



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

22BOPC24 Monocular Sensory Perception

Course outcomes:

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

CO1: To appreciate the physiology of vision.

CO2: To equip on visual psychophysics.

CO3: To visualize the spatial and temporal aspects of vision.

CO4: To decipher the theories, pathways and principles behind colour vision and colour vision testing.

CO5: To recognize the perception of objects, motion and depth.

Part A

10 x 1 = 10

Choose the Correct Answer

- The following retinal cells transmits visual signals from photoreceptors to ganglion cells?
a. Horizontal cells
b. Bipolar cells
c. Amacrine cells
d. Müller cells
CO1 K2
- The term "duplex retina" refers to the presence of two distinct systems in the retina. Which statement best describes these systems?
a. Photopic vision operates in low-light conditions while scotopic vision functions in bright light.
b. Photopic vision is active in bright light and scotopic vision in dim light.
c. Both systems function similarly under all lighting conditions.
d. Scotopic vision is solely responsible for color perception.
CO1 K2
- According to Weber's law, the just noticeable difference (JND) is:
a. Constant regardless of stimulus intensity
b. Directly proportional to the stimulus intensity
c. Inversely proportional to the stimulus intensity
d. Unrelated to stimulus intensity
CO2 K1
- Which of the following methods is commonly employed for threshold estimation in visual psychophysics?
a. Method of constant stimuli
b. Staircase (adaptive) method
c. Double-blind procedure
d. Random sampling
CO2 K1
- The Contrast Sensitivity Function (CSF) primarily describes:
a. The spatial frequency response of the visual system
b. Temporal resolution in vision
c. Color discrimination capabilities
d. Depth perception accuracy
CO3 K1
- Critical flicker fusion frequency is a measure of the visual system's:
a. Spatial resolution
b. Temporal resolution
c. Contrast sensitivity
d. Luminance adaptation
CO3 K1
- Which photoreceptors are primarily responsible for color vision?
a. Rods
b. Cones
c. Bipolar cells
d. Ganglion cells
CO4 K1
- The trichromatic theory of color vision is based on the existence of:
a. Two types of cones sensitive to light and dark
b. Three types of cones sensitive to short, medium, and long wavelengths
c. Four types of photoreceptors including rods and cones
d. A single photoreceptor type capable of perceiving all colors
CO4 K1

9. Form perception primarily refers to the ability to:
- Detect motion within the visual field
 - Recognize shapes and structures of objects
 - Perceive depth through binocular disparity
 - Discriminate colors under varying lighting conditions
- CO5 K1
10. In depth perception, the monocular cue that involves the overlapping (partial occlusion) of objects is known as:
- Interposition
 - Convergence
 - Linear perspective
 - Stereopsis
- CO5 K1

Part B

5 x 6 = 30

Answer ALL questions

Each answer should not exceed 400 words or two pages

- 11.a. Discuss the role of the duplex retina in visual processing.
(or)
- CO1 K2
- 11.b. Explain Magno and Parvo cellular pathways.
(or)
- CO1 K2
- 12.a. Compare Weber's law and Fechner's law in visual psychophysics, and describe the psychophysical methods used for threshold estimation.
(or)
- CO2 K2
- 12.b. Explain the factors affecting thresholds
(or)
- CO2 K2
- 13.a. Explain the concepts of spatial summation and contrast sensitivity in vision
(or)
- CO3 K2
- 13.b. How the Modulation Transfer Function (MTF) relates to visual acuity
(or)
- CO3 K2
- 14.a. Explain trichromatic theory, and cone spectral sensitivities contribute to color perception.
(or)
- CO4 K2
- 14.b. Discuss the clinical methods used to assess color vision.
(or)
- CO4 K2
- 15.a. Discuss how form, motion, and depth cues are integrated in the human visual system to facilitate object recognition in complex environments.
(or)
- CO5 K2
- 15.b. Explain motion perception and depth estimation.
(or)
- CO5 K2

Part C

5 x 12 = 60

Answer ALL questions

Each answer should not exceed 800 words or four pages

- 16.a. Discuss the role of the duplex retina in visual processing, focusing on the functional differences between photopic and scotopic vision.
(or)
- CO1 K2
- 16.b. Describe and explain Post-natal human vision development
(or)
- CO1 K2
- 17.a. Discuss the fundamental principles of visual psychophysics—including Weber's law, Fechner's law, and modern threshold estimation methods.
(or)
- CO2 K2
- 17.b. Tabulate and explain the photometry and radiometry concepts.
(or)
- CO3 K2
- 18.a. Detail how luminance, illuminance, and the Modulation Transfer Function (MTF) contribute to our understanding of spatial resolution.
(or)
- CO3 K2
- 18.b. Explain with best example of conversion of visual acuity to grating acuity.
(or)
- CO3 K2
- 19.a. Discuss the theories of color vision and explore any four clinical testing methods used to assess color perception.
(or)
- CO4 K2
- 19.b. Explain how visual processing involved in color vision perception.
(or)
- CO4 K2
- 20.a. Explain monocular cues with possible different examples.
(or)
- CO5 K2
- 20.b. Explain the theories of cognitive processes underlying motion perception and depth estimation,
(or)
- CO5 K2
