**Homeostasis Questions**

**Homeostasis**

1. Define the term homeostasis.

Homeostasis is the maintenance of a relatively stable internal environment, working to maintain conditions within very small tolerance limits.

1. List 5 factors that are controlled by homeostasis.

Temperature, oxygen saturation, pH, blood glucose, and waste concentration.

**Stimulus Response Model**

1. Draw a diagram of the stimulus response model.

The stimulus-response model use receptors that detect disturbances, a processing center that interprets and coordinates a response and an effector that carries out the response.

**Negative Feedback**

1. Define the term negative feedback.

A mechanism that counteracts the effects of the original stimulus, tends to produce internal stability.

1. Give an example of a negative feedback system.

Thermoregulation (regulation of temperature through responses like sweating and shivering) and blood glucose regulation (through insulin and glucagon). A low blood glucose level causes the pancreas to release glucagon, stimulating glycogen breakdown and causing blood glucose to rise back to normal levels. A high blood glucose level causes the pancreas to release insulin, stimulating glycogen formation and glucose uptake by cells, dropping blood glucose levels back to normal.

**Receptors**

1. Define the role of receptors.

The millions of receptors allow an organism to respond to physical/chemical stimuli, both internally and externally.

1. Contrast interoceptors and exteroceptors.

Interoceptors receive signals from within the body’s internal environment whereas exteroceptors receive signals from the external environment.

1. Give an example of stimuli detected by chemoreceptors, mechanoreceptors, photoreceptors, thermoreceptors and nociceptors.

Chemoreceptors detect smells and tastes in the nose and mouth (external) and blood vessel oxygen and ion levels (internal). Mechanoreceptors detect touch and sound vibrations (external) and pressure and balance (internal). Photoreceptors detect light in the eyes (external only). Thermoreceptors detect air temperature on the skin (external) and internal temperature in the hypothalamus (internal). Nociceptors detect painful heat, cold, pressure and light (external) and painful pressure and tension (internal).

**Effectors**

1. Define the role of effectors.

Effectors initiate the response to decrease the effect of the stimulus and are categorised into muscles and glands.

1. Compare the two types of effectors – muscles and glands.

Muscles can contract in response to stimuli, and glands secrete chemicals such as adrenaline and insulin into the bloodstream in response to stimuli.