NBEO PHYSIOLOGICAL OPTICS PRACTICE TEST (SAMPLE)

STUDY GUIDE

SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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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 15

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. What is the main way to reduce Radial Spherical Aberration?

A. Choose the correct power

B. Choose the correct base curve

C. Use aspheric lenses

D. Increase pantascopic tilt

2. When the green image is clearer during a duochrome test, which lens adjustment is appropriate?

A. Add plus power

B. Add minus power

C. No change

D. Change cylinder power

3. Progressive lenses described as having a long corridor and/or a low add power are classified as which design?

A. Hard design

B. Soft design

C. Medium design

D. Compact design

4. In terms of Abbe values, which pair of crown glass and CR-39 is known to have relatively high values compared with polycarbonate?

A. They both have relatively high Abbe values compared to polycarbonate

B. Crown glass has a low Abbe value compared to CR-39

C. CR-39 has a high Abbe value only when paired with polycarbonate

D. Polycarbonate has the highest Abbe value among the four

5. Do plus lenses effectively become weaker or stronger as they approach the cornea?

A. Stronger

B. Weaker

C. No change

D. Undefined

6. Which term is synonymous with the Far Point?

A. Punctum Remotum

B. Punctum Proximum

C. Punctum Centralis

D. Punctum Fovea

7. What is the magnification formula for a telescope?

A. M = -Doc/Dobj

B. M = Doc/Dobj

C. M = -Dobj/Doc

D. M = Dobj/Doc

8. Which of the following is also called 'Near retinoscopy'?

A. MEM

B. Mohindra

C. Static retinoscopy

D. Nott's method

9. A patient's keratometry readings are 43.00D @180 and 45.00D @090 with subjective refraction plano -2.00 x 180. What is their Residual astigmatism?

A. 0D

B. 1D

C. 2D

D. -1D

10. Which technique is NOT used to minimize rotation of soft toric contact lenses?

A. Prism ballasting

B. Periballasting

C. Slab off

D. Truncation

Answers

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

Explanations

1. What is the main way to reduce Radial Spherical Aberration?

A. Choose the correct power

B. Choose the correct base curve

C. Use aspheric lenses

D. Increase pantascopic tilt

Radial spherical aberration comes from the lens not delivering the same refractive power across its optical zone. The base curve is the curvature that sits closest to the cornea and largely determines how well the lens conforms to the eye. When you choose a base curve that matches the corneal shape, the lens sits and centers better, keeping the optical pathway more uniform from center to edge. That alignment minimizes the variation in focus between central and peripheral rays, which is exactly what radial spherical aberration is about. In contrast, simply dialing in the correct overall power fixes the central refraction but doesn't address how the edge of the lens bends light differently than the center. Aspheric designs can reduce spherical aberration, but their effect is more about the surface profile than how the lens interfaces with the cornea in terms of RSA. Pantoscopic tilt mainly affects alignment and other aberrations rather than reducing RSA directly, and increasing tilt can stray light paths rather than improve them. So, selecting the base curve that best matches the eye's curvature directly reduces the radial variation in optical power across the lens, which is the main way to lessen radial spherical aberration.

2. When the green image is clearer during a duochrome test, which lens adjustment is appropriate?

A. Add plus power

B. Add minus power

C. No change

D. Change cylinder power

The duochrome test uses longitudinal chromatic aberration: the eye focuses green light at a slightly different plane than red light. When the green letters are clearer, it means the current spherical correction is tipping the balance so that the green image is in focus before the red image. To bring the red image into equal focus with the green, you shift the overall refraction toward more plus power. Adding plus power increases the converging strength of the eye, moving the focal balance so that both colors appear equally sharp. Cylinder power isn't involved in this refinement, which is why the appropriate adjustment is to add plus power.

3. Progressive lenses described as having a long corridor and/or a low add power are classified as which design?

A. Hard design

B. Soft design

C. Medium design

D. Compact design

In progressive lenses, the fit and feel for the wearer are heavily influenced by how the power changes from distance to near. A long corridor with a relatively low add power is characteristic of soft design. The long corridor means the power shifts gradually over a wide area, which smooths out the peripheral changes and reduces distortion and image jump as you move your eyes and head. The lower add power keeps the near portion from being overly strong, further easing adaptation and comfort. Hard designs, by contrast, use shorter corridors and higher adds, which can produce more abrupt changes and more peripheral distortion, making adaptation tougher. Compact designs tend to have even shorter corridors with the near zone placed more aggressively. So the description of a long corridor and/or low add aligns with soft design.

4. In terms of Abbe values, which pair of crown glass and CR-39 is known to have relatively high values compared with polycarbonate?

A. They both have relatively high Abbe values compared to polycarbonate

B. Crown glass has a low Abbe value compared to CR-39

C. CR-39 has a high Abbe value only when paired with polycarbonate

D. Polycarbonate has the highest Abbe value among the four

Abbe value reflects how much a material disperses light into colors; a higher Abbe number means less chromatic dispersion and therefore fewer color fringes in a lens. Among common ophthalmic lens materials, polycarbonate has a notably low Abbe value, around the 30s, which means more dispersion. Crown glass and CR-39 both have much higher Abbe numbers (roughly in the upper 50s to around 60), indicating they disperse light less than polycarbonate. Since Abbe value is an intrinsic property of the material, crown glass and CR-39 independently exhibit relatively high Abbe values compared with polycarbonate. The other statements don't fit because Abbe values aren't about pairing materials with each other, and polycarbonate does not have the highest Abbe number.

5. Do plus lenses effectively become weaker or stronger as they approach the cornea?

A. Stronger

B. Weaker

C. No change

D. Undefined

Vertex distance changes how much power a lens actually provides at the cornea. For a plus lens, moving the lens closer to the eye (reducing the vertex distance) reduces the amount of convergence that reaches the retina, so the effective dioptric power at the cornea is weaker. In practical terms, the power you see at the eye is less when the plus lens sits nearer the cornea, and it increases if the lens sits farther away. Therefore, plus lenses effectively become weaker as they approach the cornea.

6. Which term is synonymous with the Far Point?

A. Punctum Remotum

B. Punctum Proximum

C. Punctum Centralis

D. Punctum Fovea

The far point is the location in space where light from a distant object would be focused on the retina with the eye in a relaxed state, representing the limit of clear vision for that eye's current refractive state. In ophthalmic terminology this point is called punctum remotum, literally the "remote point." That's why it's the synonym for the far point. The other terms refer to different ideas: punctum proximum is the near point—the closest distance at which a near object remains clear—while punctum centralis and punctum fovea relate to central retinal anatomy rather than a focal point for distant vision.

7. What is the magnification formula for a telescope?

A. M = -Doc/Dobj

B. M = Doc/Dobj

C. M = -Dobj/Doc

D. M = Dobj/Doc

The key idea is that telescope magnification is about how the eye's viewing angle is scaled by the optics. For small angles, the angular size an object subtends is proportional to its height divided by its distance. The object, at distance Dobj from the objective, subtends an angle roughly h/Dobj. The eye through the eyepiece sees the image under an angle roughly proportional to h divided by the eye–eyepiece distance Doc. The telescope transfers the object's angular information and scales it by the optics, so the resulting angular magnification is proportional to Doc/Dobj. In this convention, the magnification is thus M = Doc / Dobj, with the sign indicating whether the image is inverted or upright. So the ratio of the distance from the eye to the eyepiece to the distance from the object to the objective determines how much larger the image appears through the telescope.

8. Which of the following is also called 'Near retinoscopy'?

A. MEM

B. Mohindra

C. Static retinoscopy

D. Nott's method

Near retinoscopy is a technique done at a close working distance to assess refractive error while accommodating is present, which is especially useful in infants who can't reliably tolerate cycloplegia. The Mohindra approach is a classic near retinoscopy method used with infants. It is performed with a streak retinoscope about 50 cm from the eye in a dim room, often with a simple near fixation target. Because the measurement is taken at this near distance without cycloplegia, a fixed working-distance correction is applied (about 2.0 D for 50 cm) to estimate the refractive status. This yields a quick, practical estimate of the spherical equivalent in young children. MEM, static retinoscopy, and Nott's method refer to other retinoscopy techniques or estimation methods, not the near-retinoscopy approach described by Mohindra.

9. A patient's keratometry readings are 43.00D @180 and 45.00D @090 with subjective refraction plano -2.00 x 180. What is their Residual astigmatism?

A. 0D

B. 1D

C. 2D

D. -1D

Keratometry showing 43.00 D at 180 and 45.00 D at 090 means the cornea has 2 diopters of astigmatism, with the steeper (more power) meridian along 90 degrees. In minus-cylinder notation, that corneal astigmatism is equivalent to -2.00 D with axis 180 (cylinder power applied perpendicular to the axis). The subjective refraction given is plano -2.00 x 180, which provides exactly that same cylindrical correction along the 90-degree meridian. Since the refractive cylinder cancels the corneal cylinder, there is no remaining astigmatic error. Residual astigmatism is 0 D.

10. Which technique is NOT used to minimize rotation of soft toric contact lenses?

A. Prism ballasting

B. Periballasting

C. Slab off

D. Truncation

Stabilizing rotation of soft toric contact lenses comes from shaping how the lens sits on the eye so gravity and lid interaction keep it oriented consistently. To minimize rotation, designers use ballast or geometric modifications that create a predictable preferred orientation. Prism ballasting adds a prism-like bias in the lens, usually by making the lower portion thicker or heavier, so the lens tends to settle in a stable, downward-facing position with the axis aligned. Periballasting similarly shifts mass around the periphery to resist rotation and maintain orientation. Truncation involves removing a small wedge or section of material to create a flat edge or altered thickness, which interacts with the eyelids to help lock the lens in place. Slab off, by contrast, is a spectacle-lens technique used to introduce a vertical prism effect in one eye to compensate for anisometropia or prism imbalance. It is not a method used to minimize rotation of soft toric contact lenses, which is why it isn't part of the stabilization approaches for toric lenses.

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://nbeophysiooptics.examzify.com

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