National Contact Lens Registry Advanced Certification (NCLE-AC) Practice Exam (Sample)

Study Guide

BY EXAMZIFY

Everything you need from our exam experts!

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Questions

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1. What effect can poor insertion techniques have on the cornea?

A. Increase in tear production

B. Corneal neovascularization

C. Arcuate staining patterns

D. None of the above

2. Which medication is known to affect successful contact lens wear?

A. Antacids

B. Antihistamines

C. Aspirin

D. Laxatives

3. What instrument allows for simultaneous verification of lens diameter, optic zone, and peripheral curve?

A. Lensometer

B. Measuring magnifier

C. Radiuscope

D. Shadowgraph

4. Which of the following would NOT be a corrective action for a loose lens fit?

A. Increase optical zone

B. Decreasing e value

C. Decrease diameter

D. Increase sagittal depth

5. Which auxiliary trial lens will extend the keratometer range to approximately 61.00D?

A. -2.00 D

B. +1.50 D

C. +1.25 D

D. -1.25 D

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6. What typically causes microcysts in the cornea?

A. Inadequate eyelid closure

B. Lack of oxygen-long term hypoxia

C. Excessive lens movement

D. Allergic reactions

7. How can one describe the lens shape of a spherical lens?

A. Flat

B. Uniform

C. Single curvature

D. Multi-focal

8. How does endothelial dysfunction affect the lens?

A. It leads to increased water content in cornea

B. It creates a more stable lens fit

C. It results in enhanced nutrient absorption

D. It improves visual acuity

9. How many diopters of power are required to focus parallel rays of light at a distance of 1 m?

A. One diopter

B. Two diopters

C. Three diopters

D. Four diopters

10. What is one benefit of in-office polishing of a gas permeable lens?

A. Thicker lens edge

B. Improved comfort

C. Better oxygen permeability

D. Thinner lens edge

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Answers

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

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Explanations

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1. What effect can poor insertion techniques have on the cornea?

A. Increase in tear production

B. Corneal neovascularization

C. Arcuate staining patterns

D. None of the above

Poor insertion techniques can lead to arcuate staining patterns on the cornea, which are indicative of localized areas of damage or irritation. When contact lenses are not inserted correctly, they can shift or rub against the corneal surface inappropriately. This friction can disrupt the epithelial layer of the cornea, leading to staining that is visible during a fluorescein dye examination. Arcuate staining patterns are typically seen at the periphery of the cornea and can suggest that the lens is causing mechanical stress. In contrast, other options do not directly relate to the effects of poor insertion technique. Increased tear production, for example, might occur for other reasons but is not a direct consequence of improper lens insertion. Corneal neovascularization refers to the growth of new blood vessels into the cornea, often due to oxygen deprivation or chronic irritation, but this is more associated with prolonged lens wear or hypoxia rather than poor insertion techniques. Furthermore, choosing "none of the above" would dismiss the direct correlation between poor technique and the resultant corneal staining.

2. Which medication is known to affect successful contact lens wear?

A. Antacids

B. Antihistamines

C. Aspirin

D. Laxatives

Antihistamines are known to affect successful contact lens wear primarily due to their side effects, particularly their impact on tear production and ocular moisture. These medications are commonly used to treat allergies, colds, or other conditions that lead to histamine release. A significant side effect of antihistamines is dryness, which can lead to discomfort when wearing contact lenses. When tear production decreases, it can result in insufficient lubrication for the lenses, leading to irritation, potential blinking issues, or lens intolerance. In contrast, while antacids, aspirin, and laxatives serve important roles in treating digestive or pain-related issues, their primary effects do not typically interfere with ocular health or comfort in relation to contact lens wear. They are less likely to cause dryness or impact tear film stability in a way that directly affects how well a person can wear contact lenses. Therefore, the role of antihistamines in reducing moisture and comfort makes them the most relevant choice in this context.

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3. What instrument allows for simultaneous verification of lens diameter, optic zone, and peripheral curve?

A. Lensometer

B. Measuring magnifier

C. Radiuscope

D. Shadowgraph

The measuring magnifier is particularly useful for its ability to provide an accurate, simultaneous verification of multiple lens parameters, including lens diameter, optic zone, and peripheral curve. This instrument operates by magnifying the lens, allowing the practitioner to measure specific dimensions precisely without the need for separate measurements. The ability to verify these parameters at once is crucial in ensuring that the contact lenses fit appropriately and meet the needed specifications for the patient. This aids in achieving optimal visual acuity and comfort for the wearer, which is essential in contact lens fitting. Other instruments, like the lensometer, typically measure the power of the lenses and may not provide detailed measurements of the lens dimensions. The radiuscope primarily assesses the curvature of the back surface of the lens. Meanwhile, the shadowgraph is designed to visualize the edge profile of lenses but does not offer the same comprehensive measurement capabilities as the measuring magnifier. Thus, the measuring magnifier stands out as the appropriate choice for simultaneous verification of those specific lens characteristics.

4. Which of the following would NOT be a corrective action for a loose lens fit?

A. Increase optical zone

B. Decreasing e value

C. Decrease diameter

D. Increase sagittal depth

Decreasing the "e value," which relates to the edge thickness of the contact lens, is not a corrective action for managing a loose lens fit. In fact, a loose fit typically requires adjustments that enhance the lens's centration and stability on the eye. When a lens is deemed loose, practitioners often consider increasing the optical zone to provide better optical performance and centration. Adjusting the diameter can also help improve how securely the lens sits on the cornea, enhancing its fit by potentially allowing for more limbal coverage. Increasing sagittal depth, which directly influences how much the lens vaults over the cornea, can create a tighter fit by bringing the lens closer to the eye if the current depth is insufficient. In contrast, decreasing the edge value does not effectively address a loose fit—rather, it may make the situation worse by making the lens thinner at the edges, which could contribute to greater instability. Therefore, focusing on adjustments that enhance secure contact with the cornea is crucial in this situation, while decreasing the edge thickness would not support that goal.

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5. Which auxiliary trial lens will extend the keratometer range to approximately 61.00D?

A. -2.00 D

B. +1.50 D

C. +1.25 D

D. -1.25 D

The option of using a +1.25 D auxiliary trial lens is appropriate for extending the keratometer range to approximately 61.00D. When added to the keratometer's existing measurement range, the positive lens value increases the total effective power measured by the keratometer. For a keratometer that typically measures corneal curves, a +1.25 D auxiliary lens allows the practitioner to measure steeper corneas that exceed the standard range. In this case, the addition of a +1.25 D lens raises the effective measurement and makes it possible to accurately assess curvature in greater detail without needing to switch to a different measurement device. Using this approach helps ensure that even patients with high corneal powers can have their measurements taken accurately, which is critical for proper lens fitting and ocular health assessments. Thus, the selection of the +1.25 D lens is effective for achieving the desired range extension in keratometry.

6. What typically causes microcysts in the cornea?

A. Inadequate eyelid closure

B. Lack of oxygen-long term hypoxia

C. Excessive lens movement

D. Allergic reactions

Microcysts in the cornea are most commonly associated with a lack of oxygen, particularly in cases of long-term hypoxia. When the cornea does not receive sufficient oxygen, especially during contact lens wear, it can lead to the formation of microcysts. These microcysts are small fluid-filled pockets that develop in the epithelial layer of the cornea as a response to reduced oxygen supply. This condition is particularly prevalent with certain types of contact lenses, especially when they are worn continuously or for extended periods without proper breaks. The other factors listed, while potentially contributing to ocular discomfort or corneal health issues, do not directly cause the formation of microcysts. For instance, inadequate eyelid closure might lead to dryness or irritation but is not specifically linked to microcyst formation. Similarly, excessive lens movement can result in mechanical irritation but does not inherently create microcysts. Allergic reactions may produce symptoms that affect vision or eye comfort but do not lead to the specific condition of microcysts in the cornea.

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7. How can one describe the lens shape of a spherical lens?

A. Flat

B. Uniform

C. Single curvature

D. Multi-focal

A spherical lens is characterized by having a uniform curvature that is consistent across its entire surface, which means that it has the same radius of curvature at every point. This property leads to a shape where all lines drawn from the center of the lens to the edge are equal in curvature. The term "single curvature" effectively encapsulates this feature, as it indicates that the lens surface curves uniformly in one direction, in contrast to other shapes like toroidal or aspheric lenses which have varying curvature. In contrast, while the lens may be described as "flat," this does not adequately capture the essential nature of a spherical lens. Furthermore, "uniform" might suggest a lack of distinction in curvature but doesn't specify the defining characteristic of a singular curvature that defines spherical lenses. Lastly, "multi-focal" refers to lenses designed to correct for multiple vision conditions, such as presbyopia, which typically includes different zones for seeing at different distances. This is a distinctive characteristic that does not describe the fundamental shape of a spherical lens.

8. How does endothelial dysfunction affect the lens?

A. It leads to increased water content in cornea

B. It creates a more stable lens fit

C. It results in enhanced nutrient absorption

D. It improves visual acuity

Endothelial dysfunction affects the lens primarily through its impact on the cornea, leading to increased water content. The endothelial cells of the cornea play a crucial role in maintaining the corneal transparency and hydration level by regulating the movement of fluids and nutrients between the cornea and the aqueous humor. When these endothelial cells become dysfunctional, their ability to pump excess fluid out of the cornea is impaired, which causes corneal swelling or edema. This higher water content can lead to visual disturbances, including blurred vision. In contrast, the other options do not accurately represent the effects of endothelial dysfunction. A more stable lens fit is typically correlated with a healthy ocular surface and proper fit of the contact lenses, not with dysfunction. Enhanced nutrient absorption is not a direct result of endothelial dysfunction and is more related to the corneal surface and overall ocular health. Similarly, visual acuity typically diminishes with increased corneal edema rather than improves as a result of endothelial issues. Thus, the correct answer reflects the primary and direct consequence of endothelial dysfunction on corneal health and its influence on lens clarity.

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9. How many diopters of power are required to focus parallel rays of light at a distance of 1 m?

A. One diopter

B. Two diopters

C. Three diopters

D. Four diopters

To determine how many diopters of power are required to focus parallel rays of light at a distance of 1 meter, it is essential to understand the relationship between diopters and focal length. The power of a lens in diopters is defined as the reciprocal of the focal length in meters. In this case, to focus parallel rays of light (which would be rays coming from an object at infinity) at a distance of 1 meter, the focal length of the lens must also be 1 meter. According to the formula for lens power, the power P in diopters is calculated as follows: $$P = \frac{1}{f}$$ where f is the focal length in meters. Since the focal length is 1 meter: $$P = \frac{1}{1} = 1 \text{ diopter}$$ Thus, the correct answer is one diopter. This means that a lens with a power of one diopter will effectively focus parallel rays of light to a point 1 meter from the lens, confirming the direct correlation between focal length and lens power.

10. What is one benefit of in-office polishing of a gas permeable lens?

A. Thicker lens edge

B. Improved comfort

C. Better oxygen permeability

D. Thinner lens edge

In-office polishing of a gas permeable lens enhances comfort for the wearer, which is the primary reason this choice is correct. Polishing the lens creates a smoother surface by removing any rough edges or microscopic imperfections. A smoother lens surface can help reduce friction against the eyelid during blinking, ultimately contributing to a more comfortable wearing experience. This is particularly important for gas permeable lenses, as they tend to be less forgiving in terms of comfort compared to soft contact lenses. The other options relate more to physical attributes or performance characteristics of the lens. For instance, polishing does not significantly alter the oxygen permeability of the lens—which is a crucial characteristic for corneal health—nor does it typically result in a thicker edge. In fact, polishing is often aimed at achieving a thinner, more streamlined edge to facilitate easier application and improve overall aesthetics. Thus, while other factors such as design and material influence the overall performance of the lens, the immediate benefit of in-office polishing is heightened comfort for the lens wearer.

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