

As always, the Skidmore Honor Code is in effect, so keep your eyes foveated on your own exam. I tend to think of a point as a minute, so be sure to spend the appropriate amount of time on each question. Multiple-choice questions are worth 1 point. Note that “essay” questions do not require perfect prose, but can be responded to in outline form, with diagrams, etc. What is important, however, is completeness and clarity! (And I would really appreciate neatness.) Good luck!

Answer the following essays on the attached lined sheets of paper:

Essay 1. [20 pts] Distinguish between the parvo and the magno systems. Describe the processing of information that takes place in the primary and secondary visual cortex. How do the visual receptive fields differ among neurons found in the optic nerve, LGN, primary visual cortex, and secondary visual cortex?

Essay 2. [20 pts] We have discussed a number of different examples that indicate that perception is influenced by what we know (conceptual-driven processing). Describe at least four examples that indicate to you most clearly that perception is not simply the passive reception of visual stimuli (as a camera does), and discuss what this might mean about the relationship between memory and perception.

1. The length of a particular light wave is related to which of the following aspects of color perception?
 - a. hue
 - b. purity
 - c. brightness
 - d. color contrast

2. The aqueous humor within the eye
 - a. is thick and jelly-like.
 - b. supplies nutrients for the cornea and lens.
 - c. contains a material that is chemically similar to blood.
 - d. bends the light rays so that they focus on the retina.

3. What symptom of glaucoma permits researchers to detect this problem in its early stages?
 - a. loss of peripheral vision
 - b. overall vision loss
 - c. clouding of the lens
 - d. change in the shape of the cornea

4. Which of the following statements about monocular factors is correct?
 - a. Motion parallax occurs only when your head is stable and objects move.
 - b. Motion parallax is an excellent source of distance information.
 - c. Motion parallax is the same as the kinetic depth effect.
 - d. The kinetic depth effect means that your two eyes have slightly different views of a stimulus.

5. In the kinetic depth effect,
 - a. the distance to an object becomes apparent as the observer moves.
 - b. several other depth cues aid the perception of depth.
 - c. a figure appears flat when stationary but solid when in motion.
 - d. the effect arises from the disparity of information provided to the two eyes.

6. Panum's area
 - a. is near the horopter.
 - b. is near the focal point.
 - c. leads to objects falling on corresponding retinal locations.
 - d. All of the above.

7. The condition in which the lens loses its ability to accommodate, resulting in difficulty in focusing on nearby objects is known as
 - a. glaucoma.
 - b. albino.
 - c. cataract.
 - d. presbyopia.

8. Cataracts
 - a. is the disease involving a clouding of the cornea.
 - b. is a problem that is common in children under the age of 6.
 - c. can be corrected by removing the lens and implanting an intraocular lens.
 - d. is a disease that is extremely rare in Western countries.

9. Binocular rivalry exists when
 - a. the images on corresponding retinal points cannot be fused.
 - b. cyclopean perception is achieved.
 - c. the images on corresponding retinal points can be fused.
 - d. we are viewing an ambiguous figure and the perception keeps changing.

10. Which of the following theories of depth perception stresses that the stimulus is often ambiguous, and the perceiver must essentially solve a problem in order to decide which arrangement of objects is most likely to produce the stimulus registered on the retina?
 - a. Gestalt theory
 - b. behaviorist theory
 - c. constructivist theory
 - d. Gibsonian theory

11. The choroid layer of the eye
 - a. is located on the inside layer of the lens.
 - b. is light in color, in order to reflect the light.
 - c. provides nutrients for the retina.
 - d. is about half a centimeter in width at its thickest portion.

12. The tapetum
 - a. is found in cats and other nocturnal animals.
 - b. is located behind the choroid in humans.
 - c. aids people in seeing at night.
 - d. helps to overcome the loss of vision found at the blind spot.

13. Suppose that you are looking at a 3" black square on a white surface, two feet from your eyes. You then shift your gaze to a medium-gray, distant wall. According to Emmert's Law, you are likely to see on that wall
 - a. a 3" black square.
 - b. a 3" white square.
 - c. a white square that is larger than 3".
 - d. a white square that is smaller than 3".

14. Pairs of lights that look exactly the same but are composed of physically different stimuli are known as
 - a. complementary colors.
 - b. metamers.
 - c. tritanopes.
 - d. dichromats.

15. Which of the following is an example of the additive method of color mixing?
 - a. We mix blue and yellow food coloring together.
 - b. We put blue crayon on a yellow paper.
 - c. We make tiny dots of red and green and view them from a distance.
 - d. We mix blue and green together before painting a white piece of paper.

16. Compared to cones
 - a. rods provide greater acuity.
 - b. rods are significantly less abundant in the eye.
 - c. rods are more concentrated in the fovea.
 - d. None of the above.

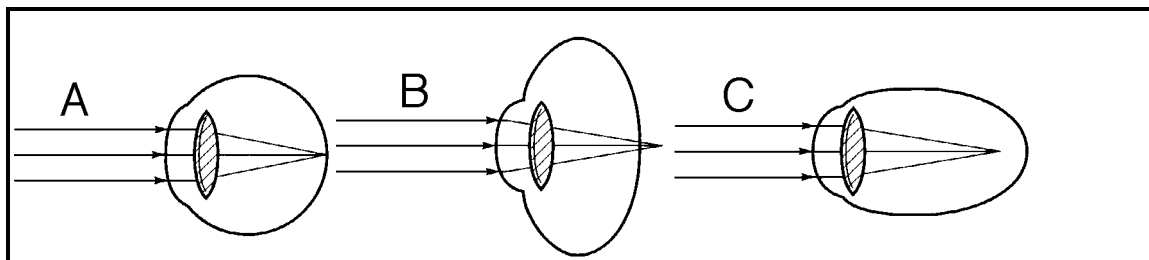
17. Which of the following statements about dark adaptation is correct?
 - a. Only cones are involved in dark adaptation.
 - b. Both rods and cones are involved in dark adaptation.
 - c. Only rods are involved in dark adaptation.
 - d. Neither rods nor cones are involved in dark adaptation.

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19. How do a color wheel and a color solid differ?
- They don't — they are the same thing.
 - A color wheel represents chromatic colors whereas a color solid represents achromatic colors.
 - A color wheel represents hue whereas a color solid represents hue, lightness and saturation.
 - A color wheel represents nonspectral hues whereas a color solid represents all hues.
20. A dichromat
- requires only two primary colors in order to match his or her perception of other colors, whereas normal trichromats require three primary colors.
 - uses different proportions of three primary colors in color matching tests, in contrast to normal trichromats.
 - has abnormal acuity, in contrast to normal trichromats.
 - has more cones that are sensitive to deep red colors, in contrast to normal trichromats.
21. What is one reason that the eye becomes more sensitive to light as time passes during dark adaptation?
- Because the pupil constricts, letting in less light.
 - Because the dark-adapted eyes have a higher concentration of rhodopsin.
 - Because the dark-adapted eyes have a lower concentration of rhodopsin.
 - Because the cornea becomes more sensitive to light.
22. Which of the following statements about cones and rods is true?
- More receptor cells feed information to each ganglion cell in the case of rods than is the case with cones.
 - Acuity in the cone region is greatest at night.
 - Vision is poor for objects registered on the fovea during the daylight.
 - Acuity is greater in the periphery of the eye than in the fovea.
23. The relative low rate of firing that occurs in ganglion cells when no stimulus is present is called
- hyperpolarization.
 - maintained activity.
 - antagonistic firing.
 - depolarization.
24. Color constancy
- arises when we call colors the same name, in spite of differences in the wavelengths striking our retinas.
 - is only roughly accurate — color perceptions are influenced by illumination differences.
 - was thought by Helmholtz to be due to unconscious inferences.
 - All of the above.

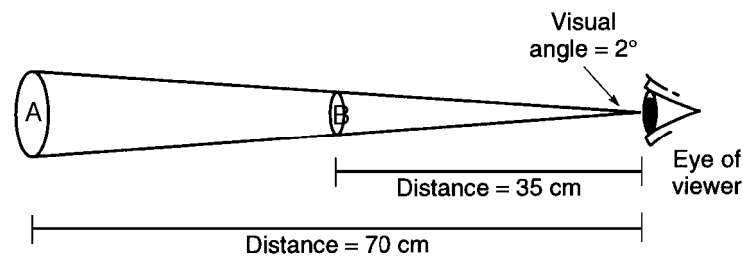
25. Using simple point-light displays, researchers have shown that observers can identify
- the species of animal being viewed.
 - the gender of the human being viewed.
 - the weight of a bowling ball being caught.
 - All of the above.
26. The superior colliculus
- is a relatively sophisticated part of the midbrain.
 - sends information directly to the secondary visual cortex.
 - integrates information from the various senses.
 - all of the above.
27. What does *retinotopic* mean?
- The retina is located at the back of the eye.
 - The retina is the primary focus of investigation.
 - Neurons that receive information from neighboring areas on the retina are found near each other.
 - The receptors on the retina are arranged so that the receptor-to-ganglion ratio is higher for rods than for cones.
28. The simple cells in the visual cortex
- respond vigorously to any kind of stimulation.
 - respond vigorously only to lines with the appropriate orientation.
 - respond only to moving stimuli.
 - respond only to moving lines that have a specified length and width.
29. A hypercolumn is
- responsible for coding motion in the lateral geniculate nucleus.
 - a series of columns in the cortex, with each column responsive to a different orientation.
 - the area of the secondary visual cortex that is primarily responsible for the perception of faces.
 - responsible for interpreting hyperkinetic motion.
30. Autokinesis is presumably due to
- small movements of a stationary car produced by action of the engine.
 - induced motion.
 - involuntary eye movements.
 - movement aftereffects.
31. Induced movement
- is an example of a context effect.
 - is a type of stroboscopic movement.
 - occurs due to involuntary eye movements.
 - occurs when a larger object impinges on a smaller object.

32. According to the corollary discharge theory, motion is perceived when
- the sensory information is sent directly to the comparison structure.
 - impulses from motion-specific retinal cells stimulate the visual cortex at the same time the pursuit system is activated.
 - the images that cross over a person's retina move in the same direction that their eyes are moving.
 - the information from the eye-head system is inconsistent with the information from the image-retina system.
33. The Ganzfeld is important because it illustrates the importance of _____ for visual perception.
- edges
 - light
 - color
 - photoreceptors
34. Lateral inhibition results in the experience of
- enhanced perception of edges.
 - enhanced perception of color.
 - faster light adaptation.
 - poorer perception of color.
35. Stabilized retinal images are important because
- they show that color is crucial for vision.
 - without them we would not be able to see movement.
 - they show that change is crucial for vision.
 - they tell us a great deal about receptive fields and lateral inhibition.
36. According to Helmholtz's theory of lightness constancy,
- viewers gather all the necessary information from the world "out there."
 - we take illumination into account when we judge lightness.
 - lightness constancy occurs because the intensity of an object, relative to its background, remains constant.
 - we have greater lightness constancy as children than as adults.



37. Which of the eyeballs above represents
- _____ a nearsighted eye
- _____ a normal eye
- _____ a farsighted eye

38. People who favor the Gestalt approach to shape perception argue that
- all experiences can be analyzed into their most basic sensations.
 - shape perception can largely be explained at the physiological level.
 - all species tend to organize shapes in the same fashion.
 - we perceive objects as well-organized wholes.
39. The stage in perception when an image is a viewer-centered representation of the visible surfaces of the visual field is known as a
- 2.5D sketch.
 - primal sketch.
 - 3D sketch.
 - zero-crossing.



40. Refer to the above figure to answer the following questions:
- Because circle A is twice as large as circle B, its visual angle will be (twice as large as, the same as, half as large as) that of circle B.
 - With the same visual angle, because circle A is twice as far away as circle B, it will measure (twice as large as, the same size as, half as large as) circle B.
 - If circle A were the same size as circle B, but twice as far away, its visual angle would be (smaller than, the same as, larger than) that of circle B.