



## SCIENCE CLASS X

### CHAPTER-5 CONTROL AND COORDINATION

**Q.1. Which part of the brain controls posture and balance of the body?**

**Ans.** Cerebellum is a part of the brain that controls posture and balance of the body.

**Q.2. What is synapse?**

**Ans.** The junction between two adjacent neurons is called synapse.

**Q.3. Name the sensory receptors found in the nose and on the tongue.**

**Ans.** Olfactory receptors and gustatory receptors are the sensory receptors found in nose and on the tongue respectively.

**Q.4. All information for our environment is detected by specialized tips of some nerve cells. Write the name given to such tips and also mention where are they located.**

**Ans.** Such tips are called receptors. They are located in sense organs.

**Q.5. State the function of (a) gustatory receptors and (b) olfactory receptors.**

**Ans.** (a) To sense taste. (b) To detect smell.

**Q.6. Name two tissues which provide control and coordination in animals.**

**Ans.** Nervous and muscular tissues are two tissues which provide control and coordination in animals.

**Q.7. Name the two components of central Nervous System (CNS) in humans.**



**Ans.** Brain and spinal cord are the two components of Central Nervous System (CNS)

**Q.8. Give some examples of involuntary actions.**

**Ans.** The examples of involuntary actions are

- (i) Beating of heart
- (ii) Blinking of eyes.

**Q.9. Name any two types of tropism.**

**Ans.** Two types of tropism are

- (i) **Geotropism** Response to gravity.
- (ii) **Chemotropism** Response to chemical substances.

**Q.10. Why adrenaline is known as emergency hormone?**

**Ans.** Adrenaline is secreted at the time of emergency or stress. In such condition, it regulates heart beat and oxygen level in body. That's why it is also called emergency hormone.

**Q.11. 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

**Ans.** (a) Auxin                      (b) Gibberellin



(e) Cytokinin

(d) Abscisic acid

**Q.12. Name one plant growth hormone, which retards growth during extremely dry season.**

**Ans.** Abscisic acid makes the seed dormant in extremely dry season.

**Q.13. Name the plant hormone that inhibits growth and also helps in wilting of leaves.**

**Ans.** The plant hormone that inhibits growth and also helps in wilting of leaves is known as abscisic acid.

**Q.14. What do we call the movement of shoot towards light?**

**Ans.** The movement of shoot towards light is called phototropism.

**Q.15. Name the plant hormone responsible for elongation of cells.**

**Ans.** Auxin is the plant hormone responsible for elongation of cells.

**Q.16. Which one is an emergency gland?**

**Ans.** Adrenal gland is an emergency gland.

**Q.17. Name the hormones secreted by the following endocrine glands.**

**(a) Thyroid gland**

**(b) Parathyroid gland**

**(c) Adrenal gland**

**Ans.** (a) Thyroid gland – Thyroxin

(b) Parathyroid gland – Parathormone

(c) Adrenal gland – Adrenaline



**Q.18. Which hormone is responsible for the secondary sexual characters in male human beings?**

**Ans.** Testosterone is responsible for the secondary sexual characters in male human beings.

**Q.19. What term is used for the movement of roots towards gravity?**

**Ans.** Positively geotropic (geotropism) is the term used for the movement of roots towards gravity.

**Q.20. Which receptor is absent in brain?**

**Ans.** Photoreceptor is absent in brain.

**Q.21. Write the function of hormone thyroxine in our body.**

**Ans.** Thyroxin regulates metabolism of fats, proteins and carbohydrates in our body.

**Q.22. Explain in brief why hormonal responses are slower than reflex actions?**

**Ans.** Hormonal responses are slower because hormones, which initiate and control the responses, are chemicals transported by blood. In reflex actions, the impulses are electrical in nature and are transmitted by specialised cells, neurons that make up nerve tissues.

**Q.23. The hormones of pancreas are antagonistic in nature. How?**

**Ans.** The hormones of pancreas function in opposite manner. Pancreas releases two hormones, these are

- (i) Insulin                      (ii) Glucagon



Insulin lowers the blood glucose level, while glucagon increases the blood glucose level. Hence, they are antagonistic.

**Q.24. 'Brain and spinal cord are two vital organs of our body'. How is our body designed to protect them?**

**Ans.** Brain sits inside a bony box. It is contained in a fluid filled balloon for shock absorption.

Spinal cord is located within the vertebral column. The backbone protects it from any injury.

**Q.25. How does feedback mechanism regulate the hormone secretion?**

**Ans.** The feedback mechanism regulates the timing and amount of hormone to be secreted. For example, if a person has more sugar in his blood, this is detected by the cells of the pancreas. As a result, more insulin will be secreted to oxidise the sugar. In a reverse situation, the secretion of insulin will be depleted.

**Q.26. (a) What is the structural and functional unit of nervous system? Name its any components.**

**(b) Which structure in a neuron helps to conduct a nerve impulse**

**(i) towards the cell body?**

**(ii) away from the body?**

**Ans.** (a) Neuron is the structural and functional unit of nervous system. its components are cell body, dendrite and axon.

(b) (i) Dendrite (ii) Axon

**Q.27. (a) What is reflex arc?**



**(b) How do muscle cells move?**

**Ans.** (a) 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 reflex arc.

(b) Muscle cells have special proteins that change their shape and arrangement in the cell in response to electrical impulse. This leads the muscle cells to shorten.

**Q.28. Which organ secretes a hormone when blood sugar rises in our body?**

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

**Ans.** Pancreas secretes a hormone.

The name of the hormone is insulin.

The name of the enzyme released is lipase (used for the breakdown of fats)

**Q.29. (a) Which hormone is responsible for the changes noticed in males at puberty?**

**(b) Deficiency of which hormone leads to dwarfism?**

**(c) Name the hormone which is injected to a diabetic patient.**

**Ans.** (a) Testosterone

(b) Growth hormone

(c) Insulin

**Q.30. If iodine is insufficient in one's diet, what might be the deficiency disease?**

**Ans.** Iodine is essential for the synthesis of thyroxine hormone secreted by thyroid gland. Thyroxin regulates carbohydrate, protein and fat metabolism in the body and is responsible for the growth and development of the body.



Deficiency of thyroxin disturbs metabolic and physical activities besides causing disorders like simple goiter.

To avoid any disruption in the synthesis of thyroxin and maintaining the regular functioning of the body, consumption of iodised salt is very essential.

**Q.31. What causes tendril to encircle or coil around the object in contact with it? Explain the process involved.**

or

**How do auxins promote the growth of a tendril around a support? Describe in brief.**

**Ans.** The tendrils are sensitive to touch. When these tendrils come in contact with a support, the auxin diffuses towards the other side away from the support. Thus, this part grows more rapidly than the other. This causes the tendril to circle around the support and thus climb upwards.

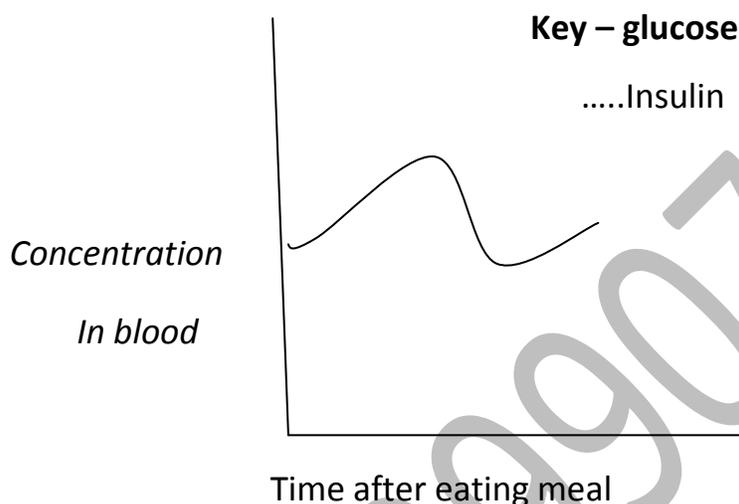
**Q.32. Differentiate between the movement in plants and animals.**

**Ans.** The difference between movements in plants and animals are given below

S.No.	Animal Movements	Plant Movements
(i)	Animals have neurons to transfer information.	Plants convey information by using electrical chemical means from cell to cell.
(ii)	Specialised proteins are present that facilitate movement of body	Plant cells change shape by changing the amount of water in them

parts.	resulting in swelling or shrinking.
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**Q.33. The following graph shows the changes expected after a meal containing starch.**



**What inference you draw from the graph?**

**Ans.** The graph shows the concentration of glucose and insulin in the blood of a healthy person. The increase in production of insulin converts the excess of glucose into hydrogen for storage in the liver and muscles.

**Q.34. Compare the contrast nervous and hormonal mechanisms for control and coordination in animals.**

**Ans.** The difference between nervous control and hormonal control is given below

S.No.	Nervous Control	Hormonal Control
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(i)	Information is passed as electrochemical signals.	Information is passed as a chemical substance through blood stream.
(ii)	Information conduction is very rapid.	Information conduction is very slow.
(iii)	Response is also very quick.	Response is usually slow.
(iv)	Its effects are short lived	Its effect are generally more prolonged.

**Q.35. What is endocrine gland? Name any two endocrine gland present in a human body and write hormones secreted by them.**

**Ans.** Glands which do not have a duct and secrete their product directly into the blood stream are called as endocrine glands.

Out of many endocrine glands thyroid and pituitary glands are two of them present in a human body.

Thyroid secretes thyroxin whereas pituitary secretes growth hormones.

**Q.36. State the sequence of changes that take place in a human body when it prepares to protect itself from a scary to dangerous situations.**

or

**Name the hormone which enables the animal body to ready to deal with the situation. Give two responses which are observed as a result of its secretion.**



or

**Explain how the human body responds when adrenaline is secreted into the blood.**

**Ans.** When the organisms confronts any scary situation, adrenaline is secreted from the adrenal gland and sent directly into the blood. Which is then circulated to various parts of the body, resulting into the following.

- (i) The main target organs include the heart which beats faster. As a result, more amount of oxygen is supplied to the muscles.
- (ii) The blood is supplied to digestive system and the skin is reduced due to contraction of muscles around small arteries. This divert the blood to the skeletal muscles.
- (iii) The breathing rate also increasing because of the contraction of the diaphragm and rib muscles.

**Q.37. Mr Kapoor has a habit to iron his shirt every morning before going to office. One morning he forgot to keep the hot iron in proper place and left for office. His two years old daughter touched the iron and her hand got burnt.**

**Mrs Kapoor immediately put the hand of her daughter under a running tap as a first aid.**

**On the basis of above passage answer the following questions**



**(a) What other materials commonly cause burn injury?**

**(b) How do we react when we touch a hot object?**

**(c) What values was shown by Mrs Kapoor?**

**Ans.** (a) The materials cause burn injury are hot drinking beverages, utensils, electrical appliances, etc.

(b) We immediately remove our hand from the hot object due to reflex action.

(c) Mrs Kapoor is knowledgeable and has ability to apply her knowledge accordingly.

**Q.38. Brain is a very delicate organ. How does the body protect such an organ?**

**Ans.** The brain in human beings are present inside a bony box. Inside the box the brain is contained in a fluid filled balloon, which provides further protection. This fluid is called as cerebrospinal fluid which protects the brain from mechanical shocks. The spinal cord on the other hand is protected by vertebral column or backbone.

**Q.39. Hormones are needed by our body in an appropriate amount. Slightly more or less secretion causes disorder in our body. Illustrate this by using three examples.**

**Ans.** Hypersecretion (more secretion) or hyposecretion (less secretion) of any hormone leads to disorders in our body.

Some of the examples are



- (i) **Goitre** This disorder is caused due to deficiency of iodine in our diet. Iodine is necessary for the synthesis of thyroxine hormone from thyroid gland.
- (ii) **Gigantism and Dwarfism** Hypersecretion of growth hormone results in giant (very tall people). Hyposecretion or deficiency of growth hormone at an early stage of life makes the person dwarf.
- (iii) **Diabetes Mellitus** Insulin helps to lower the blood glucose level. When it is secreted in less amount, the body suffers from diabetes as more and more glucose accumulate in the body.

**Q.40. Few children in a village have complained of swollen necks. More and more children have complained about swollen necks every months. A villager, Ram Singh is superstitious and he thinks that the village is cursed by a 'devil.' Shyam is an another villager, who thinks it as a disease which needs consultation with a doctor.**

**On the basis of above passage answer the following questions**

- (a) Do you agree with Ram Singh?**
- (b) What can be the reason behind swollen necks of the young children in the village? How can the problem be overcome?**
- (c) What social change is required in the village to make it free from blind faith?**
- (d) What values are shown by Shyam?**



**ans.** (a) No, I do not agree with Ram Singh.

(b) There might be deficiency of iodine in food of the village children. As iodine is necessary for the thyroid glands to make thyroxine hormone. Thyroxine helps in regulating carbohydrate, protein and fat metabolism in the body to give best balance of growth. The problem can be overcome by adding iodine in food which can be done by consuming iodised salt in place of ordinary salt.

(c) Education can open the eyes of people and make them free the blind faith. Men, women and children must be encouraged through nuked natak etc to attend the educational programme and to get educated.

(d) The values shown by Shyam are non-superstitious, aware and having scientific temperament.

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