

BIOLOGY

BOOKS - ZEN BIOLOGY (KANNADA ENGLISH)

CONTROL AND COORDINATION

Questions Section In Text Questions

1. What is the difference between a reflex action and walking?

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2. What happens at the synapse between two neurons?

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3. Which part of the brain maintains posture and equilibrium of the body?



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4. How do we detect the smell of an agarbathi [incense stick] ?



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5. What is the role of the brain in reflex action?



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6. What are plant hormones' ?



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7. How is the movement of leaves of the sensitive plant different from the movement of a shoot toward light ?



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8. Give an example of a plant hormone that promotes growth.



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9. How do auxins promote the growth of a tendril around a support?



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10. Design an experiment to demonstrate hydrotropism.



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11. How does chemical coordination take place in animals ?



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12. Why is the use of iodised salt advisable ?



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13. How does our body respond when adrenaline is secreted into the blood ?



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14. Why are some patients of diabetes treated by giving injections of insulin ?



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1. Which of the following is a plant hormone ?

- A. Insulin
- B. Thyroxin
- C. Oestrogen
- D. Cytokinin

Answer:



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2. The gap between two neurons is called a

- A. dendrite
- B. synapse
- C. axon

D. impulse

Answer:



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3. The brain is responsible for

A. thinking

B. regulating the heart beat

C. balancing the body

D. all of the above

Answer:



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4. What is the function of receptors in our body? Think of situations where receptors do not work properly. What problems are likely to arise?



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5. Draw the structure of a neuron and explain its function



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6. How does phototropism occur in plants ?



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7. Which signals will get disrupted in case of a spinal cord injury?



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8. How does chemical coordination occur in plants?



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9. What is the need for a system of control and coordination in an organism?



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10. How are involuntary actions and reflex actions different from each other?



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11. a) What will happen plants is exposed to unidirectional light .

b) Compare and contrast nervous and hormonal mechanism for contral and coordination in animal



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12. What is the difference between the manner in which the movement takes place in a sensitive plant and the movement in our legs-?



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Zen Additional Questions Section Multiple Choice Questions

1. Which of the following statements is correct about receptors ?

- A. Gustatory receptors detect taste while olfactory receptors detect smell
- B. Both gustatory and olfactory receptors detect smell
- C. Auditory receptors detect smell and olfactory receptors detect taste
- D. Olfactory receptors detect taste and gustatory receptors smell

Answer: A



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2. Electrical impulse travels in a neuron in the following manner:

A. Dendrite → axon → axonal end → cell body

B. Cell body → dendrite → axon → axonal end

C. Dendrite → cell body → axon → axonal end

D. Axonal end → axon → cell body → dendrite

Answer: C



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3. In a synapse, chemical signal is transmitted from

A. dendritic end of one neuron to axonal end of another neuron

B. axon to cell body of the same neuron

C. cell body to axonal and of the same neuron

D. axonal end of one neuron of dendritic end of another neuron

Answer: D



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4. In a neuron, conversion of- electrical signal to a chemical signal occurs at or in

A. cell body

B. axonal end

C. dendritic end

D. axon

Answer: B



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5. What is reflex arc?

A.

Receptors → Muscles → Sensory neuron → Motor neuron → Spinal

B.

Receptors → Motor neuron → Spinal cord → Sensory neuron → Mu

C.

Receptors → Spinal cord → Sensory neuron → Motor neutron → M

D.

Receptors → Sensory neuron → Spinal cord → Motor neuron → Mu

Answer: D



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6. Posture and balance of the body are controlled by

- A. cerebrum
- B. cerebellum
- C. medulla
- D. pons

Answer: B



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7. Spinal cord originates from

- A. cerebrum
- B. medulla
- C. pons
- D. cerebellum

Answer: B



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8. State the main functions of abscisic acid in plants.

- A. increase the length of cells
- B. promote cell division
- C. inhibit growth
- D. promote growth of stem

Answer: C



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9. What is the shape of a wavefront due to a spherical or point source?

- A. protein composition of cells
- B. temperature of cells
- C. amount of water in cells

D. position of nucleus in the cells

Answer: C



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10. The growth of tendrils in pea plants is due to

A. effect of light

B. effect of gravity

C. rapid cell divisions in tendrillar cells that are away from the support

D. rapid cell divisions in tendrillar cells in contact with the support

Answer: C



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11. The growth of pollen tubes towards ovules is the example of :

A. hydrotropism

B. chemotropism

C. geotropism

D. phototropism

Answer: B



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12. The substance that triggers the fall of mature leaves and fruits from plants is due to

A. auxin

B. gibberellin

C. abscisic acid

D. cytokinin

Answer: C



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13. Involuntary actions. in the body are controlled by

- A. medulla in fore brain
- B. medulla in mid brain
- C. medulla in hind brain
- D. medulla in spinal cord

Answer: C



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14. Which of the following is not an involuntary action?

- A. Vomiting
- B. Salivation
- C. Heart beat

D. Chewing

Answer: D



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15. When a person is suffering from severe cold, he or she

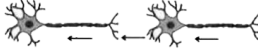

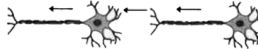
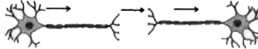
- A. differentiate the taste of an apple from that of an ice cream cannot
- B. differentiate the smell of a perfume from that of an agarbatti
- C. differentiate red light from green light
- D. differentiate a hot object from a cold object

Answer: B



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16. What is the correct direction of flow of electrical impulses?

- A. 
- B. 
- C. 
- D. 

Answer: C



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17. Dramatic changes of body features associated with puberty are mainly because of secretion of

- A. oestrogen from testes and testosterone from ovary
- B. estrogen from adrenal gland and testosterone from pituitary gland
- C. testosterone from testes and estrogen from ovary
- D. testosterone from thyroid gland and estrogen from pituitary gland

Answer: C



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18. The hormone which increases the fertility in males is called

- A. oestrogen
- B. testosterone
- C. insulin
- D. growth hormone

Answer: B



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19. The gap between two neurons is called a

- A. cell junction
- B. neuro muscular junction
- C. neural joint

D. synapse

Answer: D



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20. In humans, the life processes are controlled and regulated by

- A. reproductive and endocrine systems
- B. respiratory and nervous systems
- C. endocrine and digestive systems
- D. nervous and endocrine systems

Answer: D



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21. Chemical messengers which control and coordination in plants and animals are called

- A. Chemicals
- B. Chlorophyll
- C. Growth regulators
- D. Neurons

Answer: C



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22. The substance that accelerates the growth in the stem is

- A. Auxin
- B. Cytokinin
- C. Enzyme
- D. Vitamin

Answer: A



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23. Learning is related to

A. hypothalamus

B. thalamus

C. cerebrum

D. cerebellum

Answer: C



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24. In reflex action, the reflex arc is formed by

A. muscles - receptor - brain

B. muscles- effector - brain

C. receptor- spinal cord - muscles

D. spinal cord - receptor - muscles

Answer: C



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25. Which of these acts both as an endocrine and exocrine gland?

A. pituitary

B. adrenal

C. pancreas

D. ovaries

Answer: C



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26. An involuntary response to a stimulus is known as

- A. jerking
- B. reflex
- C. conditioning
- D. answer

Answer: B



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27. The number of pairs of cranial nerves in humans is

- A. 21
- B. 31
- C. 41
- D. 12

Answer: D



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28. The number of spinal nerves in human is

A. 12

B. 31

C. 21

D. 8

Answer: B



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29. The hormone that is used to keep flowers fresh is

A. auxin

B. gibberellic acid

C. cytokinin

D. ethylene

Answer: C



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30. The hormone that speeds up the ripening process is

A. Auxin

B. Gibberellin

C. Cytokinin

D. ethylene

Answer: D



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31. A spinal nerve is a

- A. sensory nerve.
- B. motor
- C. mixed
- D. long

Answer: C



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32. Hormone produced by the ovarian follicle is _____ and in addition _____ is produced by the corpus luteum.

- A. oestrogen, progesterone
- B. progesterone, oestrogen
- C. oestrogen, thyroxin
- D. progesterone, thyroxin

Answer: A



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33. Nodes of Ranvier are

- A. covering of the nerve fibre
- B. swelling along the nerve fibre
- C. gaps in the cover of the nerve fibre
- D. collection of nerves in the heart

Answer: C



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34. The lobes - parietal, temporal, frontal and occipetal belong to

- A. medulla oblongata

B. cerebrum

C. cerebellum

D. hypothalamus

Answer: B



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35. The box enclosing the brain is called the

A. skull

B. head

C. cranium

D. vertebral column

Answer: C



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36. The kind of nerve carrying impulses from the brain to a gland or a muscle is called

- A. effector
- B. effector
- C. mixed
- D. none of the above

Answer: B



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37. Cerebellum, medulla oblongata and pons are the parts of.....

- A. mid-brain
- B. hind-brain
- C. fore-brain
- D. spinal cord

Answer: B



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38. Which of the following endocrine glands does not occur as a pair in human body?

A. Adrenal

B. Pituitary

C. Testis

D. Ovary

Answer: B



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39. Plant hormones are called.....

A. phytohormones

B. cytohormones

C. mesohormones

D. mitohormones

Answer: A



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40. The leaves of a sensitive plant possess a soft cushion-like structure called.....

A. Pulmonus

B. pulvinus

C. pollenus

D. polynus

Answer: B



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41. The protective and insulation sheath of myelin is found around.....

- A. axon
- B. dendrite
- C. cell body
- D. pons

Answer: A



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42. Pons regulates.....

- A. body balance
- B. blood circulation
- C. blood pressure

D. respiration

Answer: C



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43. In spinal cord, the grey matter is arranged in _____ shape.

A. H

B. W

C. R

D. K

Answer: A



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44. Which of the following is not an example of reflex action?

A. Sneezing

B. Yawning

C. Walking

D. Coughing

Answer: C



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45. Hormones have _____ effect.

A. stimulatory

B. inhibitory

C. both stimulatory and inhibitory

D. nonregulatory

Answer: C



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46. When we touch the leaves of mimosa plant, we observe

- A. photonasty
- B. thermonasty
- C. thigmonasty
- D. hydronasty

Answer: C



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47. The flowers of lotus and sunflower open in the morning. This is an example of.....

- A. thigmonasty
- B. thermonasty
- C. photonasty

D. tropic movement

Answer: B



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48. Which structure of a nerve cell receives the nerve impulse passed on by another nerve cell?

A. Dendrite

B. Axon

C. Nerve fibre

D. Ranvier's node

Answer: A



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49. After travelling through the nerve cell, the nerve impulse gets converted to.....

- A. chemical signal
- B. electrical signal
- C. mechanical signal
- D. electronic signal

Answer: A



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50. Which body organ is surrounded by meninges.

- A. corpus callosum
- B. meninges
- C. thalamus
- D. lobes

Answer: B



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51. Which of the following protects brain from mechanical shock?

- A. White matter
- B. Grey matter
- C. Dark fluid
- D. Cerebrospinal fluid

Answer: D



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52. The two cerebral hemispheres are joined together by.....

- A. cranium

B. pons

C. medulla oblongata

D. corpus callosum

Answer: D



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53. A patient experienced a sudden rise in body weight up to 6 kg within a couple of weeks. Disorder of which gland is related to this condition?

A. Adrenal

B. Testes/ovary

C. Pancreas

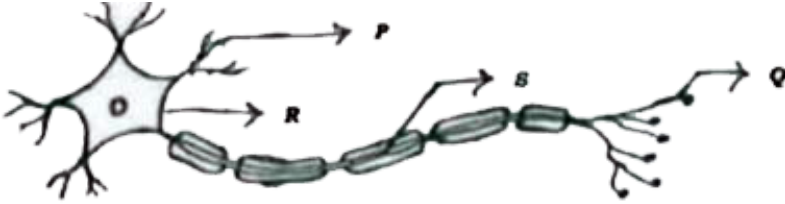
D. Thyroid

Answer: D



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54. The correct path of the movement of nerve impulses in the following diagram is



A. $Q \rightarrow S \rightarrow R \rightarrow P$

B. $P \rightarrow Q \rightarrow R \rightarrow S$

C. $S \rightarrow R \rightarrow Q \rightarrow P$

D. $P \rightarrow R \rightarrow S \rightarrow Q$

Answer: D



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55. The incorrect statement related to thyroxine hormone among the following is :

- A. it regulates fat metabolism
- B. its deficiency leads to goitre
- C. it is secreted by parathyroid gland
- D. iodine in the food is essential for its production

Answer: C



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Zen Additional Questions Section Match The Following

1. The function of hormones are given in Column - A and the names of the hormones are given in Column - B. Match them and write the answer

along with its letters:

Column - A

- A] Prepares the body to deal with the situation
- B] Regulates metabolism for body growth
- C] Regulates blood sugar levels
- D] Regulates the growth and development of the body

Column - B

- i] Growth hormone
- ii] Testosterone
- iii] Adrenaline
- iv] Progesterone
- v] Insulin
- vi] Thyroxine
- vii] Oestrogen



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Zen Additional Questions Section Very Short Answer Vsa Type Questions

1. Why is use of iodized salt advisable ?



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2. Give an example of a plant hormone that promotes its growth. Where it is synthesized?



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3. State the function of:

i] gustatory receptors, and

ii] olfactory receptors.



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4. Name the part of the brain which controls posture and balance of the body.



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5. Mention the part of the body where gustatory and olfactory receptors are located?



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6. A potted plant is made to lie horizontally on the ground. Which part of the plant will show

i] positive geotropism?

ii] negative geotropism?



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7. A young green plant receives sunlight from one direction only. What will happen to its shoot?



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8. Name the plant hormones which help/promote

i] cell division

ii] growth of the stem and roots?



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9. What is the function of thyroxine hormone in our body?



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10. Name two tissues that provide control and co-ordinate in multicellular animals?



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11. Which one of the following actions on touch is an example of chemical control?

i] Movement on the touch-sensitive plant.

ii] Movement in human leg.



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12. How are brain and spinal cord protected from injuries?



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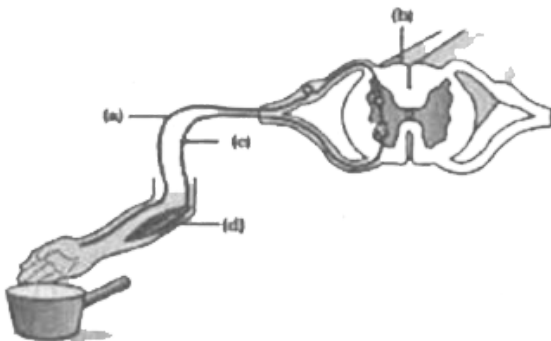
13. Name two components of central nervous system in humans.



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Zen Additional Questions Section Short Answer Sa Type I Questions

1. Label the parts (a), (b), (c) and (d) and show the direction of flow of electrical signals in the following figure.



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2. Name the plant hormones responsible for the following

a] elongation of cells

b] growth of stem

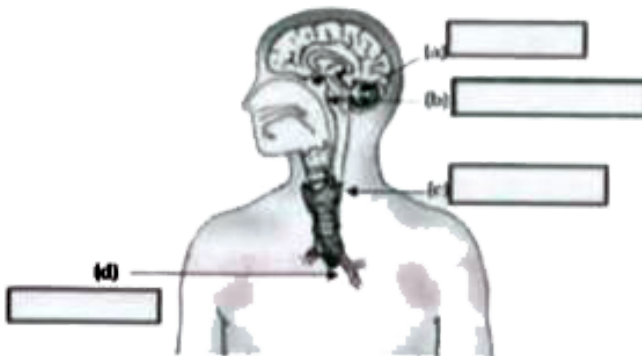
c] promotion of cell division

d] falling of senescent leaves



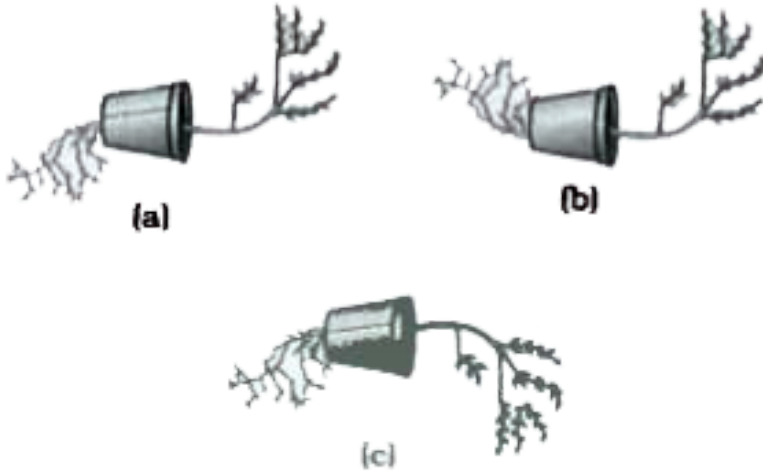
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3. Label the endocrine glands in the figure.



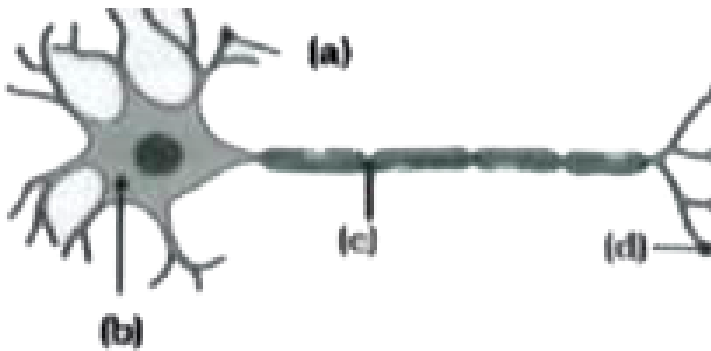
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4. In the figure, a], b] and c], which appears more accurate and why?



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5. Label the parts of a neuron in the figure.



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6. Match the terms of Column A with those of Column B.

Column A	Column B
a] Olfactory receptors	i] Tongue
b] Thermo receptors (temperature receptors)	ii] Eye
c] Gustatoreceptors	iii] Nose
d] Photoreceptors	iv] Skin



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7. What is meant by tropic movements?



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8. What will happen if intake of iodine in our diet is low?



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9. What happens at the synapse between two neurons?



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10. Answer the following:

- a] Which hormone is responsible for the changes noticed in females at puberty?
- b] Dwarfism results due to deficiency of which hormone?
- c] Blood sugar level rises due to deficiency of which hormone?
- d] Iodine is necessary for the synthesis of which hormone?



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11. Answer the following:

- a] Name the endocrine gland associated with brain?
- b] Which gland secretes digestive enzymes as well as hormones?
- c] Name the endocrine gland associated with kidneys?
- d] Which endocrine gland is present in males but not in females?



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12. Trace the sequence of events that will occur when a bright light is focussed on your eyes with the help of a diagram.



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13. Draw a neat labelled diagram showing the Reflex Arc.



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14. Differentiate between the following:

- i] Tropic movement and nastic movement
- ii] Reflex action and voluntary action
- iii] Nervous system and Hormonal system



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15. What is the name given to the junction between neurons? Describe how an impulse crosses this junction.



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16. How does our body respond when adrenaline is secreted into the blood?



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17. Name the plant hormone :

i] Which inhibits growth and causes wilting of leaves

ii] Which promotes cell division

iii] Synthesised at the shoot tip



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18. Which endocrine gland is called master gland? Why?



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19. A leaf shaped gland is present above the intestine. The secretion of this gland regulates the metabolism of sugar in blood. Name the secretion and gland.



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20. Why do people living in the mountainous regions get goitre?



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21. a) Name the hormones that are released in human male and female when they reach puberty.

(b)) Name a gland associated with brain. Which problem is caused due to the deficiency of the hormone released by this gland?



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22. (a) Which plant hormone is present in greater concentration in the areas of rapid cell division.

(b) Give one example of a plant growth promoter and a plant growth inhibitor.



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23. Name, the two main organs of our central nervous system. Which one of them plays a major role in sending command to muscles to act without involving thinking process? Name the phenomenon involved.



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24. Name the hormone secreted by human testes. State its functions.



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25. List two different functions performed by pancreas of the body.



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26. a] Plants do not have any nervous system but yet, if we touch a sensitive plant, some observable changes take place in its leaves. Explain how could this plant respond to the external stimuli and how it is communicated.

b] Name the hormone that needs to be administered to

i] increase the height of a dwarf plant.

ii] cause rapid cell division in fruits and seeds.



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27. What is insulin? Why are some patients of diabetes treated by giving injections of insulin?



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28. How is the movement of leaves of the sensitive plant different from the movement of a shoot toward light ?



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29. What is a nerve impulse? State the direction followed by a nerve impulse while travelling in the body of an organism.



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30. Why is the use of iodised salt advisable ?



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31. a] Give the location of gustatory receptor and olfactory receptor present in human beings.

b] Write a and b in the given flow chart of neuron through which

information travels as an electrical impulse.

Dendrite $\rightarrow a \rightarrow b$ End point of Neuron



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32. Different parts of brain are associated with specific function. Name the part of human brain which performs the following function:

a] sensation of feeling full

b] vomiting

c) Picking up a pencil

d] Riding a bicycle



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33. State how concentration of auxins stimulates the cells to grow longer on the side of the shoot which is away from the light



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1. Draw a neat diagram of human brain and label on it the following parts

:

(i) Mid brain

(ii) Pituitary gland

(iii) Cerebellum

(iv) Cerebrum

(a) Draw a well - labelled diagram of human brain.



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2. Write one example each of the following tropic movements?

i) Positive phototropism

ii) Negative phototropism

iii) Positive geotropism

iv) Negative geotropism

v) Hydrotropism

vi) Chemotropism



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3. State how concentration of auxin stimulates the cells to grow longer on the side of the shoot which is away from light?



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4. What is synapse? In a neuron cell how is an electrical impulse created and what is the role of synapse in this context?



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5. List in tabular form three differences between nervous control and chemical control.



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6. Smita's father has been advised by a doctor to reduce his sugar intake.

a] Name the disease he is suffering from and name the hormone whose deficiency is the cause.

b] Identify the gland that secretes it and mention the function of this hormone.

c] Explain how the time and amount of secretion of this hormone is regulated in human system.



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7. a] How is brain protected from injury and shock?

b] Name two main parts of hind brain and state the functions of each.



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8. Which organ secretes a hormone when blood sugar rises in our body?

Name the hormone and name one enzyme released by this organ.



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9. What causes a tendril to encircle or coil around the object in contact with it is? Explain the process involved.



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10. Name any three endocrine glands in human body and briefly write the function of each of them.



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11. Which part of the brain controls involuntary action? Write the function of any two region of it.



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12. What is chemotropism? Give one example. Name any two plant hormones and mention their functions.



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13. State any three function of the structural and functional unit of nervous system.



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14. What is the function of receptors in our body? Think of situations where receptors do not work properly. What problems are likely to arise?



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15. a] Name the two main constituents of the Central Nervous System in human beings.

b] What is the need for a system of control and coordination in human beings?



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16. A small coconut tree sapling was planted in a well lit part of the house while the house was under construction. As the construction work proceeded, the light was blocked from one side. After few years it was observed that the woody stem of the plant has turns and twists in it. Give reason for this unusual [CBSE 2009] appearance of the coconut tree.



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17. List the functions of various phytohormones.



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18. Explain hydrotropism with the help of an example.



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19. A squirrel is in a scary situation. Its body has to prepare for either fighting or running away. State the immediate change that take place in its body so that the squirrel is able to either fight or run?



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20. Why is chemical communication better than electrical impulses as a means of communication between cells in a multi-cellular organism?



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21. a] What is tropism?

b] How do auxins promote the growth of a tendril around a support?



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22. A cheetah, on seeing a prey, moves towards him at a very high speed.

What causes the movement of his muscles? How does the chemistry of cellular components of muscles change during this event?



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23. What are hormones? Name the hormone secreted by thyroid gland and state its function.



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24. Define geotropism. Draw a labelled diagram of a plant showing geotropic movements of its parts.



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25. Write in tabular form the location, hormone and function of the hormones secreted by each of the following glands present in the human

body.

i] Pituitary gland

ii] Thyroid gland

iii] Pancreas



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26. What are plant hormones? Name the plant hormone responsible for the following:

i] Growth of stem

ii] promotion of cell division

iii] Inhibition of growth

iv] elongation of cells.



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27. Nervous and hormonal system together perform the function of control and coordination in human beings. Justify this statement with the help of an example.



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28. Why does the flow of signals in a synapse from axonal end of one neuron to dendritic end of another neuron take place but not in the reverse direction? Explain.



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29. List in tabular form three distinguishing features between cerebrum and cerebellum.



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30. a] Name the part of human brain which controls

i] voluntary actions, and

ii] involuntary actions.

b] Write the function of peripheral nervous system. Name the components of this system stating their origin.



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31. How do auxins promote the growth of a tendril around a support?



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32. Name the hormone required for the following. Also, mention the name of endocrine gland from which that hormone is secreted:

- i] Lowering of blood glucose.
- ii] Development of moustache and beard in human males.
- iii] Metabolism of carbohydrate, fats and proteins.



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33. Smita's father has been advised by a doctor to reduce his sugar intake.

- a] Name the disease he is suffering from and name the hormone whose deficiency is the cause.
- b] Identify the gland that secretes it and mention the function of this

hormone.

c] Explain how the time and amount of secretion of this hormone is regulated in human system.



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34. Imagine the following situations:

- i] Clapping at the end of a programme.
- ii] Fluctuating blood pressure in the body.

How these situations are functionally different ? Give reason.



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35. "We withdraw our leg when stepped on thorn unknowingly."

- i] Trace the sequences of events which occur in this action.
- ii] Which part of human nervous system controls this action?



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1. Draw the structure of a neuron and explain its function



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2. What are the major parts of the brain? Mention the functions of different parts.



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3. Name the two components of central nervous systems in humans.



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4. Mention one function for each of these hormones:

a] Thyroxin

b] Insulin

c] Adrenaline

d] Growth hormone

e] Testosterone



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5. Name various plant hormones. Also give their physiological effects on plant growth and development.



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6. What is a reflex action ?



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7. How does chemical coordination take place in animals?



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8. name the structural and functional unit of the nervous system.



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9. Draw the structure of neuron and label cell body and axon.



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10. Draw the diagram showing the structure of neuron. Label the following parts :

i] The part which has prominent nucleus

ii] Dendrite.

b] Name the part of a neuron:

i] where information is acquired.

ii] through which information travels as an electrical impulse.



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11. a] Explain any three directional movements in plants.

b] How brain and spinal cord are protected in human?

c] Name the master gland present in the brain.



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12. Design an experiment to demonstrate hydrotropism.



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13. Why is the use of iodised salt advisable ?



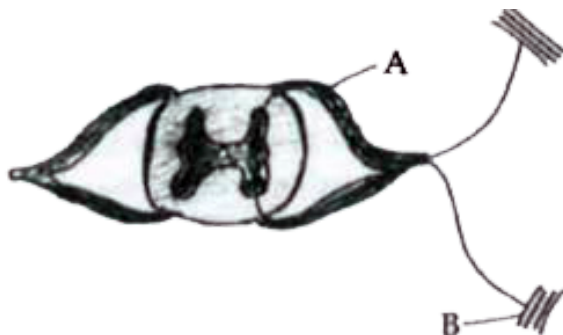
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14. Name the hormone which regulates carbohydrates, protein and fat metabolism in our body. Which gland secretes this hormone ? Why is it important for us to have iodised salt in our diet ?



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15. Name the given structure. What is its general function? Mention the function of the parts labelled as A and B. These structures in animals are said to be efficient ways to give quick responses. Why?



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Zen Additional Questions Section Hots Higher Order Thinking Skills Questions

1. The organ A which is located inside the skull of our body is protected by a bony box B and it is surrounded by 3 membranes C. The space between the membranes is filled with liquid D which protects the organ A from

mechanical shock. The organ A in combination with another organ E makes up the central nervous system.

i] What is organ A?

ii] What are B, C and D?

iii] Name the organ E.

iv] If we step out from a dark room into bright sunlight, we close our eyes for a moment. Which of the two organs A or E is directly involved in this sunshine?



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2. P, Q, R and S are four major types of phytohormones. P is a phytohormone which functions mainly as a growth inhibitor. It promotes the wilting and falling of leaves. Q, R and S are phytohormones which all promote growth of plant in various ways like Q is responsible for the phototropism in plants while R is involved mainly in shoot development. The phytohormone S helps in breaking the dormancy of seeds and buds. What is P, Q, R and S.



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