



Avinashilingam Institute for Home Science and Higher Education for Women

Deemed to be University Estd. u/s 3 of UGC Act 1956, Category 'A' by MHRD (now MoE)

Re-accredited with 'A++' Grade by NAAC. CGPA 3.65/4, Category I by UGC

Coimbatore - 641 043, Tamil Nadu, India

Bachelor's Degree Examination – May 2025

IV Semester

Class : II UG
Major : Optometry

Time: 3 Hours
Max. Marks: 100

22BOPC19 Optometric Optics II

Course outcomes:

On the successful completion of the course, students will be able to

CO1: To gain knowledge on multifocal lenses.

CO2: To understand effects, units, base – apex notation, prismatic effect of Ophthalmic prisms.

CO3: To acquire knowledge on special lenses and lens enhancement coatings.

CO4: To understand high index lenses and aberration of ophthalmic lenses in detail.

CO5: To understand the spectacle frame – manufacturing and their materials.

Part A

10 x 1 = 10

Choose the Correct Answer

- The Abbe value of a lens material is a measure of:
a. Its light transmission
b. Its chromatic dispersion
c. Its impact resistance
d. Its weight
CO3 K1
- Which of the following is not a benefit of high-index lens?
a. Light weight
b. Thinner lens
c. Better visual clarity
d. Less expensive
CO3 K1
- The best lens material for children's spectacles due to impact resistance is
a. Glass
b. Polycarbonate
c. CR-39
d. High-index plastic
CO3 K1
- If a patient complains of glare at night while driving, which lens treatment is most beneficial?
a. UV protection coating
b. Anti-reflective coating
c. Polarized coating
d. Blue-light blocking coating
CO3 K1
- Which one of the following is an advantage of progressive lenses?
a. No visible line
b. Fixed power in all areas
c. Larger reading area
d. Best for single-vision correction
CO1 K1
- If a patient has an anisometropia of more than 3D, they may experience:
a. Diplopia
b. Aniseikonia
c. Esotropia
d. Myokymia
CO4 K1
- Which type of prism is used in spectacles for treating binocular vision disorders?
a. Concave prism
b. Convex prism
c. Fresnel prism
d. Spherical prism
CO2 K1
- A prism with a power of 2Δ deviates light by:
a. 1 cm per meter
b. 2 cm per meter
c. 5 cm per meter
d. 10 cm per meter
CO2 K3
- A polarized lens is useful for:
a. Reducing horizontal glare
b. Enhancing night vision
c. Increasing light transmission
d. Reducing spherical aberration
CO4 K1
- Which of the following frame materials is hypoallergenic?
a. Nickel
b. Plastic
c. Aluminium
d. Titanium
CO5 K1

Part B
Answer ALL questions
Each answer should not exceed 400 words or two pages

5 x 6 = 30

- 11.a. Discuss on compounding and resolving prism, Explain it with one example. CO2 K2
(or)
- 11.b.(i) Define ophthalmic prisms CO2 K2
(ii) Explain their basic applications in optometry
- 12.a.(i) Explain executive bifocal lens? How does it differ from flat-top bifocals? CO1 K2
(ii) Note the type of bifocal lens design is preferred in paediatric population? Why?
(or)
- 12.b.(i) Discuss Prentice's Rule? CO2 K2
(ii) Clinical application of prentice rule.
- 13.a. Explain photochromic lenses? How do they function? CO3 K2
(or)
- 13.b. Discuss pupillary distance (PD), and why is it important in spectacle dispensing? CO5 K2
- 14.a.(i) Illustrate progressive lens markings with a labelled diagram. CO1 K2
(ii) Difference between soft and hard design progressive lenses.
(or)
- 14.b. Different types of aberration? Explain any two in detail. CO3 K2
- 15.a. (i) Enumerate the challenges of prescribing spectacles for anisometropia? CO4 K2
(ii) Troubleshoot the prescription of Anisometropia.
(or)
- 15.b. Explain the advantages and disadvantages of progressive lenses. CO4 K2

Part C
Answer ALL questions
Each answer should not exceed 800 words or four pages

5 x 12 = 60

- 16.a. Compare bifocal, trifocal, and progressive lenses in terms of function and design. CO1 K2
(or)
- 16.b. Explain the purpose of lens tints in eyewear. Discuss different types of tints and their specific applications in vision enhancement and protection. CO3 K2
- 17.a. Discuss the various segment shapes of bifocal lenses and their significance. CO1 K2
(or)
- 17.b. Describe the different parts of a spectacle frame and illustrate them with a labelled diagram. CO5 K2
- 18.a. Explain the optical challenges of high-powered lenses and possible solutions. CO4 K2
(or)
- 18.b. A 45 year old software professional came to your clinic with complaint of blurred Vision while reading and working on the computer for extended periods. CO1 K2
(i) Which is the most preferred lens option? Why?
(ii) Enumerate other lens options available for the above-mentioned scenario
(iii) Would you suggest any coating? If yes, mention which one would you suggest and why?
- 19.a. Discuss the different types of lens coatings, their importance, and mention one commercial example for each. CO3 K2
(or)
- 19.b. (i) Differentiate between spherical and aspheric lenses. Which one is better for high powered prescriptions? CO4 K2
(ii) Explain the concept of a lenticular lens. How does it differ from a regular spectacle lens, and in which clinical situations is it typically used?
- 20.a. What are special-purpose frames? Discuss their key features and applications. Provide examples of their use in different professions or activities. CO5 K2
(or)
- 20.b. (i) Explain the optical effects of concave and convex lenses on retinal image size. CO4 K2
(ii) Describe different types of bridge designs in spectacle frames and their advantages.