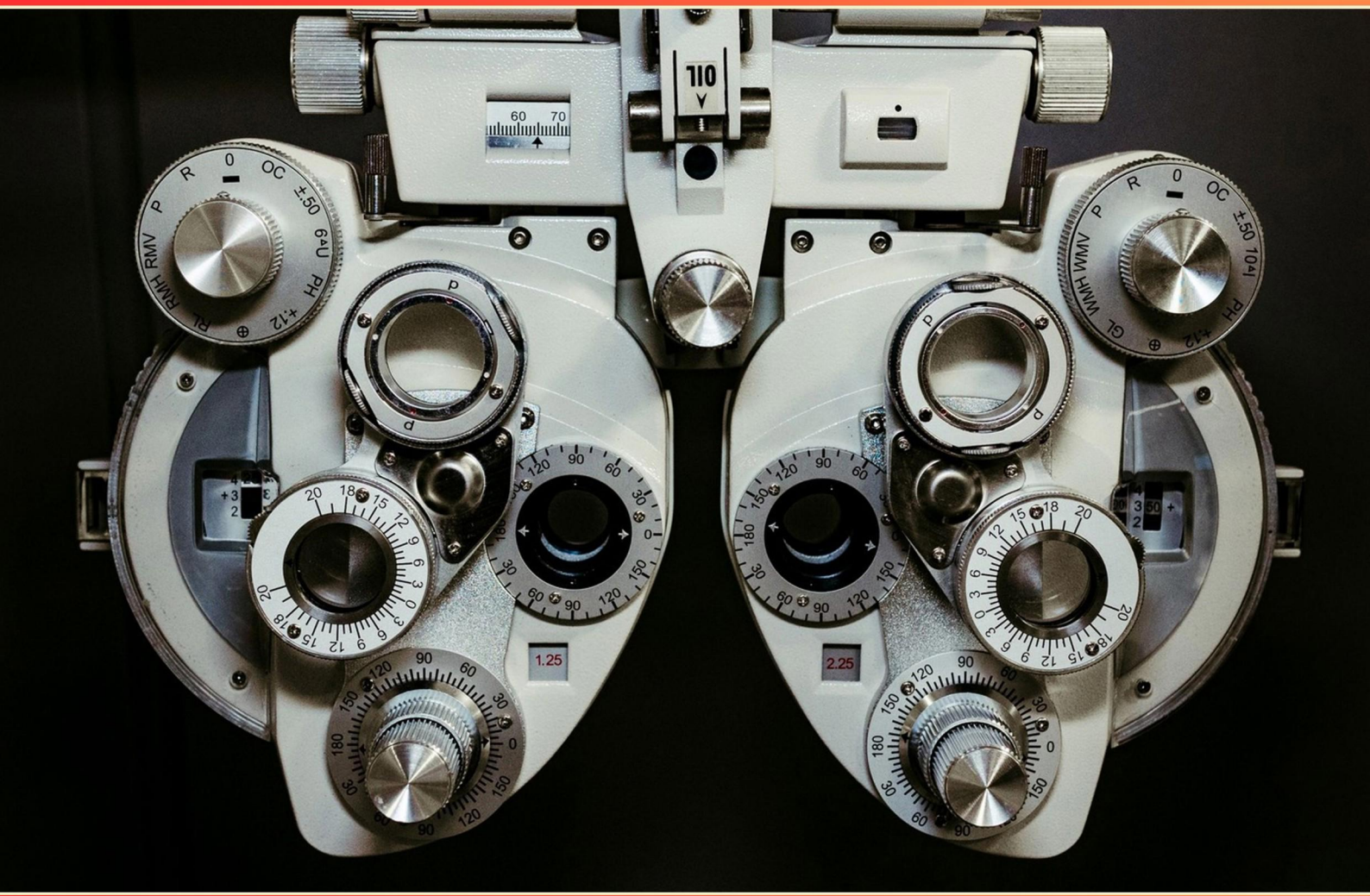
OPTOPREP NATIONAL BOARD OF EXAMINERS IN OPTOMETRY (NBEO) PRACTICE TEST (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

VISIT US ONLINE FOR THE FULL VERSION STUDY GUIDE

https://optoprepnbeo.examzify.com

Table of Contents

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 +3.00 D hyperope corrected with a +1.50 D contact lens viewing an object at 22.0 cm requires how much accommodation to achieve a clear retinal image?**

   A. +1.50 D

   B. +4.50 D

   C. +6.00 D

   D. +7.50 D

2. **What layer of the cornea, if penetrated, will leave a scar?**

   A. The stroma

   B. The epithelium

   C. The wing cell layer

   D. The tear film

3. **Fatty acid synthesis is activated during which of the following situations?**

   A. Decreased levels of citrate and glucagon, increased levels of insulin

   B. Increased levels of citrate and insulin, decreased levels of glucagon

   C. Decreased levels of citrate and insulin, increased levels of glucagon

   D. Increased levels of citrate and glucagon, decreased levels of insulin

4. **What change occurs in the temporal modulation transfer function in early glaucoma?**

   A. Increased sensitivity to high frequencies

   B. Decreased sensitivity to low frequencies only

   C. Decreased sensitivity to moderate and high frequencies

   D. No change in sensitivity

5. **What is the main mechanism of action of fluticasone and salmeterol found in Advair?**

   A. Bronchodilator; anti-inflammatory

   B. Anti-inflammatory; leukotriene inhibitor

   C. Anti-histamine; anti-inflammatory

   D. Anti-inflammatory; bronchodilator

6. What effect does a cornea measuring 600 micrometers thick have on IOP reading during Goldmann tonometry?

A. Falsely low IOP

B. Falsely elevated IOP

C. Accurate IOP reading

D. Normal adjustment needed

7. A construction worker with plaster in his eye likely experienced what type of chemical trauma?

A. Ultraviolet (UV) burn

B. Acid burn

C. Thermal burn

D. Alkali burn

8. Which procedure is NOT appropriate for evaluating suspected dacryocystitis?

A. Digital palpation of the medial canthal area

B. Dilation and irrigation of the lacrimal system

C. Extraocular muscle motility

D. Gram stain and blood agar cultures of discharge

9. Which microorganism is associated with peptic ulcer formation?

A. A) Vibrio Cholerae

B. B) Helicobacter pylori

C. C) Clostridium tetani

D. D) Campylobacter spp

10. Which systemic condition can cause a falsely low hemoglobin A1c measurement?

A. Chronic opioid use

B. Alcoholism

C. Hyperbilirubinemia

D. Pregnancy

Answers

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

Explanations

1. A +3.00 D hyperope corrected with a +1.50 D contact lens viewing an object at 22.0 cm requires how much accommodation to achieve a clear retinal image?

A. +1.50 D

B. +4.50 D

C. +6.00 D

D. +7.50 D

To determine how much accommodation is required for a +3.00D hyperope using a +1.50D contact lens when viewing an object at 22.0 cm, the first step is to calculate the total power of the optical system including both the contact lens and the hyperopia. Hyperopes require plus lens correction to bring images into focus on the retina. The individual in this scenario has a hyperopic refractive error of +3.00D. When corrected with a +1.50D contact lens, the effective power that the eye experiences becomes: Effective power = Contact lens power - Hyperopic correction Effective power = +1.50D - (+3.00D) = -1.50D This means that, in essence, the eye is acting as a -1.50D system after the contact lens correction. Next, we can calculate the vergence of light rays coming from the object at 22.0 cm. The distance in meters for the object is: Distance = 22.0 cm = 0.22 m Using the formula for vergence (Power = 1/Distance in meters), we find: V = 1 / 0.22 m ≈ +4

2. What layer of the cornea, if penetrated, will leave a scar?

A. The stroma

B. The epithelium

C. The wing cell layer

D. The tear film

The stroma is the main structural layer of the cornea, comprising about 90% of its thickness and consisting primarily of collagen fibers arranged in a highly organized manner. When the stroma is penetrated, which can occur due to trauma or surgical procedures, it is likely to result in scarring. This is because the stroma has the capacity to heal through the proliferation of fibroblasts, which can lead to the formation of scar tissue with a different composition and organization than the original corneal stroma, resulting in a permanent change in corneal clarity. In contrast, the epithelium is the outermost layer of the cornea and has a remarkable ability to regenerate quickly after injury, often healing without leaving a noticeable scar. The wing cell layer is simply a transitional layer within the epithelium and does not have the capacity to leave a scar if damaged. The tear film, while important for corneal health and clarity, is not a structural layer of the cornea and does not play a role in scarring when penetrated. Therefore, penetration of the stroma is significant concerning the potential for scarring in the cornea.

3. Fatty acid synthesis is activated during which of the following situations?

A. Decreased levels of citrate and glucagon, increased levels of insulin

B. Increased levels of citrate and insulin, decreased levels of glucagon

C. Decreased levels of citrate and insulin, increased levels of glucagon

D. Increased levels of citrate and glucagon, decreased levels of insulin

Fatty acid synthesis is primarily regulated by the availability of substrates and the hormonal environment within the body. In particular, high levels of citrate and insulin are significant indicators that promote the synthesis of fatty acids. When carbohydrate intake is sufficient, glucose metabolism increases, leading to elevated levels of acetyl-CoA. This acetyl-CoA is often converted into citrate in the mitochondria, which can then be transported into the cytosol. High levels of citrate signal that the energy status in the cell is robust, indicating an ample supply of substrates for lipogenesis. Insulin plays a crucial role in this process as well. It is a key anabolic hormone that promotes the uptake of glucose and inhibits the breakdown of fatty acids. Elevated levels of insulin, particularly after a carbohydrate-rich meal, enhance the activity of enzymes involved in fatty acid synthesis, such as acetyl-CoA carboxylase. Conversely, elevated glucagon levels, which typically arise during fasting or low carbohydrate intake, signal the body to utilize stored fat for energy. This hormonal scenario inhibits fatty acid synthesis. Thus, the situation with increased levels of citrate and insulin, combined with decreased levels of glucagon, creates a metabolic environment conducive to fatty acid synthesis. This is why the correct answer

4. What change occurs in the temporal modulation transfer function in early glaucoma?

A. Increased sensitivity to high frequencies

B. Decreased sensitivity to low frequencies only

C. Decreased sensitivity to moderate and high frequencies

D. No change in sensitivity

In early glaucoma, the temporal modulation transfer function reveals decreased sensitivity to moderate and high frequencies. This is significant because it reflects the changes occurring in visual processing as the disease affects the neural pathways associated with vision. Patients with early glaucoma may have a reduced ability to detect rapidly changing visual stimuli, indicating that the temporal aspects of vision are compromised. Understanding this aspect of the temporal modulation transfer function is crucial in diagnosing and monitoring glaucoma progression. While sensitivity to lower frequencies may remain relatively intact in the early stages, the difficulties experienced with moderate and high frequencies suggest disruptions in the visual system's capacity to process swift or dynamic visual information. This phenomenon is often observed prior to detectable changes in standard visual field tests, making it a valuable indicator in the evaluation of glaucoma.

5. What is the main mechanism of action of fluticasone and salmeterol found in Advair?

A. Bronchodilator; anti-inflammatory

B. Anti-inflammatory; leukotriene inhibitor

C. Anti-histamine; anti-inflammatory

D. Anti-inflammatory; bronchodilator

Fluticasone and salmeterol are components of Advair, and their primary actions are essential to understanding their therapeutic effects in the management of asthma and chronic obstructive pulmonary disease (COPD). Fluticasone is a corticosteroid that primarily acts as an anti-inflammatory agent. It works by inhibiting various inflammatory processes in the lungs, reducing swelling and mucus production, and thereby improving airflow. This action helps in controlling the underlying inflammation that can lead to exacerbations in respiratory conditions. Salmeterol, on the other hand, is a long-acting beta-2 adrenergic agonist (LABA) that serves as a bronchodilator. It relaxes the muscles around the airways, resulting in dilation and improved airflow. This effect is particularly important for providing relief from bronchoconstriction associated with asthma and COPD. Together, fluticasone and salmeterol combine anti-inflammatory and bronchodilatory effects, providing a comprehensive approach to managing these respiratory conditions. This synergistic mechanism not only helps in reducing symptoms like wheezing and shortness of breath but also addresses the inflammatory component that contributes to these diseases over time. Understanding the individual roles of fluticasone and salmeterol thus highlights why the

6. What effect does a cornea measuring 600 micrometers thick have on IOP reading during Goldmann tonometry?

A. Falsely low IOP

B. Falsely elevated IOP

C. Accurate IOP reading

D. Normal adjustment needed

A cornea measuring 600 micrometers thick can lead to falsely elevated intraocular pressure (IOP) readings when using Goldmann tonometry. This tonometric method is influenced by the biomechanics of the cornea, particularly its thickness and rigidity. A thicker cornea generally exhibits greater resistance to indentation, which can result in the tonometer overestimating the pressure within the eye. In clinical practice, a thicker cornea is often associated with a higher IOP reading, as the tonometer's measurement assumes a standard corneal thickness of approximately 540 micrometers. When the cornea exceeds this average thickness, the resultant IOP reading may not accurately reflect the true pressure within the eye, thus leading to a higher recorded value than would be the case if the cornea were thinner. Understanding the relationship between corneal thickness and IOP readings is crucial for interpreting tonometry results accurately, especially in patients with conditions like glaucoma where precise pressure measurement is vital for effective management and treatment planning.

7. A construction worker with plaster in his eye likely experienced what type of chemical trauma?

A. Ultraviolet (UV) burn

B. Acid burn

C. Thermal burn

D. Alkali burn

The scenario presented involves a construction worker getting plaster in the eye, which typically consists of gypsum or calcium sulfate. When plaster comes into contact with moisture, it can create a mildly alkaline environment. This means that the exposure to the plaster may lead to chemical trauma classified as an alkali burn. Alkali burns are particularly dangerous because they can cause more extensive damage than acid burns. This is due to alkali substances having a greater capacity for penetration into the eye tissues. In comparison to acids, which can cause immediate pain and damage, alkalis can continue to damage the tissue over time, often requiring prompt and careful irrigation to prevent serious complications like corneal perforation or vision loss. Understanding the nature of the chemical involved—such as plaster in this context—supports the conclusion that the correct type of chemical trauma experienced is an alkali burn, emphasizing the need for immediate medical intervention in such cases to mitigate long-term damage.

8. Which procedure is NOT appropriate for evaluating suspected dacryocystitis?

A. Digital palpation of the medial canthal area

B. Dilation and irrigation of the lacrimal system

C. Extraocular muscle motility

D. Gram stain and blood agar cultures of discharge

Dilation and irrigation of the lacrimal system is not appropriate for evaluating suspected dacryocystitis primarily because it can exacerbate the infection. Dacryocystitis, an infection of the lacrimal sac, often presents with swelling, redness, and tenderness in the medial canthal area, alongside purulent discharge. In this context, digital palpation of the medial canthal area helps to assess the presence of tenderness or swelling that suggests an infection and can elicit discharge if obstructive pathology exists. Evaluating extraocular muscle motility can help rule out associated complications or other conditions affecting ocular movement. Gram stain and blood agar cultures of any discharge obtained during examination help identify the infectious agent, which is vital for guiding appropriate treatment. In contrast, dilation and irrigation—while useful for diagnosing obstructions under normal circumstances—can introduce bacteria deeper into the lacrimal system or exacerbate existing inflammation, making it inappropriate in the setting of an active infection such as dacryocystitis.

9. Which microorganism is associated with peptic ulcer formation?

A. A) Vibrio Cholerae

B. B) Helicobacter pylori

C. C) Clostridium tetani

D. D) Campylobacter spp

Helicobacter pylori is a key bacterium associated with peptic ulcer formation. It is a gram-negative, spiral-shaped bacterium that colonizes the stomach and is known to disrupt the protective mucous layer of the gastric epithelium. This disruption can lead to inflammation (chronic gastritis) and is a significant factor in the development of both gastric and duodenal ulcers. The ability of H. pylori to survive in the acidic environment of the stomach and its production of urease, which neutralizes stomach acid, are critical to its pathogenicity. Furthermore, infection with H. pylori is linked to an increased risk of gastric cancer. The other microorganisms listed are not typically associated with peptic ulcers. Vibrio cholerae is primarily known for causing cholera and gastrointestinal distress. Clostridium tetani is known for causing tetanus, a serious disease that affects the nervous system. Campylobacter spp., while it can cause gastrointestinal infections, is more related to foodborne illness than directly to peptic ulcers. Thus, Helicobacter pylori stands out as the established pathogen connected to the development of peptic ulcers.

10. Which systemic condition can cause a falsely low hemoglobin A1c measurement?

A. Chronic opioid use

B. Alcoholism

C. Hyperbilirubinemia

D. Pregnancy

Falsely low hemoglobin A1c measurements can occur during pregnancy due to several physiological changes that affect hemoglobin and glucose metabolism. During pregnancy, there is an increase in red blood cell turnover as the body prepares to supply enough oxygen to both the mother and the developing fetus. With this increased turnover, the lifespan of red blood cells is shortened, which means that the average glucose exposure to hemoglobin is lower than it would be in a non-pregnant state. As a result, the HbA1c levels may not accurately reflect the mother's glycemic control. In contrast, chronic opioid use and alcoholism do not typically interfere with the measurement of hemoglobin A1c in a direct manner that would significantly lead to falsely low readings. Hyperbilirubinemia can affect some laboratory tests, but its direct impact on A1c measurement is not as pronounced as the physiological changes seen during pregnancy. Thus, pregnancy is the systemic condition most likely to cause this discrepancy in hemoglobin A1c results.

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://optoprepnbeo.examzify.com

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