



BIOLOGY

BOOKS - PEARSON IIT JEE

FOUNDATION

CONTROL AND COORDINATION

Quick Recap

1. With the help of an example, explain that the various systems of a body work in a

synchronized manner in human beings.



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2. What happens when the following parts of the brain are damaged due to injury?

Cerebrum



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3. What happens when the following parts of the brain are damaged due to injury?

Cerebellum



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4. What happens when the following parts of the brain are damaged due to injury?

Medulla oblongata



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5. Steroid hormones are slow in action while protein hormones are faster in action. Give

reason.



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6. Nervous system and endocrine system work in coordination with each other. What is the significant difference between the two systems?



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7. Which hormone is in greater concentration in fruits and seeds? Why?



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Test Your Concepts

1. _____ is the part of the neuron that comprises a centrally located nucleus surrounded by cytoplasm.



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2. The long slender projection of a neuron is known as _____



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3. The central nervous system comprises _____ and _____ .



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4. Midbrain comprises _____ and _____.



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5. Mixed nerves contain both _____ and _____ nerves to carry both incoming sensory information and outgoing muscle commands.



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6. Nervous system is divided into _____ and _____



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7. _____ system coordinates by generating hormones.



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8. _____ system coordinates through electrical impulses.



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9. Peripheral Nervous System



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10. _____ are the chemical messengers that are secreted into the blood directly.



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11. _____ is known as the master gland that controls all the other glands.



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12. Adrenocorticotrophic hormone stimulates adrenal cortex to secrete _____ and _____ hormones.



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13. _____ and _____ are the hormones released at the time of stress by glucocorticoids.



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14. Glucagon hormone is released by _____



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15. _____ and _____ hormones are secreted by thyroid gland.



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16. Delta cells release _____.



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17. Plant hormones are known as _____



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18. _____ is the hormone that helps in cell division in plants.



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19. The process of growth of the plant in response to light is known as _____ .



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20. Which category of neurons convert the external stimuli to internal impulses?

- A. Afferent neurons
- B. Efferent neurons
- C. Connector neurons
- D. Both (b) and (c)

Answer: A



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21. Which nerves transmit the electrical impulses from the central nervous system to the muscles and glands?

- A. Sensory neurons
- B. Motor neurons
- C. Mixed neurons
- D. Peripheral neurons

Answer: B



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22. Identify the nerves that receive the stimulus from the sense organs and transmit the impulse to the central nervous system.

A. Sensory nerves

B. Motor nerves

C. Mixed nerves

D. Both (a) and (b)

Answer: A



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23. Identify the part of the brain that distinguishes human from animals in terms of functioning,

A. Middle arachnoid

B. Forebrain

C. Mid brain

D. Hindbrain

Answer: B



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24. Identify the parts of the forebrain among the following

A. Cerebrum

B. Diencephalon

C. Corpus collasum

D. Both (a) and (b)

Answer: D



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25. Outer layer of the cerebrum is known as

- A. grey matter
- B. corpus collasum
- C. cerebral cortex
- D. white matter

Answer: C



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26. Identify the lobe of the cerebrum that is mainly responsible for receiving the information from retinas in the eyes and processing the visual information.

A. Occipital lobe

B. Frontal lobe

C. Parietal lobe

D. Temporal lobe

Answer: A



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27. How many pairs of spinal nerves are there in human body?

A. 12

B. 32

C. 35

D. 31

Answer: D



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28. Which gland is situated in a bony structure in the middle of the base of the skull?

A. Pituitary

B. Adrenal

C. Thyroid

D. Thymus

Answer: A



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29. Identify the hormone secreted by the pituitary gland that controls the cell metabolism?

A. Follicle stimulating

B. Somatotropic

C. Vasopressin

D. Oxytocin

Answer: B



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30. Which lobe of the pituitary gland secretes melanocyte stimulating hormone?

- A. Anterior lobe
- B. Intermediate lobe
- C. Posterior lobe
- D. Both (a) and (b)

Answer: B



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31. Identify the hormone that is/are not secreted by the posterior lobe of the pituitary gland.

A. Prolactin

B. Thyroid stimulating

C. Oxytocin

D. Both (a) and (b)

Answer: D



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32. Identify the hormone that stimulates the formation of corpus luteum.

A. Thyroid stimulating hormone

B. Follicle stimulating hormone

C. Luteinizing hormone

D. Prolactin hormone

Answer: C



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33. Which among the following phytohormone is involved in the growth of the plants?

A. Auxins

B. Gibberellins

C. Abscisic acid

D. Both (a) and (b)

Answer: D



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34. Which phytohormone inhibits the growth of the plant?

A. Auxins

B. Cytokinins

C. Abscisic acid

D. Gibberellins

Answer: C



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35. The growth of the pollen tube towards the ovules is known as

A. phototropism

B. chemotropism

C. geotropism

D. hydrotropism

Answer: B



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36. Match the entries of Column 1 with those of Column 2.

Column 1	Column 2
A. Synapse	(i) Cyton
B. Neuron	(ii) Cerebral peduncles
C. Hindbrain	(iii) Synaptic cleft
D. Mid brain	(iv) Pons



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37. Match the entries of Column 1 with those of Column 2.

Column 1**Column 2**

A. Glucocorticoids

(i) Somatotrophic hormone

B. Calcitonin

(ii) Adrenal medulla

C. Adrenaline

(iii) Thyroid gland

D. Dwarfism

(iv) Adrenal cortex

A.

 $A \rightarrow (iv), B \rightarrow (iii), C \rightarrow (ii), D \rightarrow (i)$

B.

 $A \rightarrow (iii), B \rightarrow (i), C \rightarrow (iv), D \rightarrow (ii)$

C.

 $A \rightarrow (iii), B \rightarrow (ii), C \rightarrow (iv), D \rightarrow (i)$

D.

$A \rightarrow (i), B \rightarrow (ii), C \rightarrow (iii), D \rightarrow (iv)$

Answer:



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Mastering The Concepts Knowledge And Understanding

1. How are neurons classified based on their function?



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2. What is synapse and name the elements that are present in it?



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3. Name the different parts of the Forebrain .



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4. Name the different parts of the Mid brain.



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5. Name the different parts of the Hindbrain.



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6. What is the main function of thalamus and hypothalamus?



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7. Write in brief about olfactory lobes



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8. What are the different regions present in a neuron?



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9. Explain about the transmission of electrical signals in our body.



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10. Explain the type of action involved in the contraction of pupil when the eyes are exposed to the bright light.



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11. What is meant by reflex action? Explain the formation of reflex arc by means of schematic diagram.



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12. Differentiate among conditioned reflexes and unconditioned reflexes.



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13. What kinds of movements does a germinating seed exhibit?



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14. Identify the type of neurons associated with the Perception of fragrance of flowers .



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15. Identify the type of neurons associated with the Instruction to climb up a staircase .



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16. Identify the type of neurons associated with the Picking up a stone to throw away a dog .



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17. Which part of the brain keeps working even when we are sleeping? Explain.



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18. Name the different endocrine glands in the human body.



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19. Define the hormones



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20. What do you mean by the endocrine system?



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21. What is the main function of the pituitary gland?



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22. Write about the structure and position of the thyroid gland.



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23. Explain about the following disease.

Exophthalmic goitre



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24. Explain about the following disease.

Cretinism in children



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25. Explain about the following disease.

Goitre



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26. What is the major function of phytohormones?



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27. What is the position of the master gland in human body? Explain its structure.



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28. Complete the table

Function of the hormone	Hormone secreted
1. Causes contraction of the uterine muscles during parturition.	
2. Increases the blood pressure by contracting blood vessels	
3. Stimulates the secretion of testosterone	
4. Secretion of oestrogen	



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29. Identify the gland that appears like a butterfly located at the base of the neck and

mention its function.



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30. Write short notes on the following disease.

Adrenal virilism



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31. Write short notes on the following disease.

Conn's syndrome



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32. Write short notes on the following disease.

Cushing's syndrome



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33. How does secretion of insulin vary according to the sugar level in blood?



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34. Why are hormones referred to as chemical messengers?



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35. Conduction of electrical impulse is faster in myelinated neuron than in non-myelinated neuron. Give reason.



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36. Nerve impulses in axon are unidirectional.

Give reason.



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37. State the difference between action potential and resting potential.



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38. Food tastes odd when we are suffering from cold. Give reason.



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39. Head injury leading to vomiting and loss of consciousness is considered fatal. Give reason.



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40. Damage on the right side of the brain leads to paralysis of the left part of the body.

Give reason.



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41. A drunken driver does not have complete control over the vehicle. Give reason.



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42. Hypothalamus helps maintain body temperature. Give reason.



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43. What is Parkinson's disease? How does it occur?



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44. How does autonomic nervous system control blood pressure?



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45. When we perceive the aroma of a delicious food, our mouth becomes watery. Explain.



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46. Availability of iodized salt in the market virtually eliminated the disease, goitre. Give reason.



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47. How does stress cause diabetes or hyperglycemia?



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48. What is an autoimmune disease?

Glucocorticoids are prescribed for treating autoimmune diseases. Give reason.



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49. LH and FSH are called gonadotrophins.

Why?



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50. What do you mean by negative feedback system? Illustrate the negative feedback mechanism for controlling body temperature.



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51. How is sugar level in blood maintained by pancreas? Explain.



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52. How does geotropism take place?



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53. How does pollen tube grow towards the ovary of the flower?



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Mastering The Concepts Assertions And Reasons

1. Assertion (A): Axon conducts the electrical impulses away from the cell body of the neuron.

Reason (R): The membrane of neuron provides the passage for the movement of ions.

A. Both A and R are true and R is the correct explanation for A.

B. Both A and R are true, but R is not the correct explanation for A.

C. A is true and R is false.

D. A is false and R is true.

Answer:



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2. Assertion (A): Synapse facilitates the transmission of impulses from one neuron to another.

Reason (R): Synapse produces chemical messengers called neurotransmitter.

A. Both A and R are true and R is the correct explanation for A.

B. Both A and R are true, but R is not the correct explanation for A.

C. A is true and R is false.

D. A is false and R is true.

Answer:



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3. Assertion (A): Action potential is generated due to the exit of sodium ions from the neuron through the plasma membrane.

Reason (R): Movement of sodium ions through the plasma membrane takes place under the influence of a stimulus.

A. Both A and R are true and R is the correct explanation for A.

B. Both A and R are true, but R is not the correct explanation for A.

C. A is true and R is false.

D. A is false and R is true.

Answer:



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4. Assertion (A): White matter of brain and spinal cord comprises axons.

Reason (R): Axon of a neuron is coated with myelin sheath.

- A. Both A and R are true and R is the correct explanation for A.
- B. Both A and R are true, but R is not the correct explanation for A.
- C. A is true and R is false.
- D. A is false and R is true.

Answer:



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5. Assertion (A): A person helps in response to the bite of an insect.

Reason (R): Conditioned reflexes are learned by an individual through interaction with the stimuli during the lifetime.

A. Both A and R are true and R is the correct explanation for A.

B. Both A and R are true, but R is not the correct explanation for A.

C. A is true and R is false.

D. A is false and R is true.

Answer:



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6. Assertion (A): If the quantity of hormones secreted gets deviated from its normal range, our body gets affected severely.

Reason (R): The function of hormone is to stimulate or inhibit the targeted organ to act

so that homeostasis of our body can be maintained.

A. Both A and R are true and R is the correct explanation for A.

B. Both A and R are true, but R is not the correct explanation for A.

C. A is true and R is false.

D. A is false and R is true.

Answer:



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7. Assertion (A): The pituitary gland is the master gland of our body.

Reason (R): The pituitary gland controls the activity of other endocrine glands such as thyroid, adrenal, ovaries and testes.

A. Both A and R are true and R is the correct explanation for A.

B. Both A and R are true, but R is not the correct explanation for A.

C. A is true and R is false.

D. A is false and R is true.

Answer:



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8. Assertion (A): Excessive thirst is a symptom of diabetes.

Reason (R): Insulin controls the water content of the body.

A. Both A and R are true and R is the correct explanation for A.

B. Both A and R are true, but R is not the correct explanation for A.

C. A is true and R is false.

D. A is false and R is true.

Answer:



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9. Assertion (A): Thyroid glands are called supra-renal gland.

Reason (R): T3 and T4 are secreted from thyroid that regulate metabolism in our body.

A. Both A and R are true and R is the correct explanation for A.

B. Both A and R are true, but R is not the correct explanation for A.

C. A is true and R is false.

D. A is false and R is true.

Answer:



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10. Assertion (A): Phototropism is the process of growth of the plant in response to light.

Reason (R): Auxins are involved in growth.

A. Both A and R are true and R is the correct explanation for A.

B. Both A and R are true, but R is not the correct explanation for A.

C. A is true and R is false.

D. A is false and R is true.

Answer:



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Assessments Tests

1. Identify the disease caused due to hyposecretion of thyroxine hormone.

- A. Hyperthyroidism
- B. Exophthalmic goitre
- C. Myxoedema in adults
- D. Both (a) and (b)

Answer: C



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2. Name the disease caused by the hypersecretion of thyroxin hormone.

A. Cretinism in children

B. Hyperthyroidism

C. Exophthalmic goitre

D. Both (b) and (c)

Answer: D



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3. Write the missing correlated terms.

Diabetes mellitus : Hyposecretion of insulin ::

_____ : hypersecretion of insulin.



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4. Write the missing correlated terms.

Mineralocorticoids : _____ :: Glucocorticoids :
cortisol.



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5. Write the missing correlated terms.

Anterior lobe : FSH :: Intermediate lobe :
_____.



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6. Write the missing correlated terms.

Diabetes insipidus: ADH :: _____ :TSH.



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7. What is the main function of thalamus and hypothalamus?



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8. Identify and write the function of the different categories of the nervous system, in which the nerves connect the different organs, limbs and skin to the central nervous system.



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9. What are the main functions of the long cylindrical structure that has originated from the brain and runs through the vertebral column?



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10. Explain the process of gluconeogenesis.



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11. What do you mean by sex corticoids?



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12. Explain about the disease that is caused by the hyposecretion of the insulin hormone.



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13. Name the gland that is also known as suprarenal gland and mention its parts.



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14. Name the following.

The bony structure around the soft brain



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15. Name the following.

The bony structure that encloses the spinal cord



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16. Name the following.

The protective membranes between the bony structure and brain



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17. Name the following.

The long cavity of the spinal cord



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18. Name the following.

The cavities in the brain



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19. Name the following.

The fluid that fills the cavities in the brain and

spinal cord



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20. Identify the type of neurons associated with the following:

Perception of fragrance of flowers



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21. Identify the type of neurons associated with the following:

Instruction to climb up a staircase



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22. Identify the type of neurons associated with the following:

Picking up a stone to throw away a dog



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23. Identify the activities controlled by medulla oblongata.

A. Functioning of kidneys

B. Walking on a rope

C. Release of hormones into blood

D. Becoming alert on hearing a sudden and
loud noise

Answer:



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24. A person who consumes more alcohol than a specified quantity cannot walk properly or cannot balance a bicycle. Give reason.



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25. Running along a straight line is coordinated by cerebrum.



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26. Reflex actions are controlled by brain.



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27. The brain does not get easily damaged even when there is a minor mechanical injury to the head. Give reason.



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28. Which part of the nervous system acts as a connecting link between the central nervous system and the various parts of the body?



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