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Most Important Questions class X

CH.7. CONTROL AND COORDINATION

MULTIPLE CHOICE QUESTIONS

Q .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

Q .2. Electrical impulse travels in a neuron from

- (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

Q 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 end of the same neuron
- (d) axonal end of one neuron to dendritic end of another neuron

Q.4. In a neuron, conversion of electrical signal to a chemical signal occurs at/in

- (a) cell body
- (b) axonal end
- (c) dendritic end
- (d) axon

Q. 5. Which is the correct sequence of the components of a reflex arc?

- (a) Receptors → Muscles → Sensory neuron → Motor neuron → Spinal cord
- (b) Receptors → Motor neuron → Spinal cord → Sensory neuron → Muscle
- (c) Receptors → Spinal cord → Sensory neuron → Motor neuron → Muscle
- (d) Receptors → Sensory neuron → Spinal cord → Motor neuron → Muscle

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Q. 6. Which of the following statements are true about the brain?

- (i) The main thinking part of the brain is hind brain.
- (ii) Centers of hearing, smell, memory, sight, etc. are located in fore brain.
- (iii) Involuntary actions like salivation, vomiting, blood pressure is controlled by the medulla in the hind brain.
- (iv) Cerebellum does not control posture and balance of the body.

(a) (i) and (ii) (b) (i), (ii) and (iii) (c) (ii) and (iii) (d) (iii) and (iv)

Q. 7. Posture and balance of the body is controlled by

(a) cerebrum (b) cerebellum (c) medulla (d) pons

Q.8. Spinal cord originates from

(a) cerebrum (b) medulla (c) pons (d) cerebellum

Q.9. The movement of shoot towards light is

(a) geotropism (b) hydrotropism (c) chemotropism (d) phototropism

Q.10. The main function of abscisic acid in plants is to

(a) increase the length of cells (b) promote cell division
(c) inhibit growth (d) promote growth of stem

Q.11. Which of the following is not associated with growth of plant?

(a) Auxin (b) Gibberellins (c) Cytokinins (d) Abscisic acid

Q. 12. Iodine is necessary for the synthesis of which hormone?

(a) Adrenaline (b) Thyroxin (c) Auxin (d) Insulin

Q.13. Choose the incorrect statement about insulin

(a) It is produced from pancreas (b) It regulates growth and development of the body
(c) It regulates blood sugar level (d) Insufficient secretion of insulin will cause diabetes

Q.14. Select the mis-matched pair:

(a) Adrenaline: Pituitary gland (b) Testosterone: Testes
(c) Estrogen: Ovary (d) Thyroxin: Thyroid gland

Q.15. The shape of guard cells changes due to change in the

(a) protein composition of cells (b) temperature of cells
(c) amount of water in cells (d) position of nucleus in the cells

Q.16. 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

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Q.17. The growth of pollen tubes towards ovules is due to

- (a) hydrotropism (b) chemotropism (c) geotropism (d) phototropism

Q.18. The movement of sunflower in accordance with the path of Sun is due to

- (a) phototropism (b) geotropism (c) chemotropism (d) hydrotropism

Q.19. 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

Q.20. 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

ASSERTION AND REASON TYPE QUESTIONS

Following questions consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:

- (a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true but R is not the correct explanation of A.
(c) A is true but R is false.
(d) A is false but R is true.

Q.1. **Assertion (A)** : Insulin regulates blood sugar level.

Reason (R) : Insufficient secretion of insulin will cause diabetes.

Q.2. **Assertion (A)** : Animals can react to stimuli in different ways.

Reason (R) : All animals have a nervous system and an endocrine system involving hormones.

Q.3. **Assertion (A)** : The effect of auxin hormone on the growth of root is exactly opposite to that on a stem.

Reason (R) : Auxin hormone increases the rate of growth in root and decreases the rate of growth in stem.

Q.4. **Assertion (A)** : A receptor is a specialized group of cells in a sense organ that perceive a particular type of stimulus.

Reason (R) : Different sense organs have different receptors for detecting stimuli.

Q.5. **Assertion (A)** : The brain is also known as the central nervous system.

Reason (R) : Central nervous system controls and regulates the voluntary actions.

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CASE STUDY BASED QUESTIONS

Q.1. Read the passage carefully and answer the questions given below.

All the living organisms (plants and animals) respond and react to changes in the environment around them. The changes in the environment to which the organisms respond and react are called stimuli (singular: stimulus). The living organisms show response to stimuli such as light, heat, cold, sound, smell, taste, touch, pressure, pain, water, and force of gravity, etc. The response of organisms to a stimulus is usually in the form of some movement of their body parts. For example, if a man touches a very hot utensil accidentally, he quickly pulls his hand away from the hot utensil. Here, heat is the stimulus and the man reacts by moving his hand away from the hot utensil. Similarly, when the Sun is bright, we close our eyes. In this case, light is the stimulus and we react by closing the eyes.

Q.1.1. Human respond to changes in their surrounding environment. The changes are known as _

- a. activity b. stimuli c. action d. coordination

Q.1.2. You close your eyes when your friend point the torchlight towards your eye. Which sensory organ is involved?

- a. Skin b. Eyes c. Nose d. Tongue

Q.1.3. A baby cried when hears the thunder. What is the stimuli that is involved?

- a. smell b. sound c. taste d. light

Q.1.4. Based on the situation below, which situation shown human respond to stimuli?

I- A boy pulls his hand when touching a hot object.

II- A girl is reading a book.

III- A girl closes her ear when hearing the thunder.

IV- A boy is walking to school.

- a. I and III b. I and IV c. II and III d. II and IV

Q.1.5. A response is _____

- a. A change in the environment that causes a reaction b. Something you write on a test
c. A reaction to a change in the environment d. The way plants communicate

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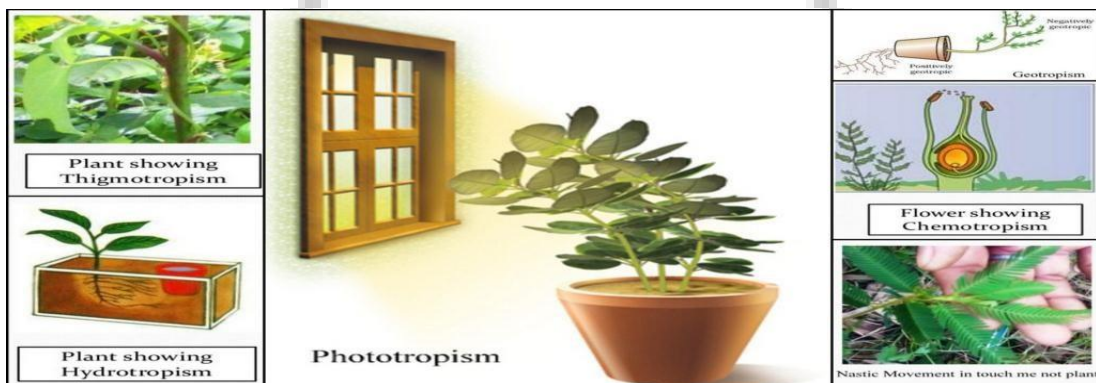
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Q2. Read the passage carefully and answer the questions given below.

The control and coordination in plants is done by plant hormones. The plant hormones coordinate the activities of the plant by controlling one or the other aspect of the growth of the plant. So, the plant hormones are also known as plant growth substances. The growth of a plant can be divided into three stages: cell division, cell enlargement and cell differentiation (or cell specialization), and these stages have particular locations in a plant.



These three stages of plant growth as well as promotion of dormancy, breaking of dormancy, stomata control, falling of leaves, fruit growth, ripening of fruits and ageing in plants are controlled by the various plant hormones.

Q.2.1. By which hormone the control and coordination of plants is done?

- a. Photohormones b. Phytohormones c. adrenal hormones d. growth hormones

Q. 2.2. Which hormone promotes cell division?

- a. Auxins b. Gibberellins c. Cytokinins d. Abscisic acid

Q. 2.3. Which hormone promotes cell the dormancy in seeds and buds?

- a. Auxins b. Gibberellins c. Cytokinins d. Abscisic acid

Q. 2.4. Which hormone promotes the wilting and falling of leaves?

- a. Auxins b. Gibberellins c. Cytokinins d. Abscisic acid

Q.2.5. Plant hormones are

- a. Physical substances b. chemical substances
c. photo chemical substances d. both a and b

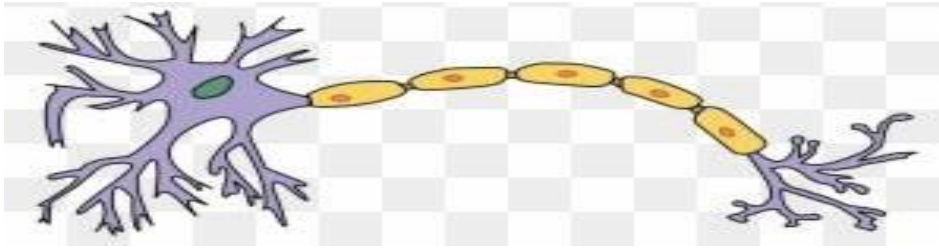
Q.3. Read the passage carefully and answer the questions given below.

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The human body contains a large number of cells A which are very long and branched, and look like electric wires. The longest branch of this cell is B whereas there are many small branches C. Any two A cells do not join to one another completely in the human body. There is a microscopic gap D between every pair of adjacent A cells through which electric impulse can pass by the release of a chemical substance.

Q.3.1. What are cells A?

- a. neurons b. axon c. body cell d. dendrites

Q.3.2. What is the name of (i) branch B, and (ii) branches C ?

- a. synapse and neurons b. axon and body cell c. axon and dendrites d. none of these

Q.3.3. What is the microscopic gap D known as?

- a. synapse b. fluid c. gap zone d. axon

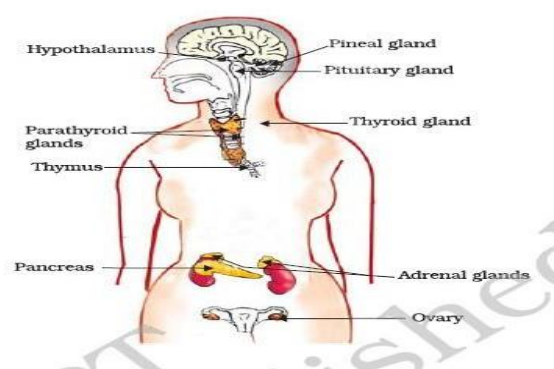
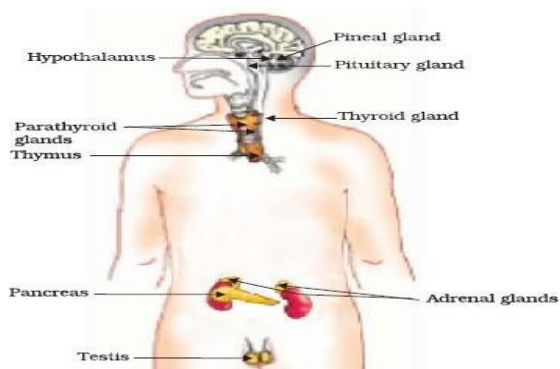
Q.3.4. Which part of a neuron is responsible for receiving information?

- a. axon b. terminal fibre c. dendrite d. body cell

Q.3.5. The cells A are of ___ types.

- a.1 b.2 c.3 d.4

Q 4. Read the passage carefully and answer the questions given below.



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A gland P is located just below the stomach in the human body. The gland P secretes a hormone Q. The deficiency of hormone Q in the body causes a disease W in which the blood sugar level of a person rises too much. person having high blood sugar is called X.

Q.4.1. Name gland P.

- a. Pancreas b. Adrenal c. Thyroid d. Hypothalamus

Q.4.2. Name hormone Q.

- a. Insulin b. Thyroxine c. Adrenaline d. Growth hormone

Q.4.3. What is disease W?

- a. Diabetes b. Obesity c. Asthma d. Arthritis

Q.4.4. Name the person X.

- a. Obese person b. Diabetic person c. Cancerous person d. Asthmatic person

Q.4.5. Which is the target organ of both adrenaline and insulin?

- a. Heart b. Kidney c. Liver d. Pancreas

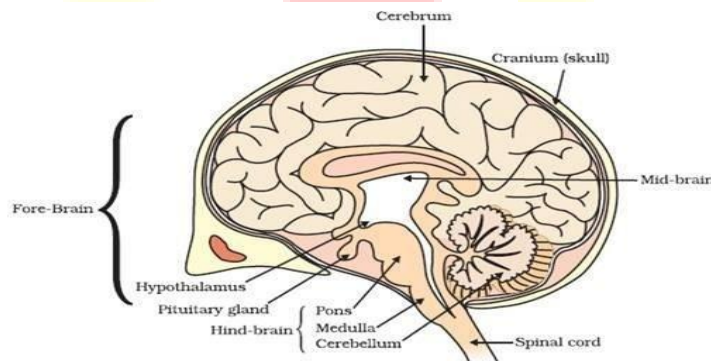


Figure 7.3 Human brain

Q 5. Read the passage carefully and answer the questions given below.

The organ A which is located inside the skull of our body is protected by a bony box B and it is surrounded by three membranes C. The space between the membranes are filled with a liquid D which protects the organ A from mechanical shocks. The organ A in combination with another organ E makes up the central nervous system.

Q.5.1. What is organ A?

- a. Brain b. Heart c. Spinal cord d. Kidneys

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Q.5.2. What are B and C?

- a. Spinal cord and hypothalamus
- b. Cranium and cerebrum
- c. Cranium and meninges
- d. Neurons and brain

Q.5.3. While walking barefooted, if we happen to step on a sharp piece of stone, we immediately lift our foot up. Which of the two organs, A or E, is directly involved in this action?

- a. A
- b. E
- c. Both A and E
- d. None of these

Q.5.4. Name the organ E.

- a. Meninges
- b. Cranium
- c. Spinal cord
- d. Medulla

Q.5.5. What is D?

- a. Blood plasma
- b. Cranium fluid
- c. Cerebrospinal fluid
- d. Medulla

ANSWER KEY

MULTIPLE CHOICE QUESTIONS

Q.NO.	1	2	3	4	5	6	7	8	9	10
ANS	a	c	d	b	d	c	b	b	d	c
Q.NO.	11	12	13	14	15	16	17	18	19	20
ANS	d	b	b	a	c	c	b	a	c	c

ASSERTION – REASON QUESTIONS:

Q.NO.	6	7	8	9	10
ANS	a	a	c	b	d

CASE STUDY QUESTIONS

Q.NO	1.1	1.2	1.3	1.4	1.5	2.1	2.2	2.3	2.4	2.5
ANS	b	b	b	a	c	b	c	d	d	b

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Q.NO.	3.1	3.2	3.3	3.4	3.5	4.1	4.2	4.3	4.4	4.5
ANS	a	c	a	c	c	a	a	a	b	C
Q.NO.	5.1	5.2	5.3	5.4	5.5					
ANS	a	c	b	c	c					

VERY SHORT ANSWER QUESTIONS

Q.1. Name two specialised tissues that provide control and coordination in multicellular organisms.

Ans. Nervous and muscular tissues.

Q. 2. List two body functions that will be affected if cerebellum gets damaged.

Ans. a. Walking in a straight line.

b. Picking up a thing from the ground.

Q. 3. Which part of the nervous system controls reflex arcs?

Ans. Spinal cord.

Q.4. Which gland secretes growth hormone in human beings?

Ans. Pituitary gland.

Q. 5. Name the sensory receptors found in the nose and on the tongue.

Ans. Olfactory receptors, gustatory receptors.

SHORT ANSWER QUESTIONS

Q.1. Name the hormones secreted by the following endocrine glands and specify one function of each:

(a) Thyroid (b) Pituitary (c) Pancreas

Ans. a. Thyroid: Secretes Thyroxine. It regulates metabolism of carbohydrates, fats and proteins.

b. Pituitary: Secretes growth hormone. Growth hormone regulates growth and development of body.

c. Pancreas: Secretes insulin. Insulin lowers blood sugar level.

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Q.2. How does chemical coordination occur in plants? Explain with the help of three examples.

Ans. In plants, chemical coordination occurs through various Phytohormones.

- a. Auxins secreted by growing tissues. They provide growth of plants.
- b. Gibberellins cause stem elongation, seed germination and flowering.
- c. Cytokinin's present in areas of actively dividing cells like fruits, seeds. Promote cell division.
- d. Abscisic acid inhibits growth and respond to environmental stress.

Q.3. (a) An old man is advised by his doctor to take less sugar in his diet. Name the disease from which the man is suffering. Mention the hormone due to imbalance of which he is suffering from this disease. Which endocrine gland secretes this hormone?

- (b) Name the endocrine gland which secretes growth hormone. What will be its effect on a person if there is:
- (i) Deficiency of growth hormones
 - (ii) Excess secretion of growth hormones?

Ans. a. The man is suffering with the disease Diabetes. Insulin is the hormone which is responsible for this disease. Pancreas secretes this hormone.

- b. Pituitary gland.
- (i) Deficiency of growth hormone causes dwarfism.
 - (ii) Excess secretion of growth hormone cause gigantism in a person.

Q.4. Draw and label a Neuron. Explain how it carries messages.

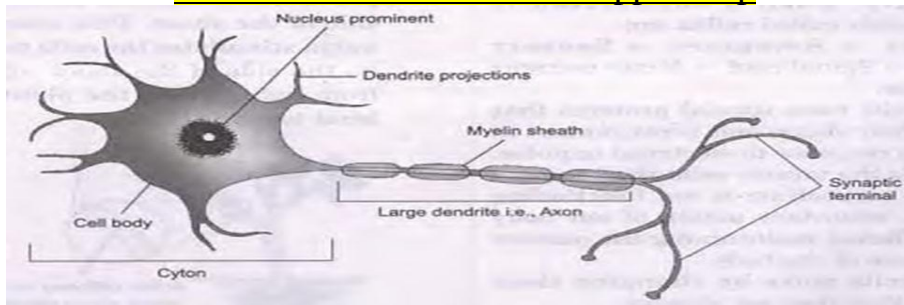
Ans. Information from the environment is detected by dendritic tip of a neuron located in the sense organ. A chemical reaction sets off here and it creates an electrical impulse which travels from dendrite to cell body and then along the axon to its endings where it sets off the release of some chemicals. The chemicals cross the synapse and set off a similar electrical impulse in dendrites of next neuron. Another synapse at the end of its axon delivers the impulse to the other cells like muscles cells / glands (effector organs) which react to perform the action.

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Q.5. (a) Name the part of brain which controls :

(i) voluntary action (ii) involuntary action.

(b) What is the significance of the peripheral nervous system? Name the components of this nervous system and distinguish between the origin of the two.

Ans .a.(i) Voluntary actions - cerebellum; (ii) Involuntary action — medulla oblongata.

b. The communication between the central nervous system and the other parts of the body is facilitated by the peripheral nervous system. Cranial nerves arise from the brain; spinal nerves arise from the spinal cord.

LONG ANSWER QUESTION

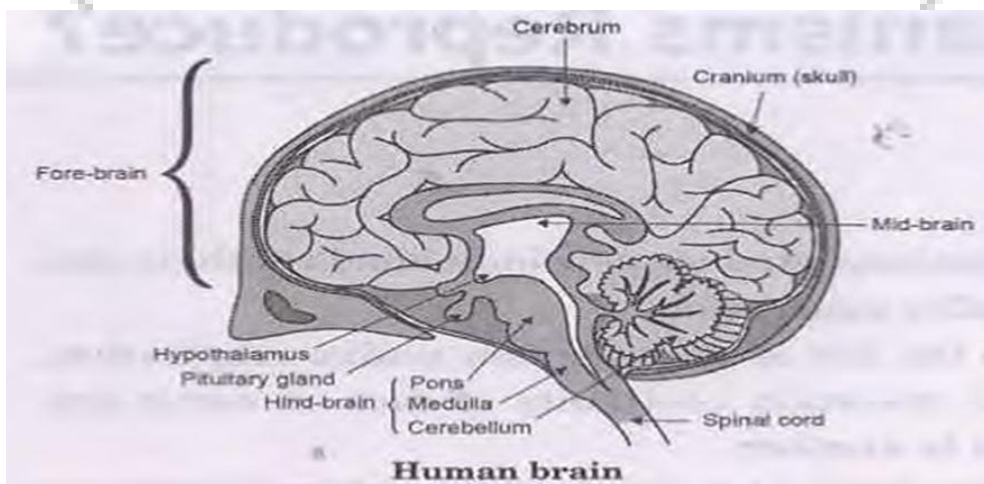
Q.1. Draw a labelled diagram of human brain. Discuss functions of cerebrum, cerebellum and medulla.

OR

Draw and describe the role of various parts of human brain.

Ans . Human brain has three major parts:

a. Fore-Brain contains mainly cerebrum b. Mid-brain c. Hind-brain



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Functions: a. Cerebellum which controls posture, balance of body and accurate voluntary movements.

b. Pons regulates respiration

c. Medulla oblongata which controls involuntary actions like blood pressure, salivation, vomiting etc.

Q. 2. Give the function(s) of the following plant hormones:

a. Auxins b. Gibberellins c. Cytokinins d. Abscisic acid e. Ethylene

Ans .a. Auxins promote cell elongation, root formation, cell division, etc. It also promotes fruit growth.

b. Gibberellins stimulate stem elongation, seed germination and flowering.

c. Cytokinins help in breaking the dormancy of seeds and buds. They delay ageing in leaves. They also promote the opening of stomata.

d. Abscisic acid promotes falling of leaves and fruits.

e. Ethylene promotes ripening of fruits

Q3. (a) Draw the structure of a neuron and label the following on it:

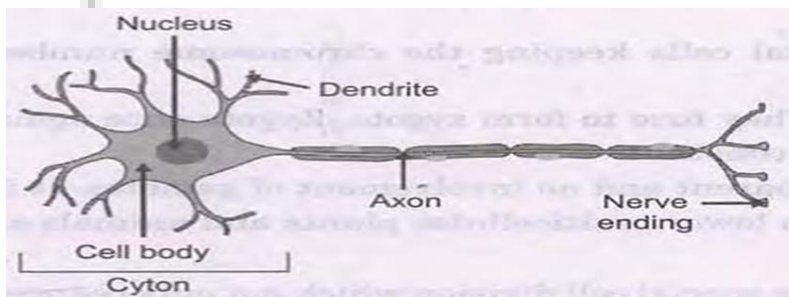
Nucleus, Dendrite, Cell body and Axon.

(b) Name the part of neuron :

(i) Where information is acquired.

(ii) Through which information travels as an electrical impulse.

Ans. (a)



b. (i) Dendrite (ii) Axon

Q. 4. Describe an activity to illustrate the phenomenon of phototropism and explain why does this occur.

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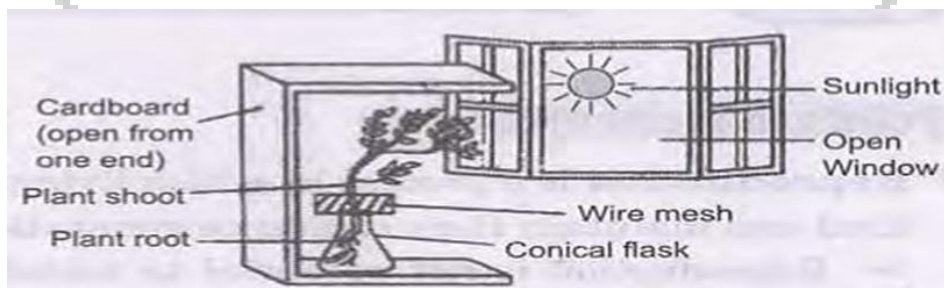
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Ans .



- Take a plant and make such an arrangement that it receives the light coming from a window as shown in the figure and observe it for few days.
 - Now, turn the flask so that the shoots are away from light and the roots towards light. Leave it undisturbed in this condition for a few days.
 - Again, observe carefully to find the difference in the movement.
 - When growing plants detect light, auxin, synthesized at the shoot tip, helps the cells to grow longer. Auxin always 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 light. Thus, the plant appears to bend towards light.
- Q.5. (a) What is Phototropism and Geotropism? With labelled diagrams describe an activity to show that light and gravity change the direction that plant part grows in.
- (b) Mention the role of each of the following plant hormones:
- Auxin
 - Abscisic acid.

Ans. a. Phototropism It is tropic movements in the direction of light or away from it e.g. shoots bend towards light while roots grow away from it. Hence shoot is positively phototropic and root is negatively phototropic.



Geotropism: Growth of roots downward towards the earth hence positively geotropic whereas stem grows upward, away from earth, hence it is negatively geographic.

b. Auxins: Synthesized at the shoot tip, helps the cells to grow longer. Abscisic acid: Inhibits growth, causes wilting and falling of leaves