

As always, the Skidmore Honor Code is in effect. Read each question carefully and answer it completely. Multiple-choice questions are worth one point each, other questions are as indicated. Good luck!

Answer these two essays on the lined paper provided at the back of the exam.

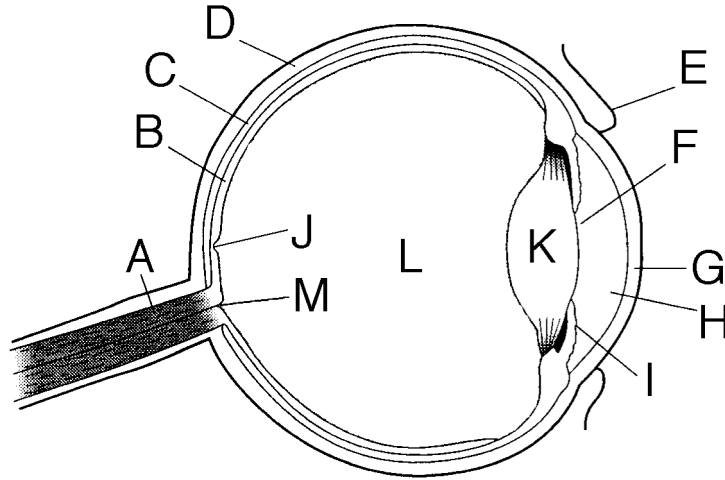
Essay 1: Describe the trichromatic and opponent process theories of color vision. Evaluate the evidence available to support each theory, and their synthesis. Describe the role that additive color mixing plays in either of these theories and contrast additive and subtractive color mixing. [20 pts]

Essay 2: What is a constancy? Illustrate the importance of constancy by discussing size and lightness constancy. What does the moon illusion tell us about size constancy? What do the Gelb demonstration and Gilchrist's study tell us about lightness constancy? [20 pts]

1. Compared to other cues to depth, accommodation is
  - a. a strong pictorial cue.
  - b. more effective in conveying relative distance.
  - c. more effective in conveying egocentric distance.
  - d. weak, at best.
2. Psychologists who favor the direct perception approach explain motion perception in terms of
  - a. relative stimulation of motion-sensitive neurons.
  - b. the corollary discharge theory.
  - c. the self-motion illusion.
  - d. information from the stimuli.
3. The microspectrophotometry technique has been used to demonstrate that
  - a. complementary colors are due to physiological differences.
  - b. rods and cones are located in different parts of the retina.
  - c. color deficiencies are due to genetic differences.
  - d. the three kinds of cone pigments have different absorption curves.
4. 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.
5. Human beings are capable of discriminating approximately colors.
  - a. 11
  - b. 1,000
  - c. 1,000,000
  - d. 5,000,000

6. Which of the following approaches to perception stresses that perception of shape is largely in-born?
  - a. information processing
  - b. empiricism
  - c. Gestalt
  - d. behaviorism
  
7. The term *invariants* is most often associated with
  - a. unconscious inference explanation for size constancy.
  - b. direct perception explanation for constancies.
  - c. relative-size explanation for size constancy.
  - d. Emmert's Law.
  
8. A person with akinetopsia may perceive the world as
  - a. shaking up and down.
  - b. blurry forms of color.
  - c. a series of still photographs.
  - d. 2-dimensional, unless the person is moving at least 40 km/hour.
  
9. Pushing on your eyeball causes you to see motion because
  - a. you have stimulated the motion detectors in the retina.
  - b. pressure on the eye itself stimulates the visual cortex.
  - c. insufficient information was found in the stimulus, according to Gibson.
  - d. the movement was passive, and corollary discharges were not produced.
  
10. The difficulty of linking the input from the two retinas is referred to as
  - a. the correspondence problem.
  - b. the constructivist problem.
  - c. the complementary problem.
  - d. the linkage problem.
  
11. Because the underlying features are constant, the fact that ambiguous figures (multistable images) can be seen in completely different ways is support for
  - a. a data-driven (bottom-up) approach to shape perception.
  - b. a conceptually driven (top-down) approach to shape perception.
  - c. the spatial-frequency approach.
  - d. the direct perception approach.
  
12. When your eyes move from one location to the next as you read this question, they are making a
  - a. fixation.
  - b. vergence movement.
  - c. gaze-contingent paradigm.
  - d. saccade.

13. The apparent purity of a color is known as
- hue.
  - saturation.
  - wavelength.
  - brightness.



14. Match the appropriate letter from the above figure to the parts of the eye indicated below [5 pts]:

_____	Sclera	_____	Iris
_____	Cornea	_____	Pupil
_____	Fovea	_____	Optic Nerve
_____	Retina	_____	Anterior Chamber
_____	Lens	_____	Choroid
_____	Optic Disc	_____	Posterior Chamber

15. Match the appropriate letter from the figure to the descriptions indicated below [5 pts]:

_____	Responsible for bending most of the light entering the eye
_____	Responsible for perceiving visual detail
_____	Responsible for accommodation
_____	Responsible for absorbing light not absorbed by the retina
_____	Contains aqueous humor
_____	Lack of photoreceptors creates a blind spot.
_____	Place where cataracts may occur
_____	Floaters are found here
_____	Astigmatisms occur here
_____	Contains rods and cones

16. What topic in color perception is relevant to the artistic technique called pointillism?
- additive mixtures
  - subtractive mixtures
  - color deficiencies
  - subjective colors

17. Which of the following approaches sees visual stimuli as rich with information yet attempts to solve perceptual problems with general physical knowledge rather than with specific knowledge about the stimuli?
  - a. Gibsonian
  - b. behaviorist
  - c. computational
  - d. Gestalt
  
18. One of the most common techniques used to diagnose color deficiency involves a number hidden in a pattern of different colored circles. This method is
  - a. the pointillism test.
  - b. the Purkinje shift.
  - c. the successive color test.
  - d. the Ishihara test.
  
19. In order to most successfully disrupt biological motion, researchers
  - a. used masking lights that moved in a random pattern.
  - b. used masking lights that moved in a uniform pattern.
  - c. inverted the point-light display.
  - d. made the masking lights a different size than the lights in the point-light display.
  
20. A potential physiological explanation for the mechanism by which binocular information contributes to depth perception is that
  - a. the optic chiasm codes for binocular information.
  - b. the visual cortex has cells that are sensitive to binocular disparity.
  - c. the information from each of the two eyes is compared in the lateral geniculate nucleus.
  - d. the ganglion cells in the retina supply information about binocular disparity.
  
21. Optic flow fields
  - a. are insufficient in providing enough information to detect motion.
  - b. become useless in detecting motion when inverted lenses are worn, because the visual system cannot overcome the changes that the lenses create.
  - c. disrupt the body's natural compensation processes, making it difficult to detect subtle movements.
  - d. are created from the combination of object and observer motion and aid in the determination of what is in motion.
  
22. Research on lightness perception indicates that
  - a. we organize the visual scene before we perceive the lightness of objects in the scene.
  - b. we perceive the lightness of objects in a scene before we organize those objects.
  - c. lightness perception and organization of objects occur simultaneously.
  - d. the nature of the stimuli determines whether lightness perception or organization of objects occur first.

23. Autokinesis (the autokinetic effect) is presumably due to
- small movements of a stationary car produced by action of the engine.
  - induced motion.
  - involuntary eye movements.
  - movement aftereffects.
24. Blindness due to damage to the visual system is called a
- glaucoma.
  - hemangioma.
  - cataract.
  - scotoma.
25. The far point
- is the location on the retina on which distant objects are best focused.
  - typically produces unclear or fuzzy vision.
  - is the farthest point that a person can see clearly.
  - is the point that would be in focus when the eyes are at dark focus.
26. For a nearsighted person,
- the far point is closer than for a person with normal acuity.
  - the near point is closer than for a person with normal acuity.
  - the eyeball is typically elongated.
  - All of the above.
28. Briefly describe how the corollary discharge theory would explain the following by telling me what's going on in the image-retina and eye-head systems [6 pts]:
- motion on the retina results in the perception of motion in the world
  - motion on the retina results in the perception of no motion in the world
  - no motion on the retina results in the perception of motion in the world
  - no motion on the retina results in the perception of no motion in the world
  - Helmholtz's experience with the clay stuffed in his eyeball
  - motion perceived when you push on your eyeball