

BIOL 1520 | Module 3 Practice Exam Questions (Instructional)

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1. Which of the following is the correct sequence that describes the contraction of a skeletal muscle fiber?
 - 1) Depolarization is spread via T tubules to the sarcoplasmic reticulum.
 - 2) Calcium is released and binds to the troponin complex.
 - 3) The phosphate ion is released from myosin.
 - 4) ADP is released from myosin.
 - 5) Tropomyosin shifts and unblocks the cross-bridge binding sites.
 - a. 5 → 3 → 1 → 2 → 4
 - b. 1 → 5 → 2 → 4 → 3
 - c. 1 → 2 → 5 → 3 → 4
 - d. 2 → 5 → 1 → 4 → 3
 - e. 5 → 1 → 2 → 3 → 4
2. For a neuron with an initial membrane potential at -70 mV, an increase in the movement of sodium ions into that neuron's cytoplasm would result in
 - a. the replacement of potassium ions by the sodium ions.
 - b. the neuron switching on its sodium potassium pump to restore the initial conditions
 - c. the replacement of potassium ions with calcium ions
 - d. hyper polarization of the neuron
 - e. depolarization of the neuron
3. Both epinephrine and cortisol are secreted in response to stress. Which of the following statements is also true for *both* of these hormones?
 - a. They act to increase blood glucose availability.
 - b. Their receptors are on the surfaces of target cells.
 - c. They are secreted by the adrenal cortex.
 - d. Their secretion is stimulated by adrenocorticotrophic hormone (ACTH) (corticotrophin).
 - e. They are secreted into the blood within seconds of the onset of stress.

4. If you were blindfolded while sitting in a rolling office chair, how could you determine whether you were being pushed forwards or backwards?
- The hairs on the surface of the skin bend in order to relay the primary sensation of motion.
 - Calcium carbonate crystals (otoliths) shift in response to motion, which is recognized by hair cells in the ear.
 - The motion causes regions of the basilar membrane to vibrate at differing imperceptible frequencies.
 - The fluid surrounding the cerebral cortex redistributes in response to motion, which is recognized by the parietal lobe.
 - None of the above are accurate
5. Sensory receptors (e.g. hearing, taste, smell, etc) provide information on the stimulus intensity to the CNS by:
- the differing variety of sensory receptors responding to a common stimulus
 - the frequency of action potentials
 - a sensory receptor-reflex arc
 - the spinal cord
 - specialized region(s) of the cerebrum
6. What is the role of the actin (thin) filament in muscle contraction?
- has motor protein heads that hydrolyze ATP
 - filament that is pulled towards the center of the sarcomere
 - filament that pulls the other filament towards the center of the sarcomere
 - binding sites for motor protein head
 - B and D
7. Which of the following statements correctly describe(s) T tubules and their role in conducting action potentials in muscle cells?
- Without T tubules, the muscle cell would not be able to contract.
 - tubules have receptor proteins that bind neurotransmitters released from the synaptic terminal of the motor neuron.
 - tubules carry action potentials throughout the muscle cell
 - A and C
 - B and C

8. Glucocorticoids do which of the following?
- a. promote the release and breakdown of fatty acids
 - b. increase blood glucose levels
 - c. promote the immune response
 - d. increase insulin production
 - e. A and B
9. Which statement accurately describes an action potential?
- a. Its magnitude increases along the axon.
 - b. Its magnitude decreases along the axon.
 - c. All action potentials in a single neuron are of the same magnitude.
 - d. During an action potential, the membrane potential of the neuron remains constant.
 - e. An action potential permanently shifts a neuron's membrane potential away from its resting value.
10. A neuron that has just fired an action potential cannot be immediately restimulated to fire a second action potential. The short interval of time during which restimulation is not possible is called
- a. hyperpolarization.
 - b. repolarization.
 - c. the resting potential.
 - d. the refractory period.
 - e. depolarization.
11. Which of the following statements concerning graded membrane potentials is correct?
- a. They can be more negative than resting potential.
 - b. They can be less negative than resting potential.
 - c. They integrate the many synaptic inputs to a cell.
 - d. They are important means of summing sensory inputs.
 - e. All of the above are correct.
12. Which of the following conditions would stimulate a molting larval insect to transform into a larger larval stage?
- a. decreased level of ecdysone
 - b. lack of juvenile hormone
 - c. lack of the melatonin hormone
 - d. increased level of juvenile hormone
 - e. lack of ecdysone

13. What is the function of Ca^{2+} in muscle cells?

- a. It regulates how hard the muscle contracts
- b. It removes troponin to remove the tropomyosin-complex from the binding sites
- c. It creates involuntary muscle movement by causing sarcomeric change
- d. It increases the rate of ADP flow to the muscle to cause the myosin head to bind
- e. B and D

14. During the middle of a winter's night, various plants were flashed with red light and then far-red light. Which of the following statements are correct?

- a. Long day plants will bloom
- b. Long day plants will not bloom
- c. Short day plants will bloom
- d. Short day plants will not bloom.
- e. B and C

15. The steps below refer to various stages in an action potential:

1. The sodium-potassium pump redistributes ions, resetting the membrane potential.
2. Voltage-gated sodium channels open quickly after depolarization past the threshold potential.
3. A mechanical disturbance causes sodium ions to enter the intracellular space.
4. Voltage-gated potassium ion channels open, repolarizing the membrane.
5. The membrane potential drops below the resting potential.

Which sequence of events is correct:

- a. 2→3→4→1→5
- b. 1→2→5→3→4
- c. 3→5→2→1→4
- d. 2→4→1→5→3
- e. 3→2→4→5→1

16. Which of the following neuron structures are matched with the correct function?

- a. Dendrites; cells that cover the axon in myelin in the central nervous system
- b. Axon; transmits signals from the cell body to the synapse via electrical signaling.
- c. Synapse; a close physical connection where electrical signals are conducted between two neurons.
- d. Oligodendrites; cellular projections that receive signals from neighboring neurons.
- e. All of the above are correctly matched

17. Which of the following statements is correct?
- a. The resting potential across a membrane is about +65 mV.
 - b. Sodium may freely pass through the membrane via “leaky channels”.
 - c. The sodium/potassium pump obtains energy from the hydrolysis of phosphate groups.
 - d. A and B
 - e. A and C
18. Which statement about cone cells in a human eye is *not* true?
- a. They are responsible for our sharpest vision.
 - b. They are responsible for color vision.
 - c. They are more sensitive to light than rods are.
 - d. They are fewer in number than rods.
 - e. They exist in high numbers at the fovea.
19. The color in color vision results from the
- a. ability of each cone cell to absorb all wavelengths of light equally.
 - b. lens of the eye acting like a prism and separating the different wavelengths of light.
 - c. differential absorption of wavelengths of light by different kinds of rod cells.
 - d. three different isomers of opsin in cone cells.
 - e. absorption of different wavelengths of light by amacrine and horizontal cells.
20. The rising phase of an action potential is due to the
- a. closing of K^+ channels.
 - b. opening of chemically gated Na^+ channels.
 - c. opening of voltage-gated Na^+ channels.
 - d. closing of voltage-gated Ca^{2+} .
 - e. spread of positive current along the plasma membrane.
21. The resting potential of a neuron is due mostly to
- a. open Na^+ channels.
 - b. synaptic summation.
 - c. open K^+ channels.
 - d. open Cl^- channels.
 - e. None of the above

22. Which statement about olfaction is *false*?
- a. Olfactory stimuli are recognized by the interaction between odorant molecules and receptor molecules.
 - b. The more odorant molecules that bind to receptors, the more action potentials are generated.
 - c. The greater the number of action potentials generated by an olfactory receptor, the greater the intensity of the perceived smell.
 - d. The perception of different smells results from the activation of different combinations of olfactory receptors.
 - e. Each of the statements above are true.
23. Which membrane is most directly responsible for the ability to determine pitch?
- a. Round window
 - b. Basilar membrane
 - c. Oval window
 - d. Tympanic membrane
 - e. Tectorial membrane
24. Which statement is *not* true?
- a. The transmembrane potential of a rod cell becomes more negative when the rod cell is exposed to light.
 - b. A photoreceptor releases the most neurotransmitter when in total darkness.
 - c. Whereas in vision the intensity of a stimulus is encoded by the degree of hyperpolarization of photoreceptors, in hearing the intensity of a stimulus is encoded by changes in firing rates of sensory neurons.
 - d. The interaction among hammer (malleus), anvil (incus), and stirrup (stapes) conducts sound waves across the fluid-filled middle ear.
 - e. Stiffening of the ossicles in the middle ear can lead to deafness.
25. In humans, the region of the retina where the central part of the visual field falls is the
- a. central ganglion cell.
 - b. fovea.
 - c. optic nerve.
 - d. cornea.
 - e. pupil.

26. Which of the following is true of gibberellins?
- a. They are responsible for phototropism and gravitropism.
 - b. They are gases at room temperature.
 - c. They are produced by fungi exclusively.
 - d. They cause flowering in plants.
 - e. They inhibit the synthesis of digestive enzymes by barely seeds.
27. Which process is *not* directly affected by auxin?
- a. Apical dominance
 - b. Leaf abscission
 - c. Seed germination
 - d. Root initiation
 - e. Cell elongation
28. Cytokinins promote cellular division in plants, but only when in the presence of auxin. This system is an example of which type of regulation?
- a. Positive feedback
 - b. Negative feedback
 - c. Hormonal crosstalk
 - d. A and C
 - e. None of the above
29. Which statement about sensory systems is *not* true?
- a. Sensory transduction involves the conversion (direct or indirect) of a physical or chemical stimulus into changes in membrane potential.
 - b. In general, a stimulus causes a change in the flow of ions across the plasma membrane of a sensory receptor cell.
 - c. Habituation is the decreased response to a stimulus that has been repeated without an important effect.
 - d. The more intense a stimulus, the greater the magnitude of each action potential fired by a sensory neuron.
 - e. Sensory adaptation plays a role in the ability of organisms to discriminate between important and unimportant information.

30. A scientist is observing various axons. She notices that axons taken from different species produce action potentials with varying speeds. Which of the following may explain this phenomenon?
- a. The diameters of the axons are different.
 - b. The axons display different levels of myelination.
 - c. The speeds of action potentials may vary within the same axon.
 - d. Both A and B explain this occurrence.
 - e. None of the above are true; all axons relay messages at the same speed.
31. All types of sensory signal transduction are based on the production of
- a. action potentials in the sensory receptor cells.
 - b. increased frequency of action potentials in the sensory receptor cells when more deeply stimulated.
 - c. graded depolarizations in the sensory receptor cells.
 - d. graded changes in membrane potential in the sensory receptor cells.
 - e. A and B
32. In the complete absence of light, a rod will
- a. become strongly depolarized and increase its release of neurotransmitters
 - b. become strongly hyperpolarized and decrease its release of neurotransmitters
 - c. become strongly hyperpolarized and increase its release of neurotransmitters
 - d. become strongly depolarized and decrease its release of neurotransmitters
 - e. None of these
33. Which of the following is responsible for rigor mortis (muscle stiffness after death)?
- a. The cessation of action potentials after death
 - b. The lack of ATP in dead tissue
 - c. The lack of acetylcholine (ACh) in dead tissue
 - d. The exhaustion of Ca^{2+} from the sarcoplasmic reticulum
 - e. None of the above explain rigor mortis.
34. Muscle contraction is graded, while the neuronal signals that initiate it are “all or nothing.” Which of the following is a mechanism responsible for graded muscle contraction?
- a. Variable numbers of T-tubules depolarized
 - b. Variable sizes of action potentials in efferent neurons
 - c. Variable frequencies of action potentials in efferent neurons
 - d. Variable numbers of myosin thick filaments activated by ATP
 - e. Variable amounts of calcium released by the sarcoplasmic reticulum

35. Which of the following does *not* accurately describe either olfaction or gustation?
- a. Each olfactory receptor cell contains receptors for multiple odorants.
 - b. Taste receptor cells become depolarized and release neurotransmitters upon stimulation by tastants.
 - c. Each taste bud contains receptor cells for all types of tastants.
 - d. The ability to perceive flavor is dependent upon both taste and olfactory receptor cells.
 - e. Olfactory receptor cells are neurons; taste receptor cells are receptor cells synapsed with neurons.
36. Which of the following statements about sensory cells is *false*?
- a. Mechanoreceptors detect stimuli that distort membranes.
 - b. Chemoreceptors are involved in smell, taste, and hearing.
 - c. Photoreceptor molecules exhibit a conformational change when stimulated by light.
 - d. Nociceptors respond to harmful stimuli.
 - e. All of the above are true.
37. Which of the followings statements concerning phytochromes is correct?
- a. It is the only photoreceptor pigment in plants.
 - b. It exists in two forms interconvertible by light.
 - c. It is a pigment that is colored red or far-red.
 - d. It is a green-light receptor.
 - e. It is the photoreceptor for phototropism in coleoptiles.
38. What is the correct order for the following event in the interaction of a cell with a signal? (1) alteration of cell function; (2) signal binds to a receptor; (3) signal released from source; (4) signal transduction.
- a. 1→2→3→4
 - b. 2→3→1→4
 - c. 3→2→1→4
 - d. 3→2→4→1
 - e. 3→4→2→1
39. Why do some signals ("first messengers") trigger "second messengers" to activate target cells?
- a. The first messenger requires activation by ATP.
 - b. The first messenger is not water soluble.
 - c. The first messenger binds to many types of cells.
 - d. The first messenger cannot cross the plasma membrane.
 - e. There are no receptors for the first messenger.

40. Contractile proteins (which can act to shorten cells or perform work) include:
- a. actin
 - b. myosin
 - c. microtubules
 - d. A and B
 - e. A, B, and C
41. Which of the following is *false* regarding the peripheral nervous system (PNS)?
- a. The PNS includes the sympathetic and parasympathetic divisions.
 - b. The PNS includes sensory and effector neurons.
 - c. The PNS controls both voluntary and involuntary responses to stimuli.
 - d. The PNS can relay information to both the brain and the spinal column for signal processing.
 - e. All of the above are true.
42. Nociceptors are sensory receptors sensitive to:
- a. strong or light touch
 - b. photons
 - c. pain
 - d. any degree of heat
 - e. tissue damage
43. Reflexes such as the knee-jerk reflex result in a very rapid involuntary response to a stimulus without altering activity in
- a. motor neurons.
 - b. sensory neurons.
 - c. the spinal cord.
 - d. the brain.
 - e. All of the above are altered.

44. In the human brain, the interneurons in the medulla are myelinated while the outer cortex is demyelinated. The outer layer of the spinal cord is myelinated, while the interior neurons are lack myelin. Which of the following statements correctly explains this difference?
- a. Information is integrated in the cortex of the brain, while information is integrated in the internal layers of the spinal column.
 - b. There is no relationship between the functions of these structures and their myelination.
 - c. Information is integrated in the medulla of the brain, while information is integrated in the external layers of the spinal column.
 - d. During the reflex arc, sensory stimuli is transmitted from the inner layers of the spinal column to the cortex of the brain.
 - e. None of the above are accurate.
45. Which of the following statements about plant hormones is *false*?
- a. Cytokinins inhibit cell division.
 - b. Absciscic acid is not involved in abscission (leaf detachment from a plant).
 - c. Gibberellins stimulate cell enlargement.
 - d. Ethylene contributes to the ripening of fruit.
 - e. Plant hormones are small molecules, easing diffusion through the plant body.
46. Exposure to _____ light will _____ plant processes, such as germination but exposure to _____ light will _____ that process.
- a. far red, activate, red, inhibit
 - b. far red, inhibit, red, activate
 - c. blue, inhibit, far red, activate
 - d. blue, activate, red, inhibit
 - e. light wavelength is not important, rather photoperiod (length of exposure) determines plant responses to light
47. The binding of an inhibitory neurotransmitter to the postsynaptic receptors results in which of the following?
- a. Depolarization of the membrane
 - b. Hyperpolarization of the membrane
 - c. Generation of an action potential
 - d. Increased permeability of the membrane to sodium ions
 - e. Increased permeability of the membrane to calcium ions

48. Fast-twitch fibers differ from slow-twitch fibers in that
- a. they are more common in the leg muscles of champion sprinters than marathon runners.
 - b. they have more mitochondria.
 - c. they fatigue less rapidly.
 - d. their abundance is more a product of training than of genetics.
 - e. they are more common in postural muscles than in finger muscles.
49. What is the role of Ca^{2+} in the control of muscle contraction?
- a. Cause depolarization of the T-tubule system.
 - b. Change the conformation of troponin, thus exposing myosin binding sites.
 - c. Change the conformation of myosin heads, thus causing microfilaments to slide past each other.
 - d. Bind to tropomyosin and break actin-myosin cross-bridges.
 - e. Block the ATP-binding site on myosin heads, enabling muscles to relax.
50. Muscle contraction is controlled by
- a. Movement of actin motor proteins along myosin filaments
 - b. Movement of myosin motor proteins along actin filaments
 - c. Shortening of actin filaments along myosin filaments
 - d. Shortening of myosin filaments along actin filaments
 - e. A and B
51. In responding to stress, the anterior pituitary gland releases ACTH, which in turn stimulates the adrenal cortex to release:
- a. cortisol
 - b. insulin
 - c. adrenalin
 - d. A and B
 - e. B and C
52. Leptin is secreted by _____ and targets hunger centers located in _____.
- a. the pancreas, the brain
 - b. the stomach, the brain
 - c. the brain, the stomach
 - d. fat cells, the brain
 - e. the adrenal gland, the brain

53. Persons suffering from type 2 diabetes are still able to produce insulin, unlike those with Type 1 diabetes. This implies that Type 2 diabetes involves:
- a. producing far too much insulin
 - b. cells of the body are stimulated to produce too much glucose
 - c. insulin receptors being absent or non-functioning
 - d. body cells cannot convert glucose to glycogen
 - e. there are too many cells storing fat instead of glycogen
54. Which statement about synaptic transmission is *not* true?
- a. The synapses between neurons and skeletal muscle cells use ACh as their neurotransmitter.
 - b. The release of neurotransmitter at the neuromuscular junction causes the motor end plate to depolarize.
 - c. In vertebrates, the synapses between motor neurons and muscle fibers are always excitatory.
 - d. Inhibitory synapses cause the resting potential of the postsynaptic membrane to become more negative.
 - e. All the above are true.
55. Shortening of sarcomeres within a single muscle fiber during muscle contraction can best be describes as:
- a. an all or nothing response
 - b. a variable response based on muscle tension
 - c. a variable response depending on the number of motor units
 - d. a variable response depending on the number of fibers controlled by a motor neuron
 - e. sarcomeres do not change length during a muscle contraction
56. Routine homeostasis is likely to occur under which of the following conditions?
- a. stimulation of a stress response pathway
 - b. negative feedback loop
 - c. equal concentrations of all hormones within the circulatory system
 - d. positive feedback loop
 - e. while asleep and not active

57. The sarcoplasmic reticulum of a muscle fiber:
- a. releases calcium when depolarized following an action potential
 - b. spreads the depolarization from an action potential throughout the muscle fiber
 - c. causes troponin to shift tropomyosin on the thin filament
 - d. A and B
 - e. A, B, and C
58. Which of the following statements about information flow in the vertebrate visual system is true?
- a. The conformation of retinal dictates which color is encoded by light.
 - b. When photons of light enter the eye, the first cells in the retina they encounter are ganglion cells.
 - c. The highest density of rod cells in the human retina is centrally located in the fovea, resulting in high acuity dim light vision.
 - d. Pigmented epithelium cells at the back of the retina provide information about the level of ambient light for contrast adjustments.
 - e. More than one of these statements is true.
59. Which of the following is a likely cause of diabetes?
- a. Overproduction of insulin by β -cells of the pancreas
 - b. Loss of α -cells of the pancreas
 - c. Loss of insulin receptors
 - d. Overproduction of glucagon
 - e. Loss of receptors for somatostatin
60. Steroid hormones
- a. are produced only by the adrenal cortex.
 - b. have only cell surface receptors.
 - c. are water-soluble.
 - d. act by altering the activity of proteins in the target cells.
 - e. act by altering gene expression in the target cell.
61. Which of the following is true of all hormones?
- a. They are secreted by glands.
 - b. They have receptors on cell surfaces.
 - c. They may stimulate different responses in different cells.
 - d. There is a gene that codes for each hormone.
 - e. When the same hormone occurs in different species, it has the same action.

62. Contractile proteins (which can act to shorten cells or perform work) include
- a. Actin
 - b. Myosin
 - c. Microtubules
 - d. A & B
 - e. A, B & C
63. Sensory receptors (e.g. hearing, taste, smell, etc) provide information on the stimulus intensity to the CNS by
- a. The differing variety of sensory receptors responding to a common stimulus.
 - b. A sensory receptor-reflex arc
 - c. The spinal cord
 - d. Specialized regions(s) of the cerebrum
 - e. The frequency of action potentials
64. This plant hormone is involved in the phototropic response to blue light and the gravitropic response of roots.
- a. Ethylene
 - b. Cytokinins
 - c. Gibberelin
 - d. Indole acetic acid
 - e. Auxin
65. Shortening of sarcomeres within a single muscle fiber during muscle contraction can best be described as
- a. An all-or-none response.
 - b. A variable response based on muscle tension.
 - c. A variable response depending on the number of motor units.
 - d. A variable response depending on the number of fibers controlled by a motor neuron.
 - e. Sarcomeres do not change length during a muscle contraction.
66. In responding to stress, the anterior pituitary gland releases ACTH, which in turn stimulates the adrenal cortex to release
- a. Cortisol
 - b. Insulin
 - c. Adrenalin
 - d. A & B
 - e. B & C

67. Which of the following statements about plant hormones is false?

- a. Cytokinins inhibit cell division
- b. Absciscic acid is not involved in abscission (leaf detachment from a plant).
- c. Gibberellins stimulate cell enlargement.
- d. Ethylene contributes to the ripening of fruit.
- e. Plant hormones are small molecules, easing diffusion through the plant body.

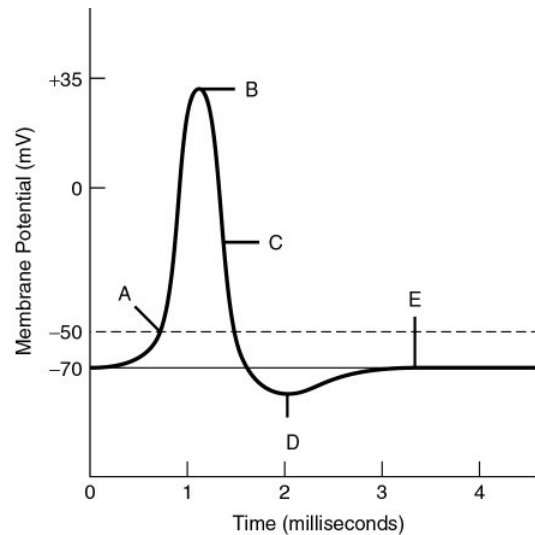
68. Lipid-insoluble chemical signaling molecules

- a. bind to intracellular receptors which can then bind to DNA, changing gene expression
- b. bind directly to DNA, changing gene expression
- c. bind to extracellular receptors which can then bind to DNA, changing gene expression
- d. bind to extracellular receptors, which triggers an intracellular amplification signal, which may (or may not) alter gene expression
- e. lipid-insoluble molecules cannot function as chemical signals

69. Exposure to _____ light will _____ plant processes, such as germination, but exposure to _____ light will _____ that process.

- a. Far red, activate, red, inhibit.
- b. Far red, inhibit, red, activate.
- c. Blue, inhibit, far red, activate.
- d. Blue, activate, red, inhibit.
- e. Light wavelength is not important, rather photoperiod (length of exposure) determines plant responses to light.

Fill in the appropriate letter (A-E) corresponding to the best answer to questions 9-11.



70. K^+ is the principle ion moving at label ____.
71. The axon membrane potential is hyperpolarized at label ____.
72. The axon membrane potential is hyperpolarized at label ____.
73. The endocrine system and the nervous system are structurally related. Which of the following cells best illustrates this relationship?
- A) a neurosecretory cell in the hypothalamus
 - B) a neuron in the spinal cord
 - C) a cell in the pancreas that produces digestive enzymes
 - D) a brain cell in the cerebral cortex
 - E) a steroid-producing cell in the adrenal cortex

74. Persons suffering from Type 2 diabetes are still able to produce insulin, unlike those with Type 1 diabetes. This implies that Type 2 diabetes involves
- a. Producing far too much insulin
 - b. Cells of the body are stimulated to produce too much glucose
 - c. Insulin receptors being absent or non-functioning
 - d. Body cells cannot convert glucose to glycogen
 - e. There are too many cells storing fat instead of glycogen
75. The normal absence of cone cells and rod cells is a feature of
- a. night vision
 - b. lack of color vision
 - c. total blindness
 - d. peripheral vision
 - e. the blind spot
76. The sarcoplasmic reticulum of a muscle fiber
- a. Releases calcium when depolarized following an action potential
 - b. Spreads the depolarization from an action potential throughout the muscle fiber
 - c. Causes troponin to shift tropomyosin on the thin filament
 - d. A and B
 - e. A, B and C
77. Glial cells in the nervous system are responsible for
- a. Insulating axons and preventing “crosstalk” between adjacent fibers
 - b. Supporting and nurturing neurons and axons
 - c. Integrating sensory input and perception of stimulus quality
 - d. A & B
 - e. A, B & C

78. In chemical signaling pathway, crosstalk refers to

- a. Negative feedback in the neuroendocrine pathway
- b. Positive feedback in the neuroendocrine pathway
- c. Target cells having receptors to multiple chemical signals, with interactions among transduction pathways downstream of each receptor type
- d. Action potentials in one neuron inducing activity in neighboring neurons, amplifying the original signal
- e. Hormone receptors causing a higher frequency of action potentials in a neuron.

79. Plant phytochromes

- a. Respond to specific wavelengths of light
- b. Are involved in regulating life history responses of plants
- c. Break seed dormancy and stimulate germination
- d. A & B
- e. A, B & C

80. qualities from the frequency of action potentials

- A) True B) False

81. Neurotransmitters are a form of chemical signal found only in the nervous system.

- A) True **B) False**

82. In animals, contractile proteins (such as actin) are found only in muscle cells.

- A) True B) False

83. In animals, chemoreceptors for taste and smell are basically identical in structure/function differing only by their location on the body.

- A) True

84. An EPSP will always cause an action potential on the post-synaptic cell.

A) True

B) False

85. To qualify as a hormone, a chemical must exert its effects on target cells even though it is present in very minute quantities.

A) True

B) False

86. Both rhodopsin and opsins (which respond to different wavelengths of light and are responsible for color vision) share retinal as the primary molecule which changes conformation when exposed to light.

A) True

B) False

87. Cardiac muscle has actin and myosin but lacks sarcomeres.

A) True

B) False

88. Exposure to light hyperpolarizes (or inhibits) vertebrate photoreceptors.

A) True

B) False

89. Consuming large quantities of glucose-rich Halloween candy causes the pancreatic beta cells the Islets of Langerhans to release large amounts of insulin.

A) True

B) False