

ASSIGNMENT 11

Material Covered:
Units 6.1 – 6.5 of Module 6
of the IACLE Contact Lens Course

ASSIGNMENT 11

Read the questions carefully and record your answers on the answer sheet provided

1. **The eye as a whole receives most of its oxygen supply from:**
 - a. The bulbar conjunctival vessels
 - b. The limbal vasculature
 - c. The ophthalmic artery
 - d. The atmosphere

2. **Which one of the following does the conjunctiva demonstrate during an episode of Contact Lens-induced Papillary Conjunctivitis (CLPC)?**
 - a. An increase in the number of granulocytes
 - b. A decrease in the number of mast cells
 - c. An increase in the number of PolyMorphoNuclear leukocytes (PMNs)
 - d. A decrease in the number of eosinophils

3. **With each blink, the tear exchange capability of the 'tear pump' under a soft contact lens is approximately:**
 - a. 0.55%
 - b. 1%
 - c. 11%
 - d. 20 %

4. **Which one of the following techniques is NOT a means of estimating corneal oxygen demand?**
 - a. Clark-type polarographic oxygen sensor
 - b. Rate of epithelial cell mitosis
 - c. Confocal microscopy
 - d. Aesthesiometry

5. **According to Harvitt and Bonanno (1999), to prevent anoxia across the entire cornea, the following contact lens transmissibilities are required in the open and closed eye conditions respectively:**
 - a. 9.9×10^{-9} and 17.9×10^{-9}
 - b. 23×10^{-9} and 89×10^{-9}
 - c. 24.1×10^{-9} and 87.0×10^{-9}
 - d. 35×10^{-9} and 125×10^{-9}

6. **Estimates of human corneal oxygen consumption vary between:**
 - a. 1.6 and 4.9 μL per cm^2 per hour
 - b. 1.6 and 10.9 μL per cm^2 per hour
 - c. 2 and 16 μL per cm^2 per hour
 - d. 4.9 and 10.9 μL per cm^2 per hour

7. **Regardless of water content, the overnight corneal swelling resulting from the wearing of a conventional hydrogel contact lens during sleep is most likely to be:**
 - a. 0.5 to 3%
 - b. 3 to 5%
 - c. 4 to 7.5%
 - d. 8 to 12%

8. **Contact Lens-induced Acute Red Eye (CLARE) is usually associated with:**
 - a. Significant bacterial colonization of the cornea and conjunctiva
 - b. High numbers of Gram-positive bacteria on the lens
 - c. High numbers of Gram-negative bacteria on the lens
 - d. Fungal colonization of the contact lens

9. **Which statement regarding Chlamydiae is CORRECT?**
 - a. Has an outer membrane similar to Gram-positive bacteria
 - b. Can synthesize its own DNA, RNA, and protein
 - c. Can synthesize ATP
 - d. Is a relatively large micro-organism

10. **Protozoans are typically classified by reference to their:**
 - a. Means of movement (motility)
 - b. Preferred habitat
 - c. Ability to encyst under adverse conditions
 - d. Potential to cause disease

11. **Which statement is NOT correct?**
 - a. Fungal cells have a nuclear membrane
 - b. Bacteria have membrane-bound organelles
 - c. Viruses are acellular, non-living biological entities
 - d. Bacterial cells do not have a nuclear membrane

12. **Contact lens-related Microbial Keratitis (MK) is most commonly associated with which organism?**
 - a. *Fusarium solani*
 - b. *Staphylococcus aureus*
 - c. *Candida albicans*
 - d. *Pseudomonas aeruginosa*

13. **Which one of the following is NOT a major tear protein?**
 - a. Lysozyme
 - b. Lipocalin
 - c. Albumin
 - d. Lactoferrin

- 14. Which one of the following is a real effect of contact lens wear?**
- Lactoferrin concentrations increase
 - Mucin concentrations decrease
 - Lysozyme concentrations remain substantially unaltered
 - Cytokine levels rise with continued wear
- 15. Contact Lens-induced Peripheral Ulcers (CLPUs) are often associated with:**
- Gram-positive bacteria, especially *Staphylococcus aureus*
 - Central corneal infiltrates
 - Gram-negative bacteria, especially *Pseudomonas aeruginosa*
 - Fungal contamination of the lens storage case
- 16. The minimum oxygen requirement to prevent the suppression of mitosis in the corneal epithelium is:**
- 5%
 - 9%
 - 16%
 - 21%
- 17. During open eye conditions, oxygen tension is highest at the...**
- Palpebral conjunctiva
 - Corneal endothelium
 - Canal of Schlemm
 - Corneal epithelium
- 18. What temperature is typically used by manufacturers and researchers when calculating the oxygen permeability (Dk) of a contact lens material?**
- 18° C
 - 21° C
 - 34° C
 - 37° C
- 19. Which statement regarding the oxygen permeability of a contact lens material is INCORRECT?**
- Independent of lens thickness
 - Based on the diffusion (D) and solubility (k) coefficients of the material
 - Temperature dependent
 - Can be measured through the coulometric technique
- 20. What is the oxygen transmissibility of a contact lens which has the following properties?
 $Dk = 34 \times 10^{-11} \text{ (cm}^2\text{/sec)(mlO}_2\text{/ml x mm Hg)}$; Lens thickness = 0.12 mm**
- 28×10^{-9}
 - 40×10^{-9}
 - 28×10^{-11}
 - 40×10^{-11}