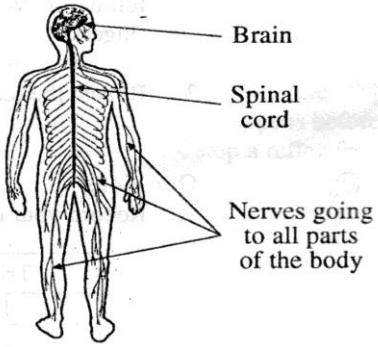
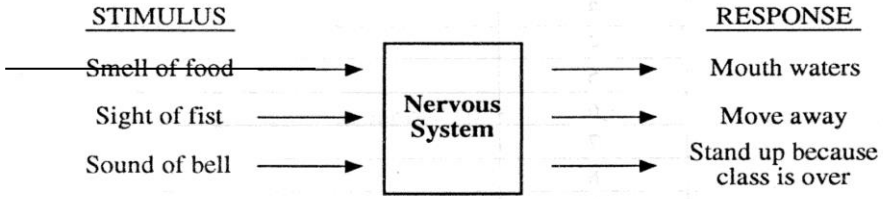
HUMAN NERVOUS AND ENDOCRINE SYSTEMS

THE NERVOUS SYSTEM

The **nervous system** consists of the brain, spinal cord and nerve cells. It sends messages around the body, so that the organs work together.

The nervous system acts because of changes inside or outside the body (stimulus). The nervous system also makes the other systems in the body reply or respond to these stimuli.





Our sensory organs receive a stimulus from outside the body. This message is carried by a nerve cell or many nerve cells and is called an **impulse**. The nerve then carries the impulse to the brain. The brain makes an "answer" to this message-- a response. The brain sends out another impulse to the parts of the body that carry out the response.

Reflex Actions

A **reflex action** happens when you respond very quickly to a stimulus. This is the fastest message carried by our nervous system. It is automatic- a reflex happens before we even know it. We do not have to think about a reflex. We cannot stop a reflex from happening.

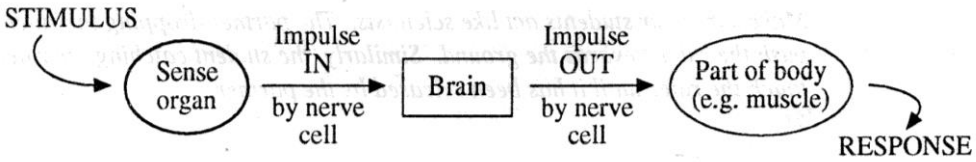
Examples of reflex actions:

- knee jerk
- ankle jerk
- eye blink
- swallowing

The Sense Organs

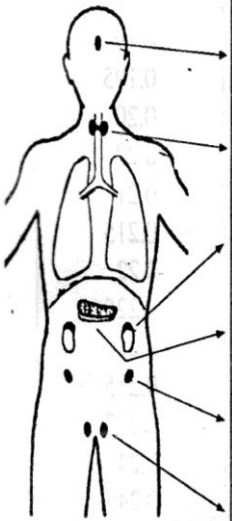
The **sense organs** are things of our body that allow us to perceive or get information from our environment. In humans, these are:

1. Eyes- contain cells sensitive to light.
2. Ears- contain cells sensitive to sound and balance.
3. Tongue- contains cells sensitive to taste and flavour.
4. Nose- contains cells sensitive to smells.
5. Skin- contains cells sensitive to touch, temperature, and pressure.



THE ENDOCRINE SYSTEM

The **endocrine system** is made up of endocrine glands. These glands produce **hormones**. Hormones are "chemical messengers". They carry messages around the body in the blood. Messages carried by hormones are slower than messages carried by the nerves. The effects of hormones last longer than the effects of nerves.



Endocrine gland	Hormone	What hormone does
Pituitary	Growth hormone	Controls growth
Thyroid	Thyroxine	Controls the chemical reactions in the cells of the body
Adrenals	Adrenaline	Gets the body ready by speeding up the heart rate and breathing
Pancreas	Insulin	Controls the amount of sugar (glucose) in the blood
Ovaries (female only)	Female sex hormone	Controls the female characteristics (e.g. breast development, etc.)
Testes (males only)	Male sex hormone	Controls the male characteristics (e.g. deeper voice, hair on body)

Here is an example of a gland and hormone from the endocrine system:
The pancreas (the gland) produces insulin (the hormone).

Insulin is carried by the blood from the pancreas to the liver. In the liver, insulin controls the amount of glucose in the blood. Any excess (extra) glucose is stored in the liver as glycogen.

If the pancreas produces very little insulin, the blood sugar increases and causes diabetes. A doctor can help diabetic people by giving them a regular injection of insulin.