Import Settings: Base
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Information Field: Level
Information Field: Page
Information Field: Topic
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Information Field: Bloom's Level
Highest Answer Letter: D
Multiple Keywords in Same Paragraph: No

Chapter: Chapter 2: Multiple Choice

Multiple Choice

1. The only type of electromagnetic radiation that can be seen by the human eye is:
A) microwaves.
B) X-rays.
C) light.
D) ultraviolet rays.

Ans: C
Level: E
Page: 41
Topic: Light

2. A light source emitting a wavelength of approximately 700 nm would be perceived as:
A) dark red.
B) orange.
C) yellow.
D) green.

Ans: A
Level: E
Page: 41
Topic: Light as a Wave

3. A single particle of light is known as a(n):
A) neutron.
B) photon.

C) proton.
D) electron.

Ans: B
Level: E
Page: 42
Topic: Light as a Stream of Particles

4. Photons that cross a boundary between two transparent or translucent media at an oblique angle are:
A) transmitted.
B) absorbed.
C) reflected.
D) refracted.

Ans: D
Level: M
Page: 42
Topic: Light as a Stream of Particles

5. Which statement about an optic array is false?
A) It is the spatial pattern of brightness and color entering the eyes.
B) Moving objects in the environment will change the optic array.
C) It is constant and does not vary in space and time.
D) Changes in the lighting conditions can change the optic array.

Ans: C
Level: M
Page: 42
Topic: The Optic Array

6. The _____ is the portion of the surrounding space that one can see when one's eyes are in a given position in their sockets.
A) choroid
B) field of view
C) retinal image
D) fovea

Ans: B
Level: E
Page: 44
Topic: Field of View

7. The extraocular muscles:
A) enable rapid and accurate eye movements.
B) control the size of the pupil.
C) control the shape of the lens.
D) supply the inside of the eye with oxygen and nutrients.

Ans: A
Level: M
Page: 45
Topic: Acuity and Eye Movements

8. The superior and inferior rectus muscles move the eye:
A) up and down.
B) side to side.
C) clockwise and counterclockwise.
D) in all directions.

Ans: A
Level: M
Page: 45
Topic: Acuity and Eye Movements

9. The _____ is an imaginary diameter line from the front to the back of the eye, passing through the center of the lens.
A) cornea
B) optic axis
C) choroid
D) lateral rectus

Ans: B
Level: E
Page: 46
Topic: Structure and Function of the Eye

10. The three layers of membranes in the eye (from outer to inner) are:
A) the sclera, the retina, and the choroid.
B) the retina, the sclera, and the choroid.
C) the choroid, the retina, and the sclera.
D) the sclera, the choroid, and the retina.

Ans: D
Level: M
Page: 46
Topic: Structure and Function of the Eye

11. A transparent membrane at the front of the eye is the:
A) retina.
B) cornea.
C) choroid.
D) iris.

Ans: B
Level: E
Page: 46
Topic: Structure and Function of the Eye

12. The _____ is the colored part of the eye, and the visible portion of the _____ is the white of the eye.
A) lens; pupil
B) cornea; sclera
C) iris; sclera
D) sclera; iris

Ans: C
Level: M
Page: 46
Topic: Structure and Function of the Eye

13. Which statement is true of the pupil of the eye?
A) It lets more light into the eye when it constricts.
B) It is an opening in the middle of the cornea.
C) The pupil of the left eye constricts when light is shone in the right eye.
D) The size of the pupil is controlled by the sclera of the eye.

Ans: C
Level: D
Pages: 46-47
Topic: Structure and Function of the Eye

14. The process of focusing light on the retina is performed by the cornea and the:
A) lens.
B) iris.
C) pupil.
D) anterior chamber.

Ans: A
Level: E
Pages: 46-47
Topic: Structure and Function of the Eye

15. The intraocular pressure in the three chambers of the eye is:
A) lesser than the air pressure.
B) equal to the air pressure.
C) greater than the air pressure.
D) unrelated to the air pressure.

Ans: C
Level: M
Page: 47
Topic: Structure and Function of the Eye

16. Both the anterior and posterior chambers of the eye are filled with a clear thin fluid known as the:
A) retinal fluid.
B) vitreous humor.
C) aqueous humor.
D) chamber fluid.

Ans: C
Level: M
Page: 47
Topic: Structure and Function of the Eye

17. A strong lens has a relatively _____ focal length and a _____ angle of refraction.
A) long; small
B) short; large
C) long; large
D) short; small

Ans: B
Level: M
Pages: 47-48
Topic: Structure and Function of the Eye

18. Accommodation is the term used for the:
A) ability of the cornea to refract light.
B) ability of the pupil to change its size under different light conditions.
C) ability of the lens to adjust its shape to focus on objects at different distances from the eye.
D) ability of the retina to adjust its shape in response to bright light.

Ans: C
Level: M
Page: 48
Topic: Structure and Function of the Eye

19. The surface of the retina can be seen through a(n) _____.
A) tonometer
B) ophthalmoscope
C) imaging camera
D) loupe

Ans: B
Level: E
Page: 50
Topic: Structure and Function of the Eye

20. The inner nuclear layer of the retina contains bipolar cells, horizontal cells, and _____.
A) amacrine cells
B) retinal ganglion cells
C) photoreceptors
D) paracrine cells

Ans: A
Level: M
Page: 51
Topic: Structure and Function of the Eye

21. _____receive signals from and send signals to horizontal cells in the retina.
A) Photoreceptors
B) Oblique muscles
C) Amacrine cells
D) Extraocular muscles

Ans: A
Level: E
Page: 51
Topic: Structure and Function of the Eye

22. Which cells in the retina send action potentials to the brain via the optic nerve?
A) bipolar cells
B) amacrine cells
C) retinal ganglion cells
D) photoreceptors

Ans: C
Level: M
Page: 51
Topic: Structure and Function of the Eye

23. _____are capable of transducing light into neural signals in the retina.
A) Photoreceptors
B) Extraocular muscles
C) Horizontal cells
D) Oblique muscles

Ans: A
Level: E
Page: 51
Topic: Structure and Function of the Eye

24. The "business ends" of the photoreceptors, where transduction occurs, are embedded in a layer of cells called the _____.
A) outer nuclear layer
B) pigment epithelium
C) ganglion cell layer
D) inner synaptic layer

Ans: B
Level: M

Page: 51
Topic: Structure and Function of the Eye

25. The layer of the retina closest to the vitreous chamber of the eye is the _____ layer.
A) inner synaptic
B) outer synaptic
C) outer nuclear
D) ganglion cell

Ans: D
Level: M
Pages: 52-53
Topic: Structure and Function of the Eye

26. How many different kinds of photopigment molecules are present in the human retina?
A) two
B) three
C) four
D) five

Ans: C
Level: E
Page: 54
Topic: Photoreceptors: Rods and Cones

27. The degree to which a photopigment molecule absorbs light of different wavelengths is known as:
A) pupillary reflex.
B) visual acuity.
C) spectral sensitivity.
D) accommodation.

Ans: C
Level: E
Page: 54
Topic: Photoreceptors: Rods and Cones

28. The photopigment in _____ is most sensitive to short-wavelength light, with a peak sensitivity at 443 nm.
A) rods
B) S-cones
C) M-cones
D) L-cones

Ans: B
Level: E
Page: 55
Topic: Photoreceptors: Rods and Cones

29. The photopigments in _____ and _____ have some sensitivity across nearly the entire spectrum of visible light.
A) rods; M-cones
B) S-cones; L-cones
C) M-cones; L-cones
D) S-cones; rods

Ans: C
Level: M
Page: 55
Topic: Photoreceptors: Rods and Cones

30. The all-*trans* retinal and 11-*cis*-retinal shapes of photopigment molecules are known as:
A) phosphenes.
B) isomers.
C) photochromes.
D) enantiomers.

Ans: B
Level: M
Page: 55
Topic: Transduction of Light

31. The density of cones:
A) is highest in the optic disk.
B) remains constant throughout the retina.
C) rises rapidly within a short distance of the fovea.
D) is highest in the fovea.

Ans: D

Level: M
Page: 56
Topic: Number and Distribution of Rods and Cones in the Retina

32. The area of the retina that contains no photoreceptors is the:
A) fovea.
B) macula.
C) optic disk.
D) outer segment.

Ans: C
Level: E
Page: 56
Topic: Number and Distribution of Rods and Cones in the Retina

33. The density of rods:
A) is highest in the optic disk.
B) remains constant throughout the retina.
C) rises rapidly within a short distance of the fovea.
D) is highest in the fovea.

Ans: C
Level: M
Page: 56
Topic: Number and Distribution of Rods and Cones in the Retina

34. In rod monochromats the:
A) retina develops with cones but without rods.
B) optic disk consists only of cones.
C) retina develops with rods but without cones.
D) optic disk consists of only rods.

Ans: C
Level: M
Page: 60
Topic: Adapting to Changes in Lighting

35. The cones-only curve in a dark adaptation experiment is obtained by:

A) having a person suffering from glaucoma as the participant.
B) ensuring the spot of light falls only on the fovea.
C) ensuring the spot of light is away from the fovea.
D) having a rod monochromat as the participant.

Ans: B
Level: M
Pages: 59-60
Topic: Adapting to Changes in Lighting

36. The process of photopigment regeneration:
A) is longer for cones than for rods.
B) is longer for rods than for cones.
C) aids in adjusting the operating range of the visual system.
D) causes the pigment molecules to resume the 11-*trans* shape.

Ans: B
Level: E
Page: 60
Topic: Adapting to Changes in Lighting

37. Photopigment regeneration:
A) occurs only in rod monochromats.
B). allows photopigment molecules to resume their 11-cis shape from all-*trans*.
C) is a property of retinal circuits with convergence.
D) compensates for the lack of photoreceptors in the optic disk.

Ans: B
Level: M
Page: 60
Topic: Adapting to Changes in Lighting

38. _____ is a property of retinal circuits with convergence in which signals from photoreceptors in some small space on the retina add up to affect the response of the retinal ganglion cells in the circuit.
A) Lateral inhibition
B) Accommodation
C) Photoisomerization
D) Spatial summation

Ans: D

Level: E
Page: 62
Topic: Convergence in Retinal Circuits

39. The higher the degree of convergence in neural circuits:
A) the higher the number of one-to one pattern of RGC and photoreceptor connections.
B) the lower the response to dim light.
C) the more the circuit supports visual acuity.
D) the more the circuit supports sensitivity to dim light.

Ans: D
Level: D
Page: 62
Topic: Convergence in Retinal Circuits

40. The _____ is the region of a sensory surface that, when stimulated, causes a change in the firing rate of a neuron.
A) fovea
B) blind spot
C) receptive field
D) near point

Ans: C
Level: E
Page: 64
Topic: Receptive Fields

41. Studies on the midget versus parasol types of RGCs show that at any given distance from the fovea:
A) both types of RGCs have similar receptive fields.
B) parasol RGCs have relatively small receptive fields and midget RGCs have relatively large receptive fields.
C) both types of RGCs send the same kind of visual information to the brain.
D) midget RGCs have relatively small receptive fields and parasol RGCs have relatively large receptive fields.

Ans: D
Level: M
Page: 65
Topic: Receptive Fields

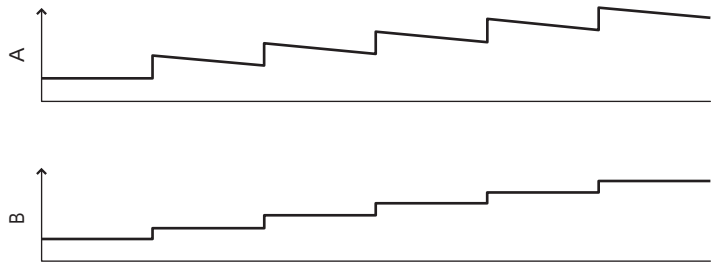
42. In order to maximally stimulate a retinal ganglion cell with an on-center receptive field, a spot of bright light should strike:
A) both the center and the surround of the entire receptive field.
B) the entire center of the receptive field without touching the surround.
C) only the surround of the receptive field.
D) neither the center nor the surround of the receptive field.

Ans: B
Level: D
Pages: 65-66
Topic: Receptive Fields

43. _____ refers to those signals sent by horizontal cells which tend to decrease the responses of photoreceptors in the center of the receptive field.
A) Lateral inhibition
B) Convergence
C) Edge enhancement
D) Spatial summation

Ans: A
Level: E
Pages: 67-68
Topic: Receptive Fields

44. Which graph of Mach bands display does a person perceive when looking at the illustration below?
A) A
B) B



Ans: A
Level: M
Page: 69
Topic: Edge Enhancement: An Example of How It All Works Together

45. The enhancement of edges in Mach bands can be explained by:
A) lateral inhibition.
B) convergence.
C) dark adaptation.
D) spatial summation.

Ans: A
Level: E
Pages: 68-69
Topic: Edge Enhancement: An Example of How It All Works Together

46. A disorder of the extraocular muscles in which the two eyes are not aligned with one another is called:
A) presbyopia.
B) astigmatism.
C) myopia.
D) strabismus.

Ans: D
Level: E
Page: 70
Topic: Strabismus and Amblyopia

47. In which accommodation disorder does the optic axis become too long, resulting in the light coming to a focus in front of the retina?
A) myopia
B) hyperopia
C) astigmatism
D) presbyopia

Ans: A
Level: E
Page: 71
Topic: Disorders of Accommodation: Myopia, Hyperopia, Presbyopia, and Astigmatism

48. Which statement is true of the disorders of accommodation?
A) Astigmatism cannot be corrected with glasses as opposed to other disorders of accommodation.
B) Presbyopia is characterized by a progressive decrease in the distance from the eye to the near point as the person ages.
C) Myopia and hyperopia cannot be detected until much later in life.
D) Myopia is known as nearsightedness, while hyperopia refers to farsightedness.

Ans: D
Level: M
Pages: 71-72
Topic: Disorders of Accommodation: Myopia, Hyperopia, Presbyopia, and Astigmatism

49. According to the text, in hyperopia:
A) the curvature of the cornea or the lens is slightly irregular or asymmetrical.
B) there is a progressive increase in the distance from the eye to the near point as the person ages.
C) a person can see distant objects clearly but not nearby objects.
D) a person can see nearby objects clearly but not distant objects.

Ans: C
Level: M
Page: 72
Topic: Disorders of Accommodation: Myopia, Hyperopia, Presbyopia, and Astigmatism

50. Presbyopia is characterized by:
A) a progressive decrease in the distance from the eye to the near point as the person ages.
B) a progressive increase in the distance from the eye to the near point as the person ages.
C) a slightly irregular or asymmetrical cornea or lens, making complete accommodation impossible.
D) a person being able to view nearby objects clearly but not distant objects.

Ans: B
Level: M
Page: 72
Topic: Disorders of Accommodation: Myopia, Hyperopia, Presbyopia, and Astigmatism

51. Which disorder of vision can be treated with LASIK surgery?
A) astigmatism
B) cataracts
C) glaucoma
D) floaters

Ans: A
Level: E
Page: 72
Topic: Disorders of Accommodation: Myopia, Hyperopia, Presbyopia, and Astigmatism

52. Which statement is false with regard to cataracts?
A) They can result from an exposure to ultraviolet radiation.
B) They can be treated with a replacement lens that has a variable focal length.
C) They can be treated through surgery.
D) They can be a side effect of diabetes or other diseases.

Ans: B
Level: M
Page: 72
Topic: Cataracts

53. Which disorder of vision results from the intraocular pressure being too high for a person's eye?
A) astigmatism
B) cataracts
C) glaucoma
D) floaters

Ans: C
Level: M
Page: 72
Topic: High Intraocular Pressure: Glaucoma

54. Which condition is characterized by a loss of vision due to a damage to the photoreceptors in a region at the center of the retina?
A) macular degeneration
B) cataracts
C) retinitis pigmentosa

D) phosphenes

Ans: A
Level: M
Page: 73
Topic: Retinal Disease: Macular Degeneration and Retinitis Pigmentosa

55. Night-vision devices based on thermal imaging convert the _____ emitted by the objects and surfaces in the scene into a visible electronic image.
A) infrared radiation
B) X-rays
C) phosphorescent light
D) ultraviolet light

Ans: A
Level: E
Page: 74
Topic: Applications: Night-Vision Devices