CHAPTER:6

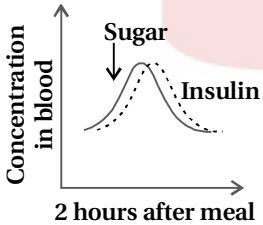
OPEN STUDENT FOUNDATION
STD 10 : SCIENCE
IMPORTANT QUESTION DAY 6

Date : 23/02/24

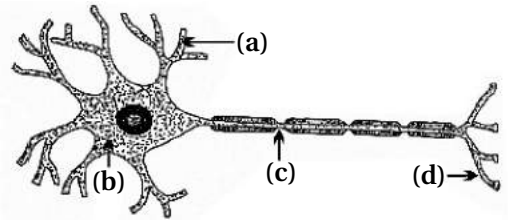
Section A

● **Write the answer of the following questions. [Each carries 1 Mark]** **[20]**

1. The transfer of stimuli is done very quickly through .....
2. ..... helps the cells to grow longer.
3. Plants do not show the response of stimuli fast because it lacks .....
4. In animals ..... have evolved as efficient ways of functioning in the absence of true thought processes.
5. Lack of ..... in our diet causes goitre.
6. Running cat is growth based action.
7. The thinking tissue is located in the posterior part of the brain.
8. Reflex arc is formed in spinal cord.
9. Cells cannot form or transmit electric impulses continually.
10. The efficiency of the respiratory units decreases when we have a cold.
11. Afferent and efferent nerve fibres meet in .....
    (A) Brain (B) Spinal cord (C) Muscles (D) Heart
12. The identification of stimuli related to taste and smell is done by .....
    (A) Gustatory receptors – olfactory receptors (B) Visionary receptors – gustatory receptors
    (C) Olfactory receptors – vision related receptor (D) All of the above
13. In our body, the thinking nervous tissue having complex network located in .....
    (A) Forward end of the skull (B) Backward end of the skull
    (C) Lateral end of the skull (D) Ventral end of the skull
14. Peripheral nervous system is made up of .....
    (A) Cranial nerve – spinal nerves (B) Endocrine glands – enzymes
    (C) Cranial nerves – nerve fibres (D) Cranial nerves – axon
15. ..... are responsible for changing the direction in part of plant having growth.
    (A) Light and gravity (B) Wind and moisture (C) Light and wind (D) Wind and gravity
16. The graph shows the changes taking place in the blood concentration of a healthy person whose diet has more of sweet (sugar) in it. What do you understand from this graph ?



17. Label (a), (b), (c) and (d) in the following diagram.



18. Injury to the medulla leads to death of the human being. Give reason.

19. What is the composition of Cerebrospinal fluid (CSF) ?

20. Concentration of oxygen stimulates the length of cells. Why ?

Section B

● **Write the answer of the following questions. [Each carries 2 Marks]** **[22]**

21. Why are some patients of diabetes treated by giving injection of insulin ?

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

23. What happens at the synapse between two neurons ?

24. Compare and contrast nervous and hormonal mechanisms for control and coordination in animals.

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

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

27. What are plant hormones ?

28. Give explanation, reason for diabetes, symptoms and how it is removed ?

29. Explain transport of stimuli with the help of chemicals.

30. Which types of movements are shown by plants ? Explain with examples.

31. Give names of growth hormones in plants and its effects.

Section C

● **Write the answer of the following questions. [Each carries 3 Marks]** **[18]**

32. Give origin of hormones secreting in human body and there work.

33. Draw a diagram of human brain and its functional and its main parts.

34. How does phototropism occur in plants ?

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

36. Explain : Reflex Arc with the help of a diagram.

37. Design an experiment to demonstrate hydrotropism.

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Section [A] : 1 Marks Questions					
No	Ans	Chap	Sec	Que	Universal_QueId
1.	-	Chap 6	S4	2	QP23P11B1012_P1C6S4Q2
2.	-	Chap 6	S4	7	QP23P11B1012_P1C6S4Q7
3.	-	Chap 6	S4	15	QP23P11B1012_P1C6S4Q15
4.	-	Chap 6	S4	20	QP23P11B1012_P1C6S4Q20
5.	-	Chap 6	S4	24	QP23P11B1012_P1C6S4Q24
6.	-	Chap 6	S5	1	QP23P11B1012_P1C6S5Q1
7.	-	Chap 6	S5	8	QP23P11B1012_P1C6S5Q8
8.	-	Chap 6	S5	9	QP23P11B1012_P1C6S5Q9
9.	-	Chap 6	S5	22	QP23P11B1012_P1C6S5Q22
10.	-	Chap 6	S5	38	QP23P11B1012_P1C6S5Q38
11.	B	Chap 6	S6	10	QP23P11B1012_P1C6S6Q10
12.	A	Chap 6	S6	11	QP23P11B1012_P1C6S6Q11
13.	A	Chap 6	S6	16	QP23P11B1012_P1C6S6Q16
14.	A	Chap 6	S6	25	QP23P11B1012_P1C6S6Q25
15.	A	Chap 6	S6	46	QP23P11B1012_P1C6S6Q46
16.	-	Chap 6	S7	72	QP23P11B1012_P1C6S7Q72
17.	-	Chap 6	S7	71	QP23P11B1012_P1C6S7Q71
18.	-	Chap 6	S7	67	QP23P11B1012_P1C6S7Q67
19.	-	Chap 6	S7	60	QP23P11B1012_P1C6S7Q60
20.	-	Chap 6	S7	54	QP23P11B1012_P1C6S7Q54

Section [B] : 2 Marks Questions					
No	Ans	Chap	Sec	Que	Universal_QueId
21.	-	Chap 6	S8	3.4	QP23P11B1012_P1C6S8Q3.4
22.	-	Chap 6	S8	2.4	QP23P11B1012_P1C6S8Q2.4
23.	-	Chap 6	S8	1.2	QP23P11B1012_P1C6S8Q1.2
24.	-	Chap 6	S3	11	QP23P11B1012_P1C6S3Q11
25.	-	Chap 6	S3	7	QP23P11B1012_P1C6S3Q7
26.	-	Chap 6	S3	4	QP23P11B1012_P1C6S3Q4
27.	-	Chap 6	S8	2.1	QP23P11B1012_P1C6S8Q2.1
28.	-	Chap 6	S1	28R2	QP23P11B1012_P1C6S1Q28R2
29.	-	Chap 6	S1	20	QP23P11B1012_P1C6S1Q20

30.	-	Chap 6	S1	15	QP23P11B1012_P1C6S1Q15
31.	-	Chap 6	S1	21	QP23P11B1012_P1C6S1Q21

Section [C] : 3 Marks Questions					
No	Ans	Chap	Sec	Que	Universal_QueId
32.	-	Chap 6	S2	3	QP23P11B1012_P1C6S2Q3
33.	-	Chap 6	S1	11	QP23P11B1012_P1C6S1Q11
34.	-	Chap 6	S3	6	QP23P11B1012_P1C6S3Q6
35.	-	Chap 6	S3	10	QP23P11B1012_P1C6S3Q10
36.	-	Chap 6	S1	9	QP23P11B1012_P1C6S1Q9
37.	-	Chap 6	S8	2.5	QP23P11B1012_P1C6S8Q2.5

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Section A

● **Write the answer of the following questions.** [Each carries 1 Mark] **[20]**

1. The transfer of stimuli is done very quickly through .....

➠ Electrical impulse

2. ..... helps the cells to grow longer.

➠ Auxin

3. Plants do not show the response of stimuli fast because it lacks .....

➠ nervous system

4. In animals ..... have evolved as efficient ways of functioning in the absence of true thought processes.

➠ reflex arcs

5. Lack of ..... in our diet causes goitre.

➠ Iodine

6. Running cat is growth based action.

➠ False

7. The thinking tissue is located in the posterior part of the brain.

➠ False

8. Reflex arc is formed in spinal cord.

➠ True

9. Cells cannot form or transmit electric impulses continually.

➠ True

10. The efficiency of the respiratory units decreases when we have a cold.

➠ True

11. Afferent and efferent nerve fibres meet in .....

(A) Brain (B) Spinal cord (C) Muscles (D) Heart

Ans. (B) Spinal cord

12. The identification of stimuli related to taste and smell is done by .....

(A) Gustatory receptors – olfactory receptors (B) Visionary receptors – gustatory receptors

(C) Olfactory receptors – vision related receptor (D) All of the above

Ans. (A) Gustatory receptors – olfactory receptors

13. In our body, the thinking nervous tissue having complex network located in .....

(A) Forward end of the skull (B) Backward end of the skull

(C) Lateral end of the skull (D) Ventral end of the skull

Ans. (A) Forward end of the skull

14. Peripheral nervous system is made up of .....

(A) Cranial nerve – spinal nerves (B) Endocrine glands – enzymes

(C) Cranial nerves – nerve fibres (D) Cranial nerves – axon

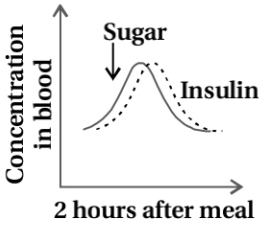
Ans. (A) Cranial nerve – spinal nerves

15. ..... are responsible for changing the direction in part of plant having growth.

(A) Light and gravity (B) Wind and moisture (C) Light and wind (D) Wind and gravity

Ans. (A) Light and gravity

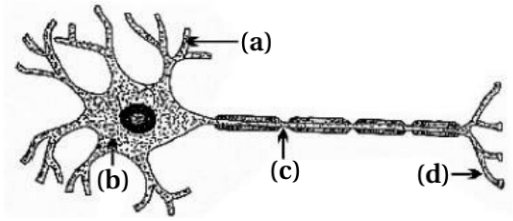
16. The graph shows the changes taking place in the blood concentration of a healthy person whose diet has more of sweet (sugar) in it. What do you understand from this graph ?



➠ As blood sugar levels rise after a meal, so does endocrine insulin, which converts sugar into glycogen.

➠ Two hours after a meal, sugar and insulin levels drop to normal,

17. Label (a), (b), (c) and (d) in the following diagram.



➠ (a) Dendrites

(b) Cell body

(c) Axon

(d) Nerve ending

18. Injury to the medulla leads to death of the human being. Give reason.

➠ There are centers for blood pressure, secretion of saliva, vomiting are located in hind-brain. Medulla oblongata located in hind-brain is associated with regulation of above process / activities. So damage to medulla can lead to death.

19. What is the composition of Cerebrospinal fluid (CSF) ?

➠ Cerebrospinal fluid (CSF) is a clear, colour less ultra filtrate of plasma with low protein content and few cells.

20. Concentration of oxygen stimulates the length of cells. Why ?

➠ To stimulate phototropism.

Section B

● **Write the answer of the following questions.** [Each carries 2 Marks] **[22]**

21. Why are some patients of diabetes treated by giving injection of insulin ?

➠ **For answer see Section-1 Q. no. 28**

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

➠ A hormone called auxin is synthesized at the perpendicular axis. It induces in length of cells.

➠ When light is coming from one side of the plant, it diffuses towards the shady of the shoot. This concentration of auxin stimulates the cell to grow longer on the side of the shoot .Thus the plant appears to bend towards light.

23. What happens at the synapse between two neurons ?

- Among two nerve cells closely arranged together, axons of one neuron remains physically connected to dendrites of other neuron in space. This space connection is called synapse.
- At the end of the axon the electrical impulse sets off the release of some chemicals. These chemicals cross synapse and start a similar electrical impulse in a dendrite of the next neuron. Thus nervous impulses travel in the body.

24. Compare and contrast nervous and hormonal mechanisms for control and coordination in animals.

- The control and coordination of different processes occurring in animals are done by nerves and endocrinal activities.
- Nervous tissue collects information or stimuli by receptor organs and interpret them, takes a decision and send it to motor or sensory area.
- **Eg.,** Growth occurring in the body, maintain sugar level in the body.
- Hormones secreting from different glands reach till organs and show their effects.

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

- Due to following signals arrive in spinal cord injury, disruption takes place like, reflex action.
- Information of stimuli coming from various organs are not regulated by brain.
- The message coming from brain are not transported till various organs.

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

- All information from our environment is detected by the specialized tips at same nerve cells. These receptors are usually located in our sense organs. Such as the inner ear, the nose, the tongue and so on. So gustatory receptors detect taste while olfactory receptors detect smell.
- This information acquired at the end of the dendrite tip of a nerve cell sets off a chemical reaction that creates an electrical impulse. This impulse travels from the dendrite to the cell body and then along the axon to its end.
- At the end of the axon the electrical impulse sets off the release of some chemicals.
- These chemicals cross the gap or synapse and start a similar electrical impulse in a dendrite of the next neuron.
- If receptor organs don't function properly, then no response is obtained by organs due to no interpretation of environmental information obtained.

27. What are plant hormones ?

- Chemicals produced from plant which acts growth inducer and growth inhibitor are called plant hormone.

28. Give explanation, reason for diabetes, symptoms and how it is removed ?

- When the level of sugar increases in blood of a person, the deficiency caused is called Diabetes.
- The regulation of level of sugar in blood is done by hormone Insulin secreted from pancreas.
- If insulin is not secreted in proper amount from pancreas, the sugar level in the blood rises causing Diabetes. So by giving insulin injection to patients, the level of sugar is maintained in blood.

29. Explain transport of stimuli with the help of chemicals.

- After acquiring stimuli, stimulated cells releases a chemical compound that would diffuse around the cells. If other cells around have the means to detect this compound using special molecules on their surfaces, then they would be able to be recognized in formation and even transmit it.

➠ The process by chemical compound is done with slow pace but reaches to all the cells of the body.

30. Which types of movements are shown by plants ? Explain with examples.

➠ Plant shows two types of motion.

(1) **Dependent of growth :** When a seed is sown in soil, due to germination root goes downwards and stem part goes at the upper side / up in the air.

Thus growth occurs due to directional growth of germinated plant. If by any reason growth is stopped, no movement is displayed.

(2) **Independent growth :** By touching the leaf of a "touch me not" plant or mimosa it shows action of folding up and drop / bending down.

The leaves of "touch me not" plant move very quickly in response to touch. There is no growth involved in this movement.

31. Give names of growth hormones in plants and its effects.

➠ Auxin is included in growth hormone in plants.

➠ Auxin is formed / synthesized at the shoot tip, which helps the cells to grow longer.

➠ When light is coming from one side of the plant, auxin diffuses towards the shady side of the shoot. So the length of cells increases and the plant appears to bend towards light. Thus phototropism is observed.

➠ Gibberellins helps in growth of stem.

➠ Cytokinins promote cell division rapidly and increase number of cell.

➠ They are present in greater concentration areas of rapid cell division such as in fruits and seeds.

➠ It is a growth promoting hormone. Abscisic acid is one example of a hormone which inhibits growth. Its effect include witting of leaves.

Section C

● **Write the answer of the following questions.** [Each carries 3 Marks] **[18]**

32. Give origin of hormones secreting in human body and there work.

➠ (1) **Growth hormone : Origin** : Pituitary gland

Function : Regulation of growth and development of the body.

(2) **Thyroxin** : **Origin** : Thyroid gland

Function : Helps in metabolisms of carbohydrates, protein and fats.

(3) **Insulin** : **Origin** : Pancreas

Function : Maintains level of sugar.

(4) **Adrenaline** : **Origin** : Adrenal gland

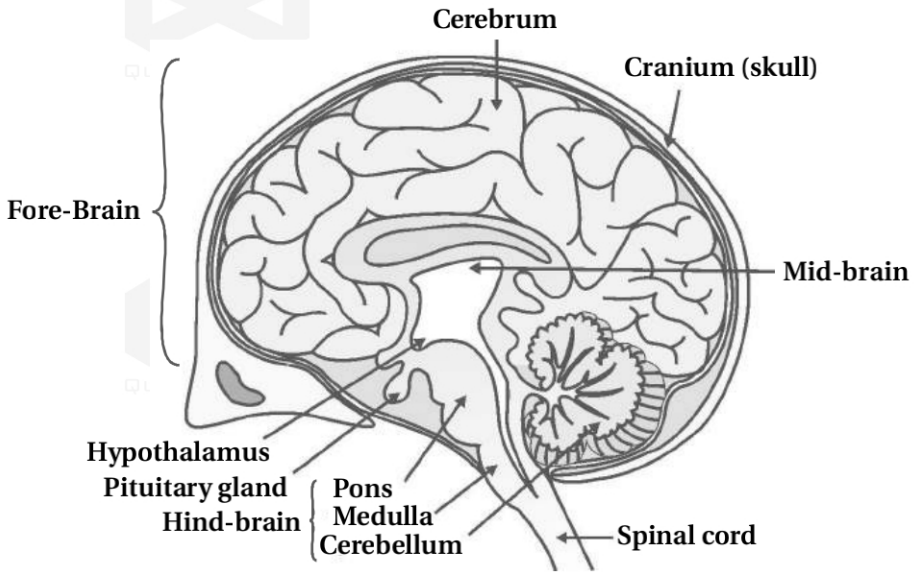
Function : Heart beats faster, pressure of blood increases breathing rate increases.

(5) **Testosterone** : **Origin** : Testis

Function : It develops sexual secondary characters in a male.

33. Draw a diagram of human brain and its functional and its main parts.

➠ The brain has three major parts namely (1) Fore-brain (2) Mid-brain (3) Hind-brain



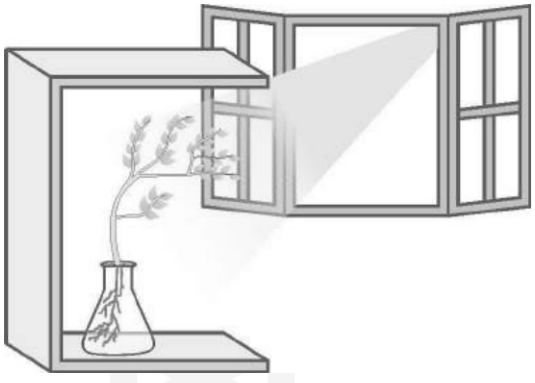
Human brain

Sub question : Give information about main part of brain which think or give functions of fore brains.

- The fore-brain is the main thinking part of the brain.
- It has regions which receives sensory impulses from various receptors.
- Separate areas of fore-brain are specialized for hearing, smell, sight and so on.
- There are separate areas of association in fore-brain where this sensory information is interpreted by putting it together all information from other receptors.
- Information already stored in brain are interpreted.
- After interpretation of information stimuli regulates.
- The center related to hunger is located in fore-brain by that it is indicated that whether belly is filled or empty.

34. How does phototropism occur in plants ?

- In plants after germination of seed, stem comes up into the air towards light. This is called phototropism.
- Hormone Auxin is synthesized at the shoot tip, helps the cells to grow longer.
- When the light is coming from one side of the plant, auxin diffuses towards the shady side of the shoot.
- This concentration of auxin stimulates the cells to grow longer on the side of the shoot which is away from the light. As a result phototropism is seen in plants.



Response of the plant to the direction of light

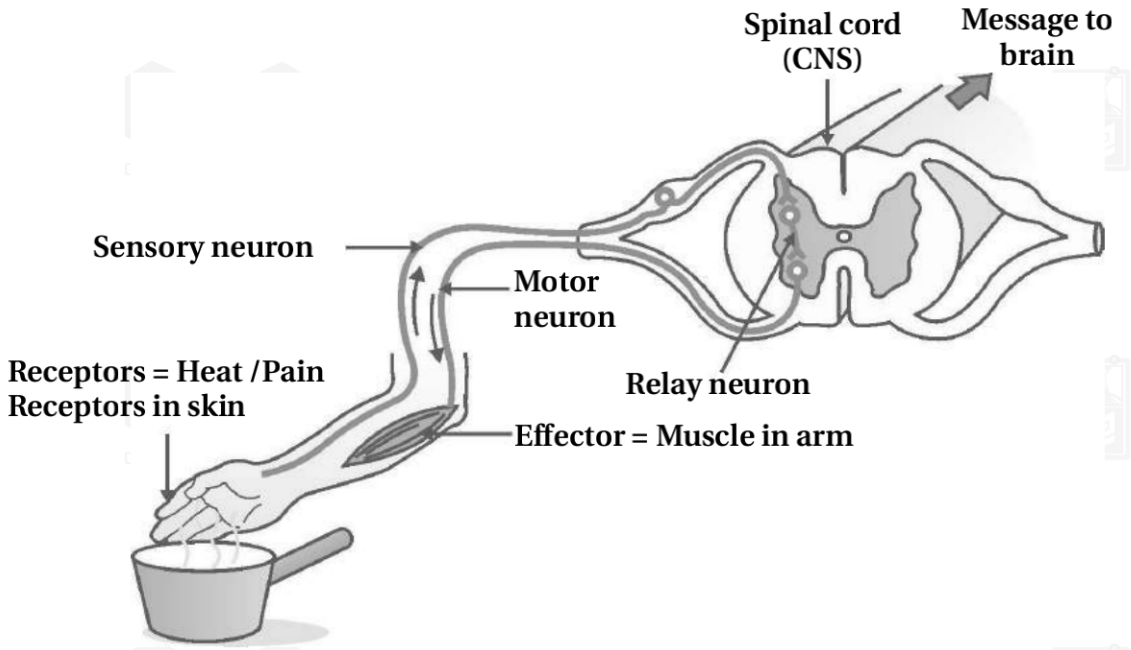
- In plants phototropism can be explained by experiment.
- **Aim :** To exhibit phototropism in plants
- **Requirements :** Conical flask, water, wire gauze, a small fresh bean plant, corrugated box.
- **Method :** Fill water in a conical flask and cover it with wire gauze.
- Put a small fresh bean plant over it in such a way that its root remain dipped in water.
- Take an open corrugated box from one side. Put flask in it in such a way that light enters towards open side of the window of the box.
- **Observation :** It is observed after 2-3 days that stem grows towards light and root moves in its opposite direction, grows against light.
  - In a plant the direction of stem and root change.
  - A newly developing part of stem grows in the direction of sunlight.
- **Conclusion :** Phototropism is observed in shoot tip.

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

- **Involuntary actions :** The involuntary actions occurring in our body has no control of a person they occur automatically.
- Internal organs of heart, lungs are associated with involuntary actions. On regular functions work \ performed by such organs, we have no control. Eg. Heart beats, breathing etc.
- The control of involuntary actions is done by mid- brain and hind-brain.
- Actions like blood pressure, salivation involuntary and vomiting are controlled by hind-brain.
- **Reflex actions :** Reflex actions are controlled by spinal cord.
- It is a process that maintains control and coordination in sudden or scary situation.
- Reflex actions made by reflex arc in spinal cord with the help of the brain is pre informed.
- Reflex actions works as very efficient work system.

36. Explain : Reflex Arc with the help of a diagram.

- The design of the body finds the solution towards various information or stimuli.
- The nerves that detect the sensation of heat were to be connected to nerves that moves muscles in a simple way, the process of detecting the signal or the input and responding to it by an output action might be completed quickly.
- Such a connection is commonly called a reflex action.



Reflex arc

- Generally there is a connection between the input nerve and the output nerve.
- Nerves from all over the body meet in a bundle in the spinal cord on their way to the brain.
- Reflex arcs are formed in the spinal cord, although the information input also goes on to reach the brain.
- In most of the animals reflex arcs have evolved as efficient ways of functioning because there is very little or none of the complex neuron network needed for thinking process. So it is quite likely that reflex arcs have evolved as efficient ways of functioning in the absence of true thought processes.

37. Design an experiment to demonstrate hydrotropism.

- The root of plants always show directional growth in direction of water in the soil.
- This process is called hydrotropism.

Plant showing geotropism

- Roots always shows downward and geotropism.