

Photography and Human Physiology

Photography · Answer Key · 10 Questions

1. Which specific retinal cells are responsible for the high-acuity color vision that limits the resolution perceived in a photograph, similar to the center of a camera's sensor?

- A) Rod cells
- B) Cone cells**
- C) Amacrine cells
- D) Horizontal cells

2. What is the term for the physiological phenomenon where an image remains on the human retina for approximately 0.04 seconds, a principle fundamental to early high-speed photography and cinematography?

- A) Persistence of vision**
- B) Foveal fixation
- C) Saccadic suppression
- D) Chromatic aberration

3. In long-exposure photography, why can a human observer experience 'ghosting' or 'motion blur' when viewing high-contrast subjects, relating to the eye's involuntary rapid movements?

- A) Photoreceptor fatigue
- B) Saccades**
- C) Ciliary muscle atrophy
- D) Aqueous humor refraction

4. Which part of the human eye acts as the variable-diameter aperture, adjusting to control the amount of light entering the eye, analogous to an adjustable iris diaphragm?

- A) Cornea
- B) Lens
- C) Pupil**
- D) Retina

5. Exposure to high-intensity light from strobe photography can trigger an 'afterimage' due to which process occurring within the photoreceptor cells?

- A) Bleaching of photopigments**
- B) Ciliary muscle paralysis
- C) Corneal desiccation
- D) Hyperpolarization of the optic nerve

6. When calibrating digital sensors, the 'dynamic range' of a camera is often compared to the human eye; what is the approximate dynamic range, in stops, of the human visual system under optimal conditions?

- A) 8-10 stops
- B) 14-16 stops
- C) 20-24 stops**
- D) 30-35 stops

7. What condition can occur when a photographer stares at a bright LED viewfinder for extended periods, potentially causing 'blue light' retinal oxidative stress?

- A) Photokeratitis
- B) Macular degeneration**
- C) Presbyopia
- D) Hyperopia

8. In terms of photographic perspective, what human eye anatomical feature is responsible for the 'wide-angle' peripheral view that digital lenses attempt to replicate via spherical distortion correction?

- A) Fovea centralis
- B) Ora serrata
- C) Peripheral rod density**
- D) Bipolar cell density

9. The 'Purkinje effect' is a phenomenon where our color perception shifts in low light, which must be accounted for in low-light photography color calibration; which cells become dominant in this state?

- A) Cone cells
- B) Rod cells**
- C) Ganglion cells
- D) Müller cells

10. What is the minimum angular resolution of the healthy human fovea, which defines the 'sharpness' limit that high-resolution digital photography aims to exceed?

- A) 0.5 arcminutes
- B) 1.0 arcminutes**
- C) 5.0 arcminutes
- D) 10.0 arcminutes