

## **Biology – IGCSE/ GCSE Answers to common Qs**

### **Thermoregulation**

On a hot day;

1. **More sweat** is produced, as the sweat **evaporates**, heat is lost to the surroundings, which cools the body down.
2. The hair erector muscles relax, **hair lies flat**. A layer of **insulating air is not trapped** around the body, heat is lost to the surroundings, the body cools down.
3. **Blood vessels** which supply blood to the skin capillaries **dilate**, this is known as vasodilation. More blood flows closer to the surface of the skin, more **heat is lost by radiation**, the body cools down.

On a cold day;

1. **Shivering** – the muscle cells contract which **releases heat energy**, which increases the temperature of the body.
2. Hair erector muscles contract, **hair** on the body **stands** which traps a **layer of insulating air**, therefore less heat is lost to the surroundings.
3. The **blood vessels** which supply blood to the skin capillaries **contract**, less blood flows near the surface of the skin, **more heat is retained in the body**, which increases the temperature of the body.

### **Effect of ADH on a hot day**

1. Osmoreceptors in the hypothalamus detect an increase in the concentration of blood.
2. The pituitary gland is stimulated to secrete **more ADH**.
3. ADH travels in blood to the collecting ducts of the nephrons in the kidneys.
4. ADH makes the collecting ducts **more permeable** to water.
5. **More water is reabsorbed** into the body by osmosis.
6. The urine produced has a smaller volume and a higher concentration of salts and therefore appears yellow.

### **Reflex action nerve impulse**

1. The stimulus is detected by a receptor.
2. An electrical impulse is generated down the sensory neurone, to a relay neurone and then to a motor neurone.
3. Between neurons, the impulses take the form of a chemical impulse, where neurotransmitters diffuse from the pre-synaptic neurone to the post-synaptic neurone.
4. The motor neurone is connected to an effector, the muscle cells, which contract, pulling the hand away to prevent injury to the body.

### **Inhalation**

1. External intercostal muscles contract, internal intercostal muscles relax.
2. Ribcage moves up and out.