

## Holt Invitational: Anatomy & Physiology Answer Key

1. The central nervous system (CNS) includes the
  - A. brain and cranial nerves
  - B. brain and spinal nerves
  - C. brain and spinal cord
  - D. brain only
2. Which of the following is not part of the brain stem?
  - A. Medulla
  - B. Cerebellum
  - C. Pons
  - D. Midbrain
  - E. Both b and c
3. Which of the following is not part of the brain stem?
  - A. Medulla
  - B. Cerebellum
  - C. Pons
  - D. Midbrain
  - E. Both b and c
4. Which structure connects a ventricle to the subarachnoid space?
  - A. Interventricular foramen
  - B. Cerebral aqueduct
  - C. Lateral aperture
  - D. Median aperture
  - E. Both c and d
5. The basal nuclei include:
  - A. hippocampus
  - B. caudate nucleus
  - C. lentiform nucleus
  - D. mammillary bodies
  - E. Both b and c
6. Parts of the limbic system include:
  - A. Cingulate gyrus
  - B. Hippocampus
  - C. Fornix
  - D. Septal nuclei
  - E. All of the above
7. Which of the following is not found in the forebrain?
  - A. Pons
  - B. Thalamus
  - C. Hypothalamus
  - D. Corpus callosum
  - E. Both a and d

## Holt Invitational: Anatomy & Physiology Answer Key

8. Cell bodies in the peripheral nervous system occur in small clusters called:
- A. Collaterals
  - B. Neuroglia
  - C. **Ganglia**
  - D. Nuclei
  - E. Bouquets
9. Cells that move through the central nervous system, removing foreign and deteriorated material.
- A. **Microglia**
  - B. Oligodendrocytes
  - C. Astrocytes
  - D. Ependymal Cells
10. Myelin sheaths in the central nervous system are formed by:
- A. Microglia
  - B. Neurolemmocytes
  - C. **Oligodendrocytes**
  - D. Ependymal cells
  - E. Astrocytes
11. The most common type of neuron is:
- A. Interneurons
  - B. Afferent neurons
  - C. **Multipolar neurons**
  - D. Pseudo-unipolar neurons
  - E. Pyramidal neurons
12. Which of the following form a neuronal synapse?
- A. Neuromuscular junction
  - B. Neuroglandular synapse
  - C. Pseudo-unipolar synapse
  - D. Pyramidal auditory synapse
  - E. **Both A and B**
13. Myelin sheaths in the peripheral nervous system are formed by
- A. Astrocytes
  - B. Ependymal cells
  - C. **Neurolemmocytes**
  - D. Oligodendrocytes
  - E. None of the above

## Holt Invitational: Anatomy & Physiology Answer Key

14. Nerves are protected by a sheath of connective tissue called:
- A. Neurilemma
  - B. Endoneurium
  - C. Perineurium
  - D. **Epineurium**
15. Which statement reflects what occurs during a nerve impulse?
- A. Depolarization occurs at the site of the stimulus.
  - B. Sodium ions rush into the cell.
  - C. The nerve impulse travels in one direction only.
  - D. **All of the above**
16. Which of the cerebral lobes is the center for emotional regulation, verbal communication, voluntary muscle control and problem solving?
- A. **Frontal**
  - B. Parietal
  - C. Temporal
  - D. Occipital
17. The primary visual cortex is in this lobe:
- A. Frontal
  - B. Parietal
  - C. Temporal
  - D. **Occipital**
18. The spinal cord feature associated with nerves supplying the upper limbs is:
- A. Brachial plexus
  - B. Radial plexus
  - C. **Cervical enlargement**
  - D. Ventral gray horns
19. Cerebral edema is:
- A. **Water retention in the brain usually from a head injury**
  - B. An autoimmune disorder
  - C. Caused by abnormal protein deposits in the brain
  - D. Occurs when a region of the brain is deprived of oxygen
20. In what area of the spinal cord do the spinal cord tracts lie?
- A. anterior horn
  - B. posterior horn
  - C. gray commissure
  - D. **white matter**

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21. Which of the following is not true of neurons?
- A. They respond to physical and chemical stimuli.
  - B. They are the most abundant cells of nervous tissue.
  - C. They all conduct nerve impulses.
  - D. They all release chemical regulators.
  - E. They cannot divide mitotically.
22. Which of the following is not a structural component of a neuron?
- A. Dendrite
  - B. Myelin
  - C. Axon
  - D. Schwann cell
  - E. Neurolemmocyte

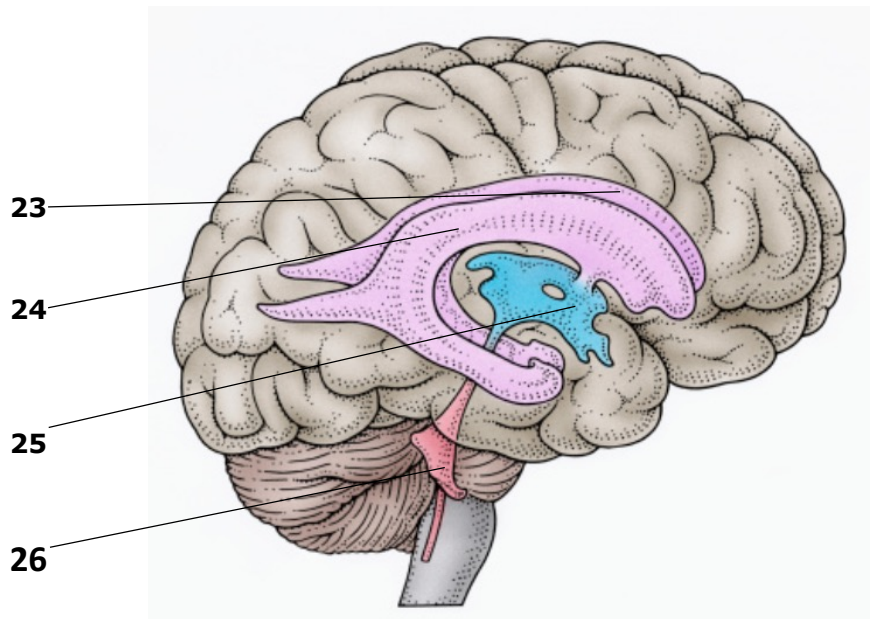
**Identification: Write the name of the structure on the line next to the number.**

23. Left Lateral Ventricle

24. Right Lateral Ventricle

25. Third Ventricle

26. Fourth Ventricle

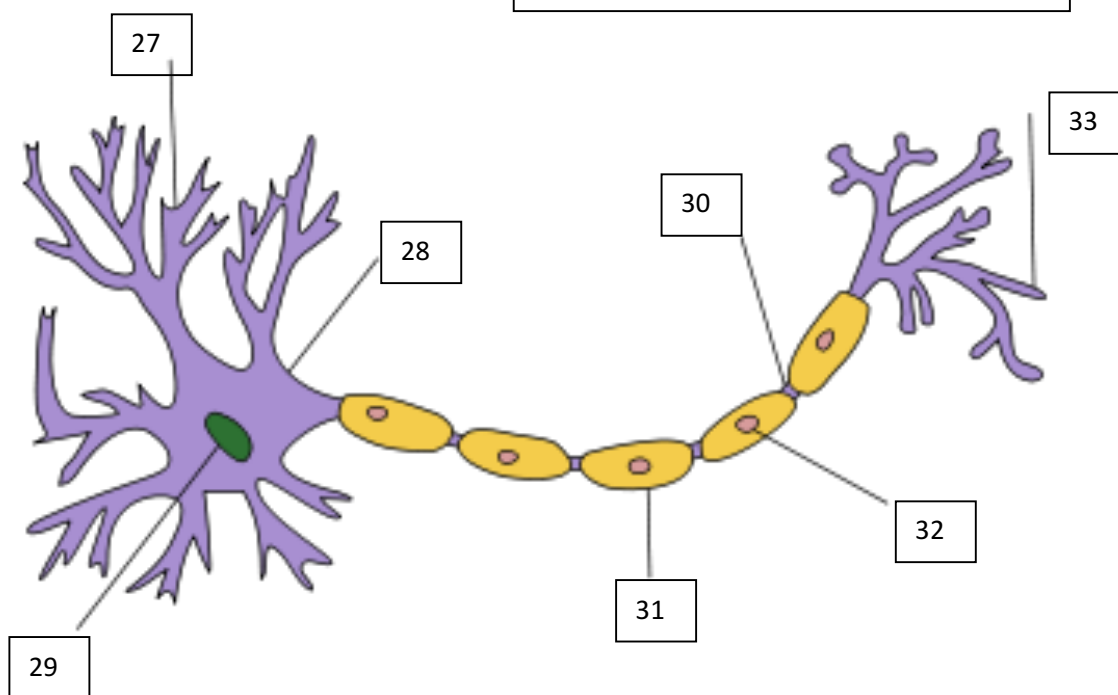


## Holt Invitational: Anatomy & Physiology Answer Key

Identification: Write the letter of the correct name from the word bank on the line next to the corresponding structure.

### Word Bank

- |                    |                  |
|--------------------|------------------|
| A. Node of Ranvier | E. Nucleus       |
| B. Schwann cell    | F. Axon terminal |
| C. Dendrite        | G. Myelin        |
| D. Cell Body       |                  |



- 27. Dendrite (C)
- 28. Cell Body (D)
- 29. Nucleus (E)
- 30. Node of Ranvier (A)
- 31. Myelin (G)
- 32. Schwann cell (B)
- 33. Axon Terminal (F)

## Holt Invitational: Anatomy & Physiology Answer Key

34. The exact cause of this (the fourth most common) chronic neurological disorder is unknown. It is characterized by a sudden surge in the electrical activity in the brain that reoccurs.

- A. Epilepsy
- B. Multiple sclerosis
- C. Cerebral palsy
- D. Shingles
- E. Alzheimer's disease

35. A reactivation of the Varicella zoster herpes virus which is characterized by severe pain and the appearance of a blistering rash distributed along dermatomes.

- A. Shingles
- B. Alzheimer's disease
- C. Parkinson disease
- D. epilepsy
- E. cerebral palsy

36. An immune-mediated disease of the central nervous system where T cells pass from the blood stream into the CNS and where they attack myelin and damage nerves.

- A. Huntington's disease
- B. Epilepsy
- C. Multiple sclerosis
- D. Parkinson disease
- E. Alzheimer's disease

37. A disorder that is characterized by amyloid plaques and tau tangles throughout the brain that damage and destroy neurons. Initial damage appears to take place in the hippocampus affecting memory.

- A. Parkinson disease
- B. Epilepsy
- C. Huntington's disease
- D. Alzheimer's disease
- E. Multiple sclerosis

38. Bilateral, symmetrical, non-progressive motor dysfunction and partial paralysis, which is usually caused by damage to the cerebrum during gestation or birth trauma but can also be hereditary.

- A. Conjunctivitis
- B. Epilepsy
- C. Multiple sclerosis
- D. Cerebral palsy
- E. Parkinson disease

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39. A chronic progressive movement disorder caused by the death of neurons in the substantia nigra which would normally produce dopamine. Diagnosis must include the presence of one of more of the four most common primary motor symptoms: resting tremor, bradykinesia, rigidity, and postural instability.
- A. Multiple sclerosis
  - B. Epilepsy
  - C. Alzheimer's disease
  - D. Parkinson disease**
  - E. Huntington's disease
40. Controls all involuntary and actions and is further divided into two divisions.
- A. Parasympathetic nervous system
  - B. Central nervous system
  - C. Autonomic nervous system**
  - D. Somatic nervous system
41. Division of the autonomic nervous system that helps maintain normal body functions and is active in the "Fight or Flight" response.
- A. Parasympathetic nervous system**
  - B. Central nervous system
  - C. Autonomic nervous system
  - D. Peripheral nervous system
42. The afferent and efferent nerves that connect the CNS to the rest of the body to relay and receive messages.
- A. Parasympathetic nervous system
  - B. Central nervous system
  - C. Autonomic nervous system
  - D. Peripheral nervous system**
43. The brain's sensory switching station located on top of the brainstem.
- A. Hypothalamus
  - B. Brainstem
  - C. Medulla
  - D. Thalamus**
  - E. None of the above
44. Located posterior to the frontal lobe; it processes sensory input for touch, temperature and taste.
- A. Occipital lobe
  - B. Parietal lobe**
  - C. Frontal lobe
  - D. Temporal lobe
45. The oldest part of the brain structure is responsible for basic cardiac and respiratory function, and consciousness.
- A. Cerebellum
  - B. Thalamus
  - C. Brainstem**
  - D. Medulla

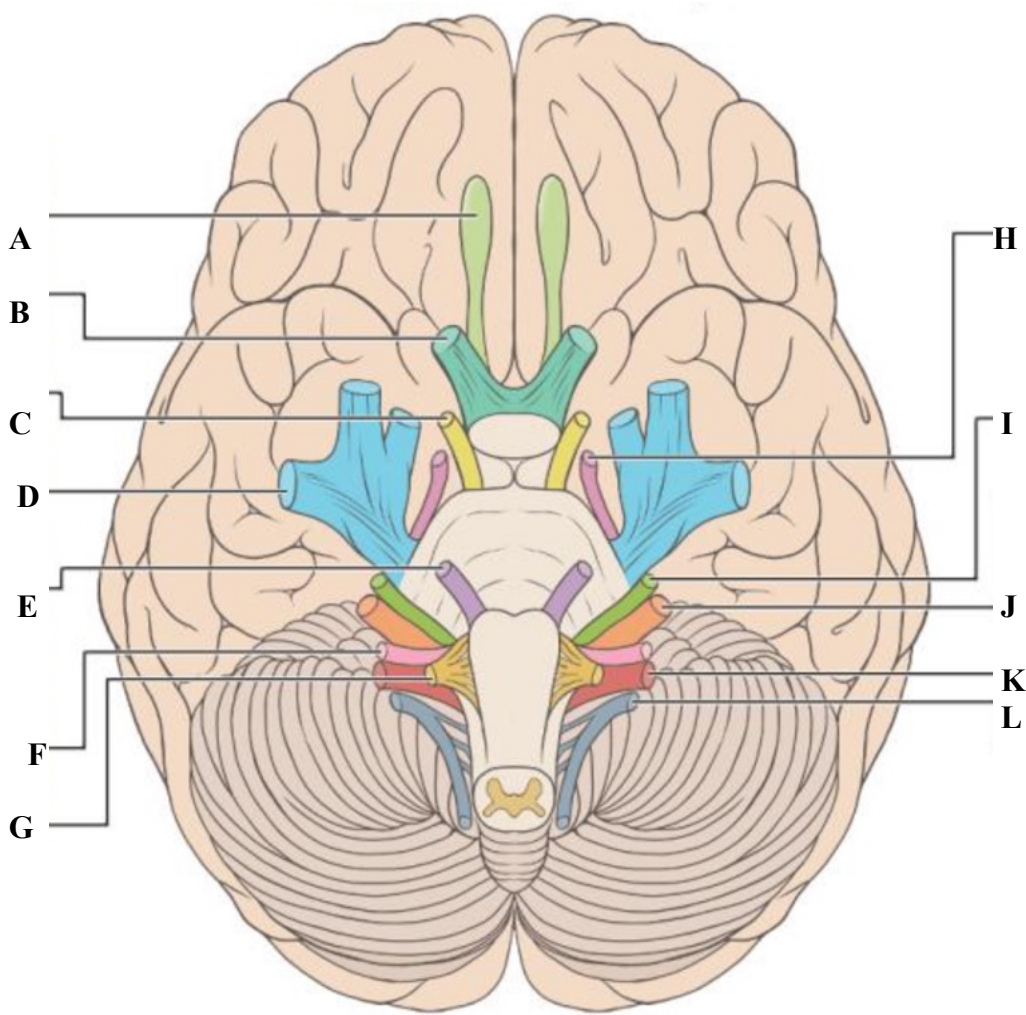
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46. The base of the brain stem; controls heartrate and respiration
- A. Cerebellum
  - B. Thalamus
  - C. Medulla
  - D. Brainstem
47. Provides hormones for the pituitary gland, and is linked to emotion and hunger
- A. Thalamus
  - B. Hypothalamus
  - C. Frontal lobe
  - D. Medulla
  - E. None of the above
48. Called the "little brain;" functions include processing sensory input and coordinating movement and balance.
- A. Cerebellum
  - B. Cerebral cortex
  - C. Medulla
  - D. Brainstem
  - E. None of the above
49. Which of these types of receptors responds to pain stimuli?
- A. Chemoreceptors
  - B. Mechanorectpors
  - C. Nociceptors
  - D. Photoreceptors
  - E. Thermoreceptors
50. Decreased sensitivity to a continued stimulus is called:
- A. Adaptation
  - B. Projection
  - C. Association
  - D. Ascension
  - E. Sensation
51. Which of these nerve endings sense continuous touch or pressure, and are found primarily in the dermis of the fingers?
- A. Merkel's disks
  - B. Hair follicle receptors
  - C. Pacinian corpuscles
  - D. Ruffini's end organs
  - E. Free nerve endings



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**Identification:** For questions 52-63 write the name of each cranial nerve identified with a letter



52. **A** Olfactory

59. **H** Trochlear

53. **B** Optic

60. **I** Facial

54. **C** Oculomotor

61. **J** Vestibulocochlear

55. **D** Trigeminal

62. **K** Vagus

56. **E** Abducens

63. **L** Accessory (Spinal Accessory)

57. **F** Glossopharyngeal

58. **G** Hypoglossal

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64. Which ascending spinal pathway (tract) carries pain and temperature information to the cerebral cortex?

- A. Lateral spinothalamic
- B. Posterior spinocerebellar
- C. Anterior spinothalamic
- D. Lateral spondylosis

65. You would expect that your pupils would be *constricted* when you are

- a. Watching the Cubs game in the bleachers on a sunny summer day
- b. Watching for the green flash when the sun sets
- c. Watching the Super Bowl on TV in a dimly lit room.
- d. Looking for your lost flashlight in a dark forest preserve

66. Which of these are functional nerve fibers

- A. Somatic afferent
- B. Somatic efferent
- C. Visceral afferent
- D. Visceral efferent
- E. All of the above

67. The reason that we have blind spots in our visual fields is because

- A. The position of the optic nerve as it enters the eye
- B. There is interference in the field of view at the optic chiasm
- C. There are no photoreceptors in the fovea.
- D. There are no photoreceptors on the optic disc.
- E. None of the above

68. Bones that transmit vibrations to the inner ear are called

- A. Foramina
- B. Ventricles
- C. Ossicles
- D. Osteocytes
- E. None of the above

69. Both the sense of taste and the sense of smell rely on these specialized cells

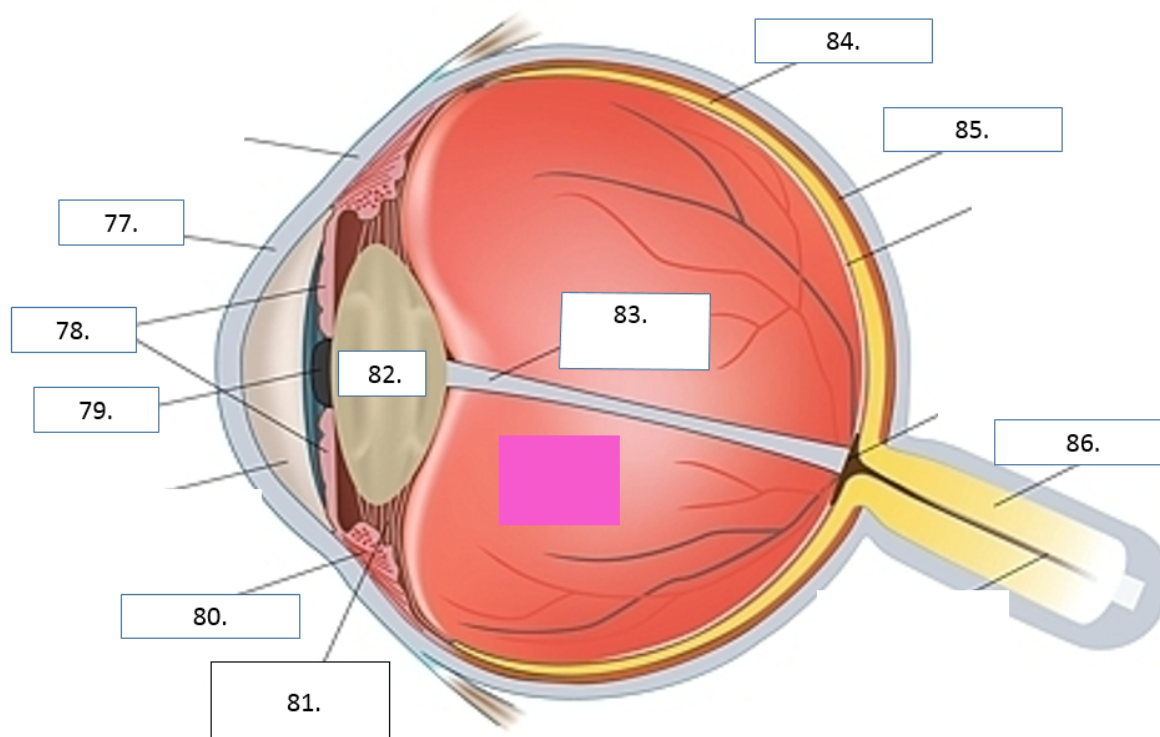
- A. Mechanoreceptors
- B. Chemoreceptors
- C. Photoreceptors
- D. Thermoreceptors
- E. None of the above

## Holt Invitational: Anatomy & Physiology Answer Key

70. Clusters of cells located on the surface of your tongue, back of your mouth, and roof of your mouth.
- A. Taste buds
  - B. Taste receptor cells
  - C. Taste pores
  - D. Taste maps
71. The olfactory system is the only system that routes directly to the brain at the:
- A. parietal cortex
  - B. lateral geniculate nucleus
  - C. olfactory bulb
  - D. fovea
72. The inability of the eye lens to focus incoming light is called
- A. Myopia
  - B. Hyperopia
  - C. Presbyopia
  - D. Astigmatism
73. Which of the following disorders is associated with aging?
- A. Hyperopia
  - B. Myopia
  - C. Presbyopia
  - D. Astigmatism
74. Which of the following disorders is another name for nearsightedness?
- A. Myopia
  - B. Hyperopia
  - C. Presbyopia
  - D. Astigmatism
75. A condition in which the focal point is beyond the retina because the eyeball is shorter is called \_\_\_\_\_.
- A. Presbyopia
  - B. Myopia
  - C. Hyperopia
  - D. Astigmatism
76. Depth perception is due to all of the factors except:
- A. Frontal location of the eyes
  - B. Total crossover of optic nerve fibers at the optic chiasma
  - C. Partial crossover of the optic nerve fibers at the optic chiasma
  - D. Each visual cortex receives input from both eyes.
  - E. Both A and B

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For questions 77-86, On the numbered line write the letter of the correct term from word bank for the diagram



- |            |                  |                        |
|------------|------------------|------------------------|
| A. Choroid | D. Pupil         | G. Suspensory Ligament |
| B. Lens    | E. Hyaloid Canal | H. Cornea              |
| C. Retina  | F. Optic Nerve   | I. Ciliary muscle      |
|            | J. Iris          |                        |

77. H

78. J

79. D

80. I

81. G

82. B

83. E

84. C

85. A

86. F

## Holt Invitational: Anatomy & Physiology Answer Key

87. Which hormone regulates our sleep and wake system?
- A. Aldosterone
  - B. Leptin
  - C. **Melatonin**
  - D. Cortisol
88. Which hormone regulates calcium levels in the blood?
- A. Estrogen
  - B. Cortisol
  - C. Insulin
  - D. **Parathyroid hormone (PTH)**
89. Which hormone stimulates appetite and prepares the body for food?
- A. Aldosterone
  - B. Leptin
  - C. **Ghrelin**
  - D. Cortisol
90. In a pregnancy test, the presence of this hormone indicates a positive test:
- A. Estrogen
  - B. Progesterone
  - C. LH
  - D. FSH
  - E. **hGC**
91. After implantation, which hormone is most important in maintaining the pregnancy?
- a. Estrogen
  - b. FSH
  - c. Inhibin
  - d. **Progesterone**
  - e. LH
92. Hormones can be classified as these except:
- a. Amines
  - b. Proteins
  - c. Steroids
  - d. **Alkaloids**
93. The receptors for non-steroid peptide hormones are on the \_\_\_\_\_.
- a. **Plasma membrane**
  - b. Nuclear envelope
  - c. Surface receptor complex
  - d. Nuclear membrane

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94. Steroid hormones result in:
- A. Destruction of normal DNA
  - B. Replication of hormones by DNA in the nucleus
  - C. Storage of subcutaneous fat
  - D. Depletion of ATP in mitochondria
95. Oxytocin functions to
- A. Cause the uterus to contract
  - B. Induce labor
  - C. Stimulate the release of milk from the mother's mammary glands.
  - D. All of the above
96. The parathyroid glands are located:
- A. Below the thyroid, hence the name "para"
  - B. Above the thyroid, hence the name "para"
  - C. Imbedded in the posterior surface of the thyroid gland
  - D. Lateral to the thyroid
97. The Midwest was once known as the "Goiter belt" because of:
- A. Fresh fish in the diet
  - B. Excessive iron in the water
  - C. Iodine depleted soil
  - D. A lack of calcium carbonate in the water
  - E. A lack of sunshine during winter months
98. Under stressful conditions, the adrenal medulla secretes
- A. Norepinephrine
  - B. Epinephrine
  - C. Oxytocin
  - D. Vasopressin
  - E. Both A and B
99. The function of insulin is to
- A. Lower blood sugar by increasing output of urine
  - B. Lower the blood glucose level by stimulating the liver metabolize glucose
  - C. Allow the uptake of glucose by cells
  - D. All of the above.
100. The pancreas does not produce insulin in this form of diabetes
- A. Type I
  - B. Type II
  - C. Hereditary
  - D. Delayed onset