

## **KPK Class 10 Biology Short Questions – Chapter 12**

### **Coordination and Control**

**Q1: How do reflex actions work in human beings?**

**Answer:**

Reflex actions are rapid, automatic responses to stimuli that don't involve conscious thought. They're controlled by a simple neural pathway called a reflex arc. Here's how it works:

1. **Sensory Receptor:** A sensory receptor (e.g., in your skin) detects a stimulus (e.g., heat).
2. **Sensory Neuron:** The receptor sends a nerve impulse to the spinal cord.
3. **Spinal Cord:** The spinal cord processes the impulse without involving the brain.
4. **Motor Neuron:** The spinal cord sends a motor nerve impulse to a muscle or gland.
5. **Effector:** The muscle or gland (effector) carries out the response (e.g., pulling your hand away).

This rapid response helps protect you from harm.

**Q2: What are the causes of epilepsy and paralysis?**

**Answer:**

**Epilepsy:**

- **Brain Abnormalities:** It's caused by abnormal electrical activity in the brain. This can be due to:
  - Genetics
  - Head injury
  - Infections
  - Stroke
  - Tumors
- **Seizures:** Epilepsy leads to seizures, which can cause a variety of symptoms like:
  - Loss of consciousness

- Muscle jerking
- Confusion

### **Paralysis:**

- **Nerve Damage:** Paralysis occurs when nerves that control muscles are damaged. This can be caused by:
  - Spinal cord injuries
  - Stroke
  - Multiple sclerosis
  - Muscular dystrophy
  - Poliomyelitis
- **Types:** Paralysis can be:
  - Complete: Loss of all muscle function.
  - Incomplete: Partial loss of muscle function.

### **Question 3: What happens if Islets of Langerhans secrete insulin but not glucagon?**

#### **Answer:**

If the Islets of Langerhans only secrete insulin and not glucagon, it would lead to a condition called **hypoglycemia**. ☐

- **Insulin:** This hormone helps lower blood sugar levels by allowing glucose to enter your cells for energy.
- **Glucagon:** This hormone raises blood sugar levels by breaking down stored glycogen in your liver.

Without glucagon, your body wouldn't be able to raise your blood sugar levels when they get too low, leading to symptoms like dizziness, sweating, and confusion. 🤔🔄

### **Question 4: Why is the pituitary gland known as the master gland?**

#### **Answer:**

The pituitary gland is called the "master gland" because it controls many other glands in your body. 🙌

- **Hormones:** The pituitary gland produces and releases important hormones that signal other glands to do their jobs.
- **Examples:** These hormones include growth hormone, thyroid-stimulating hormone (TSH), and luteinizing hormone (LH).

**Question 5: Differentiate between the two types of coordination systems.**

**Answer:**

There are two main types of coordination systems in your body: the nervous system and the endocrine system. ☐

- **Nervous System:** This system uses electrical signals (nerve impulses) to send messages quickly throughout your body. ⚡
- **Endocrine System:** This system uses chemical messengers (hormones) to send messages more slowly throughout your body. ☐

**Question 6: What is the role of insulin and glucagon?**

**Answer:**

Insulin and glucagon are hormones produced by the pancreas that help regulate blood sugar levels. 🍬

- **Insulin:** Lowers blood sugar levels by allowing glucose to enter your cells.
- **Glucagon:** Raises blood sugar levels by breaking down stored glycogen in your liver.

**Question 7: What characters are controlled by the ovarian hormones?**

**Answer:**

Ovarian hormones are responsible for controlling female sexual development and reproduction. 🧑🏻‍🔬🧑🏻‍🔬🧑🏻‍🔬

- **Estrogen:** This hormone is responsible for female sex characteristics like breast development and widening of the hips.
- **Progesterone:** This hormone helps prepare the uterus for pregnancy and supports it during pregnancy.

**Question 8: State the hormones of the pituitary and thyroid glands and write their functions.**

**Answer:**

**Pituitary Gland Hormones:**

- **Growth Hormone:** Stimulates growth and development.
- **Thyroid-Stimulating Hormone (TSH):** Stimulates the thyroid gland to produce thyroid hormones.
- **Luteinizing Hormone (LH):** Triggers ovulation in females and stimulates testosterone production in males.
- **Adrenocorticotrophic Hormone (ACTH):** Stimulates the adrenal glands to produce cortisol.

**Thyroid Gland Hormones:**

- **Thyroxine (T4):** Increases metabolism and energy production.
- **Triiodothyronine (T3):** Also increases metabolism and energy production.

**Question 9: Label the different parts of the brain in the following diagram.**

**Answer:**

(Image of a brain with labels for the different parts)

- **Cerebrum:** The largest part of the brain, responsible for thought, memory, and movement.
- **Cerebellum:** Coordinates movement and balance.
- **Brainstem:** Controls basic life functions like breathing and heart rate.
- **Medulla Oblongata:** Part of the brainstem that controls vital functions like breathing, heart rate, and blood pressure.
- **Pons:** Part of the brainstem that relays messages between the brain and spinal cord.