



## Chapter – 7 Class X

### BIOLOGY Control and Coordination

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

Ans. Difference between reflex action and walking:

Reflex action	Walking
(a) Take place without thought.	(a) Takes place after thought.
(b) Controlled by spinal cord.	(b) Controlled by cerebellum.
(c) It is involuntary action	(c) It is a voluntary action.

2. What happens at the synapse between two neurons?

Ans. At synapse, the electrical impulse generated at dendrite of a neuron is passed on to dendrite of another neuron in form of chemical impulses. The chemical present at synapse is called neurotransmitter.

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

Ans. Cerebellum

4. How do we detect the smell of an agarbatti (incense stick)?

Ans. Smell of agarbatti is detected by olfactory receptors in the temporal lobe of fore-brain. It is first received by olfactory receptors in our nose.

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

Ans. Reflex actions are formed in the spinal cord itself although the information also goes on

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to brain where the encounter remains the memory and make us aware of our action.

**6. What are plant hormones?**

**Ans.** They are chemical which help to coordinate growth, development, flowering and response to the environment in plants.

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

**Ans.** Difference between movement of leaves of sensitive plants and movement of shoot towards light:

<b>Movement of leaves of sensitive plant</b>	<b>Movement of shoot towards light</b>
(i) Growth is not involved.	(i) Growth is involved.
(ii) Movement is away from the source of stimulus (touch).	(ii) Movement is towards the source of stimulus (light).

**8. Give an example of a plant hormone that promote growth.**

**Ans.** Auxin promotes growth.

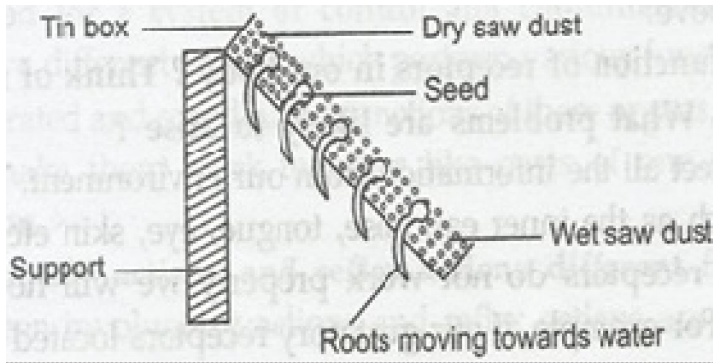
**9. How do auxins promote the growth of a tendril around a support?**

**Ans.** When tendrils come in contact of any support, the part of the tendril in contact does not grow as rapidly as the part away from the object due to auxin secreted moves away from the object in contact. This rapid growth on one side causes tendril to circle around the object.

**10. Design an experiment to demonstrate hydrotropism.**

**Ans.** Take a tin box with hole at bottom. Fill it with moist saw dust. Sow some gram seeds in it. Keep the tin box in tilted position. When seeds start germinating, water the saw dust only in lower side of the tin box. You will observe that the radicle move towards the wet saw dust.

This shows that root is positively hydrotropic.



**11. How does chemical coordination take place in animals?**

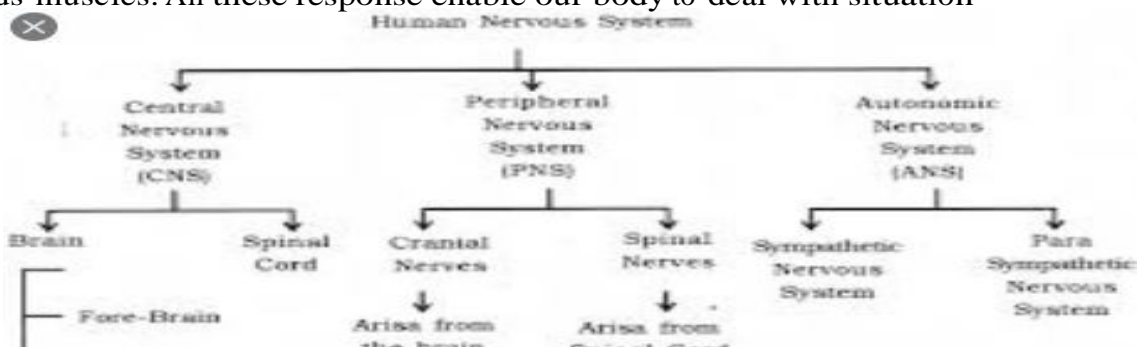
**Ans.** The chemical coordination is maintained by hormones. These are secreted by endocrine glands. These hormones are poured into blood through which they reach the target tissue or organ to act.

**12. Why is the use of iodised salt advisable?**

**Ans.** Iodine is necessary for the thyroid gland to make thyroxin hormone. In case, iodine is absent in our diet, there is a possibility of Goitre. Iodised common salt contains proper content of iodine. To avoid deficiency of iodine, iodised salt is recommended.

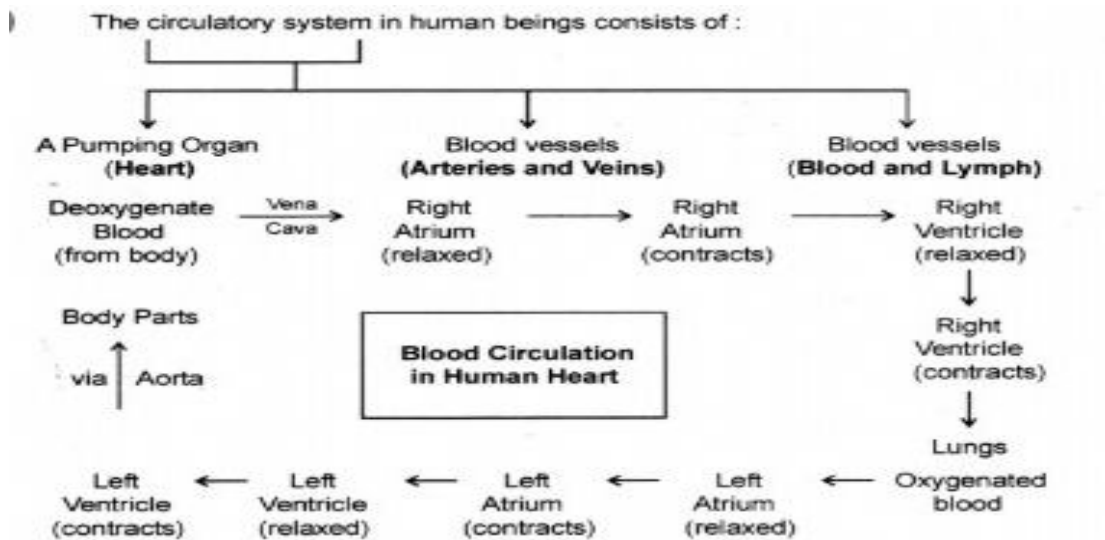
**13. How does our body respond when adrenaline is secreted into the blood?**

**Ans.** When adrenaline reaches the various target organ through blood. All these organs respond together to enable our body to deal with situation like running away from scary situation. When adrenaline reaches the heart, it beats faster to supply more oxygen to our muscles. The small arteries around digestive system and skins contracts to divert the blood towards muscles. All these response enable our body to deal with situation



(c) **balancing the body**

**Ans.** Diabetes is caused due to non or less secretion of hormone insulin by pancreas. In such person, the blood sugar level is high. Insulin converts extra sugar present in blood into glycogen. Patients suffering from diabetes are given insulin injection to control their blood sugar level.



**TEXTBOOK EXERCISES**

1. Which of the following is a plant hormone?

- (a) **Insulin**
- (b) **Thyroxin**
- (c) **Oestrogen**
- (d) **Cytokinins**

**Ans.** (d) Cytokinin.

2. The gap between two neurons is called a

- (a) **Dendrite**
- (b) **synapse**

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- (c) **balancing the body**
  - (c) **axon**

- (d) **impulse**

Ans. (b) Synapse.

### 3. The brain is responsible for

- (a) **thinking**
- (b) **regulating the heartbeat.**
- (d) **all of above.**

Ans. (d) All the above.

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

Ans. Receptors detect all the information from our environment. These receptors are located in our sense organs.

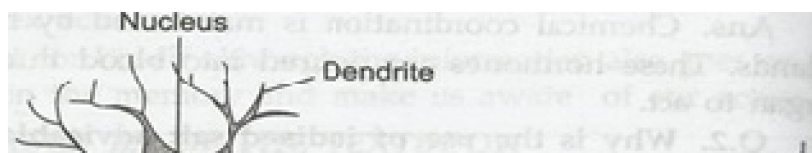
In case any of the receptors do not work properly we will not be able to perceive that particular information.

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

Ans. Neuron acquires particular information through dendrite located on its cell body. This information is then passed on to the axon. Finally, axon ending passes the information into next neuron at the synapse. As soon as the impulse reaches the dendrite, an electrical impulse is generated due to certain chemical changes in neuron. When the impulse reaches axon ending some chemicals released which pass on the impulse to next neuron. These chemicals are known as neurotransmitters.

### 6. How phototropism does occur in plants?

Ans. Movement of shoot towards light is called phototropism. This movement is caused due to more growth of cells towards the shaded side of the shoot as compared to the side of shoot



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towards light. More growth of cells is due to secretion of auxin towards the shaded side.

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

**Ans. (i)** Reflex action

**(ii)** Impulses from various body parts will not be conducted to brain.

**(iii)** Message from brain will not be conducted to various organs.

**8. How does chemical coordination occur in plants?**

**Ans.** Chemical coordination in plants is maintained by plant hormones also known as phytohormones. Some of these hormones promote growth while some inhibit it. Some hormones include auxin, Gibberellins, Cytokinin etc.

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

**Ans.** An organism has different organs which perform various functions. The survival of an organism depends on integrated and coordinated functions of these organs. Nervous and endocrine system of an organism makes them work together like parts of one machine to accomplish homeostasis or coordination.

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

**Ans.** Difference between involuntary and reflex actions is as follows:

<b>Involuntary actions</b>	<b>Reflex actions</b>
It is a set of muscles movement over which we do not have control. Such actions are controlled by brain. For example- contraction of muscle of our digestive tract, beating of heart etc.	It is rapid, spontaneous and involuntary activity that is produced in response to a stimulus. It is controlled by spinal cord. Example- removal of hand with jerk when someone touches a hot object.

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towards light. More growth of cells is due to secretion of auxin towards the shaded side.

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**11. Compare and contrast nervous system and hormonal control and coordination in animals.**

**Ans.** Difference between nervous control and hormonal control:

<b>Nervous control</b>	<b>Hormonal control</b>
(i) Consists of nerve impulses conducted by neurons from one organ to another organ.	(i) It consists of endocrine system which secretes chemical messenger's hormones secreted directly in blood.
(ii) Nervous impulses produce rapid short lasting responses.	(ii) Hormones produce longer lasting responses.
(iii) Nervous impulses are not specific in their action.	(iii) Action of hormones is highly Specific.

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

**Ans.** Difference between movement in a sensitive plant and movement in our legs:

<b>Movement in sensitive plant</b>	<b>Movement in our legs</b>
(i) There is no specialized tissue in plants for conduction of information.	(i) There is specialized nervous tissue in animals for conduction of information and muscle cells to help in movement.
(ii) Plant cells change shape by changing the amount of water in them.	(ii) Muscle cells contract or relax to effect movement.
(iii) Plant cells do not have specialized proteins.	(iii) Muscle cells have specialized protein which help muscles to contract or relax.

towards light. More growth of cells is due to secretion of auxin towards the shaded side.

