

We shall learn :

- Nervous system
- Sense organs

2

Nervous System



WARM UP

Why don't you feel pain when you cut your nail or hair?

Tick (✓) the correct responses :

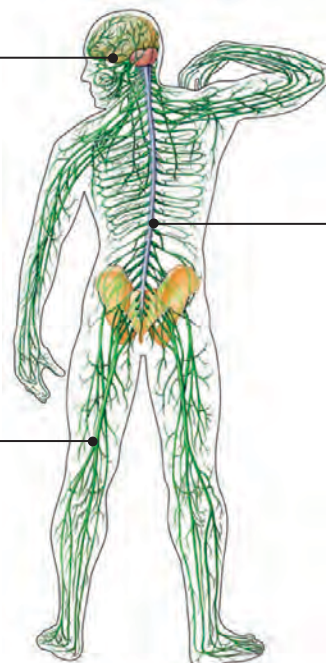
1. Nails and hair have no blood.
2. There are no neurons present in them.
3. They are dry and dead.
4. They have no bones.

How are you able to see, hear, smell, feel, think and learn? All this is possible because of the **nervous system**. It is a very important system of the body. It makes us aware of our surroundings. It coordinates and controls other systems of the body.

Nervous System

The brain, the spinal cord and the nerves form the **nervous system**. Our nervous system controls all the other systems of our body.

The brain is the control centre of the entire body. It may also be called the human computer.



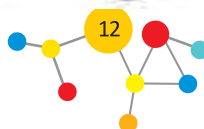
The spinal cord is a bundle of nerves. They carry messages between the brain and the rest of the body.

The nerves are spread throughout the body. They carry messages back and forth like telephone wires.



Wisdom Corner

Each half of the brain controls the opposite half of the body.



The Brain

The brain is the control centre of the body. It tells every part of your body what to do, even when you are asleep. The brain is soft and delicate like jelly. It is protected within a bony structure called skull. The space between the brain and the skull bones is filled with a fluid.

The brain has three main parts : cerebrum, cerebellum and medulla.



Wisdom Corner

Our brain can store about 100 million bits of information in a lifetime.

The Cerebrum : The cerebrum is the largest part of the brain. It helps you to think, remember and learn. It also controls the functions of the sense organs.

The Cerebellum : The cerebellum controls muscular activity and maintains balance of the body.

The Medulla or the Brain Stem : The medulla is the lowermost part of the brain. The spinal cord begins at the medulla. The medulla regulates functions like heart beat, circulation of the blood and breathing.

The Spinal Cord

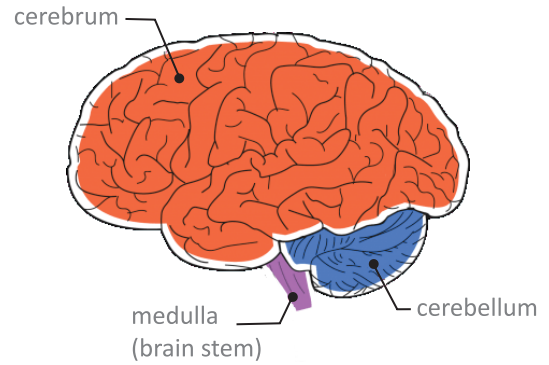
The brain is not the only organ that controls the functions of the body. The spinal cord, which is connected to the brain, controls some of the functions. It begins at the lower part of the brain and extends all along the back. It is soft and delicate like the brain and is protected inside the vertebral column.

The vertebral column is a flexible tube-like column made up of 33 bones. It runs all along your back. The spinal cord links several parts of the body to the brain. The brain and spinal cord together control all the functions of the body. Each and every thing that your body does is controlled directly by either the brain or through the spinal cord.

The Nerves

A network of nerves runs throughout our body. **Sensory nerves** pass through the spinal cord and carry messages to the brain. **Motor nerves** carry messages back from the brain. **Mixed nerves** carry messages to the brain as well as bring orders from the brain.

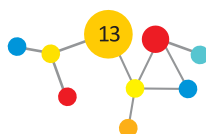
The human nervous system can send messages at the rate of 120 metre per second, that is, a message can travel from your brain to the tip of your feet, nearly 100 times in one second.



The human brain



spinal Cord



Reflex Action

At times, the body needs to respond quickly to avoid damage. At such times, the message is taken to the spinal cord which immediately sends a message back. An automatic movement in response to a stimulus is called a reflex action.

Let us see how reflex actions work :

Sense Organs

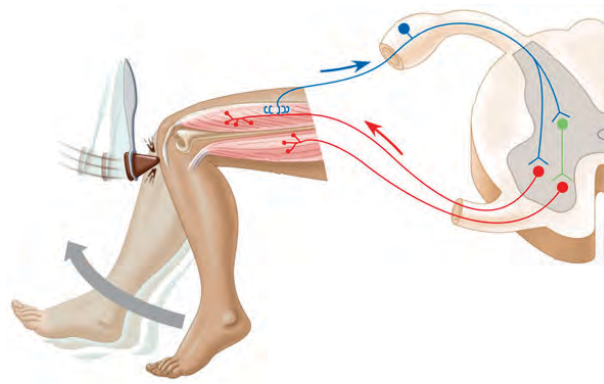
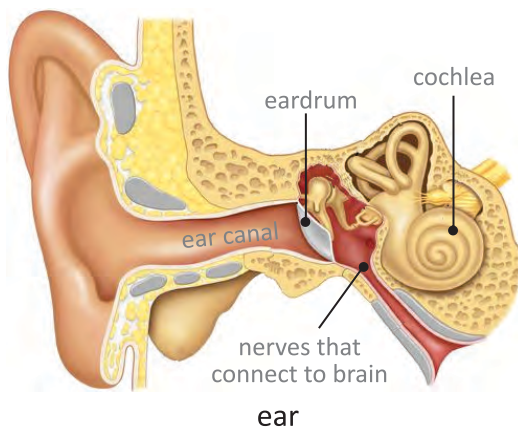
Our sense organs help us to see, hear, taste, smell and touch.

The Eye

Each eye has a lens. When you look at an object, light passes through the lens and forms an image on the retina. This image is converted into a message, which is passed on to the nerves which connect the eyes to the brain. When the message reaches the brain, it is recognised by the brain. This is how you see things.

Care of the Eyes

- Wash your eyes regularly with clean water.
- Do not work in a dim light or very bright light. This tires the eyes.
- If you read in a moving vehicle, you will strain your eyes.
- Always sit at least six feet away from the television set.
- Do not read while lying down.
- Never rub your eyes with a dirty towel or dirty hands. This can cause infection.



1. A hard object is touched (stimulus).

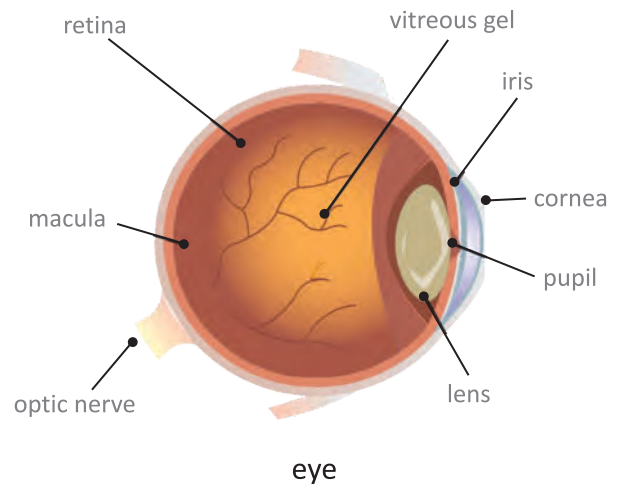
2. A nerve carries the message to the spinal cord.

3. The spinal cord tells you to withdraw your leg immediately (response).



Wisdom Corner

A reflex action does not involve the brain directly.



Ear

The ear can be divided into the external ear, middle ear and the internal ear. The middle ear is a narrow canal. At the end of the canal is the eardrum, which is made up of a thin membrane. When sound enters the middle ear, it vibrates the eardrum. The vibrations are converted into messages in the inner ear. The nerves



present in the inner ear pick up these messages and carry them to the brain. The brain then helps you to recognise the sound.

Care of the Ear

- Never hear loud music.
- Do not clean your ears with a matchstick or hairpin.
- Use a clean towel to dry your ears. Do not let water enter your ears.
- Go to a doctor if you have an earache.

The Nose

When the nose senses a smell, it is converted into a message. The message is picked up by the nerves inside the nose and is carried to the brain. The brain then helps us to know the smell.

Care of the Nose

- Keep your nostrils clean by blowing your nose gently.
- The hair inside the nose keep out dust in the air, so breathe through your nose.
- Do not pick your nose.
- Inhale steam to clear a blocked nose.

The Tongue

The tongue has taste buds, which can sense sweet, sour, salty and bitter tastes. The taste buds are connected to the nerves.

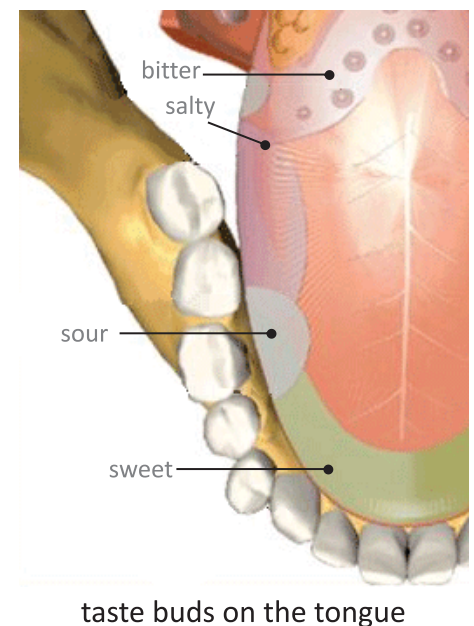
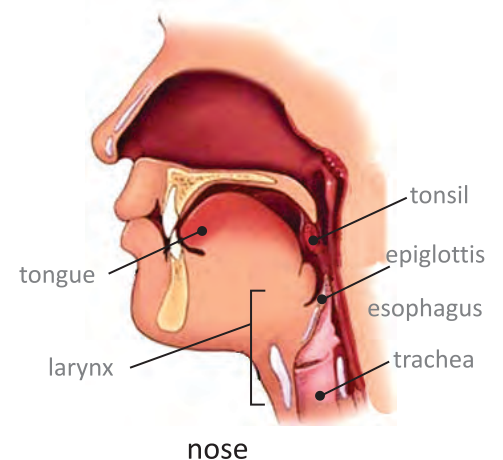
When we place food in the mouth, the tongue senses the taste and converts it into a definite message. The nerves connected to the taste buds pick up the message and carry it to the brain. The brain recognises the message and helps us to know the taste of things we eat.

Care of the Tongue

- Avoid eating very spicy food.
- Use a tongue cleaner to clean the tongue.
- Avoid drinking very hot or cold beverages.

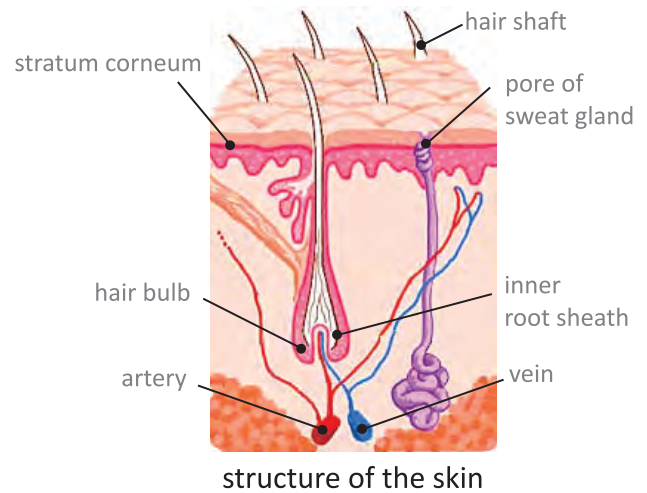
The Skin

Your skin is also a sense organ. You are able to sense pain, temperature and feel things with the help of your skin. It is richly supplied with nerves. Messages are conveyed by these nerves mostly to the spinal cord.



Care of the Skin

- Soap and water are enough to remove dirt and sweat from the skin.
- Dry yourself thoroughly after washing and wear clean and comfortable clothes.
- A scratch or cut on the skin should be treated with an antiseptic to stop the growth of germs.



Glossary

Nervous system	The system made up of the brain, spinal cord and the nerves
Brain	The control centre of the body
Cerebrum	The largest part of the brain that controls the ability to think, learn, decide, remember, dream and feel
Cerebellum	The part of the brain which coordinates all the voluntary movements
Medulla	The part of the brain which controls involuntary actions
Reflex action	An action performed automatically, without thinking, as a natural reaction
Iris	Coloured part of the eye
Pupil	Opening from where light enters the eye

Question Hour-I



A Tick (✓) the correct answer :

1. Most functions of our body are controlled by the :

(a) spinal cord	<input type="checkbox"/>	(b) brain	<input type="checkbox"/>	(c) sense organs	<input type="checkbox"/>
-----------------	--------------------------	-----------	--------------------------	------------------	--------------------------
2. The spinal cord is protected by :

(a) vertebral column	<input type="checkbox"/>	(b) skull	<input type="checkbox"/>	(c) rib cage	<input type="checkbox"/>
----------------------	--------------------------	-----------	--------------------------	--------------	--------------------------
3. Nerves that carry messages back from the brain to different body parts are called :

(a) sensory nerves	<input type="checkbox"/>	(b) motor nerves	<input type="checkbox"/>	(c) mixed nerves	<input type="checkbox"/>
--------------------	--------------------------	------------------	--------------------------	------------------	--------------------------
4. In the eye, the image of the object is focused on :

(a) iris	<input type="checkbox"/>	(b) pupil	<input type="checkbox"/>	(c) retina	<input type="checkbox"/>
----------	--------------------------	-----------	--------------------------	------------	--------------------------

B Fill in the blanks with correct words from the box:

bony, lens, aware, connected, reflex action, network

1. Nervous system makes us _____ of our surroundings.

- The brain is protected within a _____ structure called skull.
- A _____ of nerves runs throughout our body.
- A _____ does not involve the brain directly.
- Each eye has a _____ .
- The taste buds are _____ to the nerves.

C Name the following :

- The nerves that carry message from the skin to the brain _____
- The nerves that cause movement of the muscles _____
- The part of the eye that focuses the picture _____
- The actions controlled by the spinal cord _____
- The part of the brain that controls the involuntary activities of the internal organs _____

D Match the columns :

- | | |
|--------------------|---------------------------------|
| 1. The cerebellum | (a) see things |
| 2. The medulla | (b) controls muscular action |
| 3. The tongue | (c) reflex action |
| 4. The eyes | (d) controls involuntary action |
| 5. The spinal cord | (e) taste buds |

E Name three :

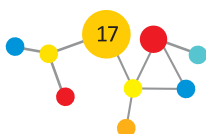
- organs of nervous system _____
- types of nerves _____
- parts of brain _____
- functions performed by the cerebrum _____

F Answer the following questions :

- What are the functions of the nervous system?
- Name the different parts of the brain. What work does each part do?
- Name the three types of nerves. What functions do these nerves perform?
- What is a reflex action? Explain with an example.
- What are sense organs?
- How does the tongue help us to taste?
- How can you keep your skin healthy?

Think Beyond HOTS 

When a patient is taken to the operation theatre, he/she is first given anaesthesia. Do you know why?



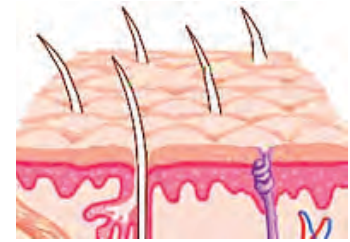
Question Hour-II



A Circle the odd one in each group. Give reasons for your answer :

- | | | | |
|---------------|-------------|----------|---------|
| 1. Cerebellum | Liver | Cerebrum | Medulla |
| 2. Retina | Iris | Eardrum | Pupil |
| 3. Nerves | Spinal cord | Eye | Brain |

B Identify the following pictures. Write their names in the spaces provided :



Fun to Drill



Why do you have two ears?

Close your eyes. Ask a friend to stand about 10 m away from you and call out your name. Guess the direction from which he is calling. Let him change his position three or four times and call out your name, while keeping your eyes shut. Can you correctly guess the direction each time?

Now shut one of your ears with cotton wool and cover it with your hand. Repeat the above. Can you correctly guess the directions now? What conclusion do you draw?

Fun to Act



1. Take a cube of ice. Hold it with a piece of cloth leaving the lower end open. Touch it one by one for 5 seconds at the following points of your body :

Nose	Cheek	Elbow	Sole of your foot
Finger tips	Wrist	Palm of your hand	

Can you classify the above points as 'very sensitive', 'sensitive' and 'not sensitive' to cold?

2. Close your eyes. Put some slices of cucumber (*kheera*) on your eyelids for some time. This will relax your eyes.