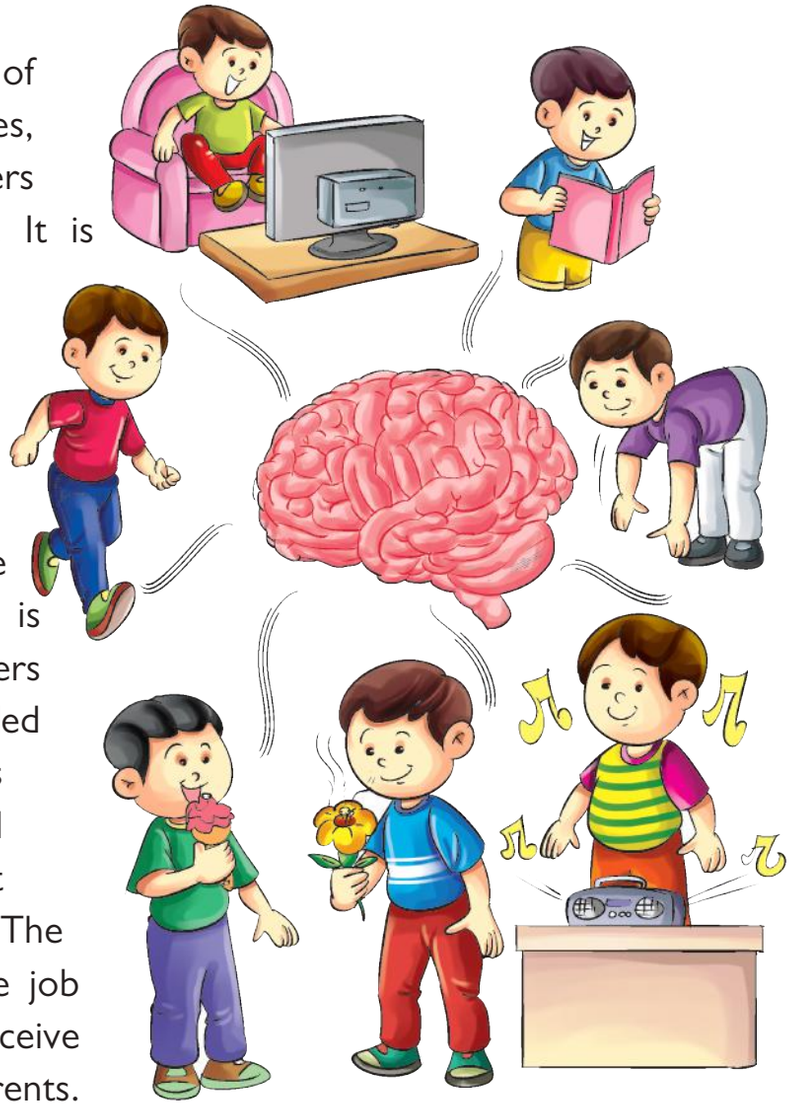
9 Brain : The Controller of the Whole Body



Brain is the most important *organ* of our body. It is an organ that senses, makes connections and *issues* orders that control all the body organs. It is *located* inside the head. The brain is well protected in the body *skull*. Several tough *membranes* and a layer of liquid *cushion* the brain against shock.

The brain is made up of special type of cells called neurons. Each cell is shaped like pyramid. From its corners extend thread like branches called dendrites. Our brain contains billions of these cells. Billions of additional neurons are found throughtout our body. They make our nerves. The structure of neurons vary with the job they do. Neurons *transmit* and receive signals or *impulses* made of tiny currents. A neuron receives an impulse through its dendrites, from a neighbouring neuron. One neuron can transmit hundreds of impulses in a single second.

The largest part of the brain is the cerebrum. This part is *concerned* with intelligent activity. The sense of sight is concentrated at the back of cereburm, the front areas are concerned with thinking. The cerebellum is *underneath* the cerebrum. When we walk, run, bend or turn, it controls our movements and keeps our balance. Another

small part is the medulla which controls the heartbeats and breathing *automatically*. The spinal cord is an *extension* or connector of brain. It controls emergency situations. For example, if our hand touches a hot plate accidentally, the spinal cord makes our hand move back quickly.

Our eyes don't actually see; they sense light and report the sensing to the brain by sending signals or impulses. The brain *interprets* the impulses and then we see 'a child or a mango'. Similarly we touch, taste, smell or hear by the interpretation of the brain. That is why the odour of the same flower may be liked by our brain and not liked by our friend's brain.

The human brain is the most *delicate* and the most *complicated* organ in the body. It is like a busy telephone switchboard, thousands of messages arrive, and go out every minute. *Enormous* number of impulses pour into the brain every second. The brain *co-ordinates* all the impulses it receives. It separates quickly what is most important for the moment from all the rest. The whole process takes only a tiny fraction of a second. For example, when we cross a road on a square, we see traffic signals, moving or standing vehicles and people of all sort. When the brain wants us to cross road, it neglects all the other things except those helpful in crossing the road. Then it sends impulses to the muscles of the legs and trunk to move.

When an insect crawls on our neck, the nerves from the neck send a 'something crawling' message to the brain. If the brain thinks it should be removed with a hanky, it sends an impulse to your arm and hand to move to take the hanky and remove the insect.

The nerve impulses travel at a speed of several hundred kilometres per hour. For example, your brain 'sees' a snake through your eyes. It gets impulses within a tiny fraction of a second. It decides and sends impulses to your feet with the same speed. That is how you run the moment you see a snake. Thus your five senses tell your brain about the world around you. The brain interprets the situation, takes decision and orders quickly.

The brain stores our experiences and thus we 'learn'. It recalls the things that we learned in the past and we remember. We have two types of memories. Long-term memory lasts for years. Short-term memory lasts for a few minutes, hours or days. Here the brain keeps information that we need for a while. For example, when we go upstairs to the kitchen to get some milk, we don't forget for what purpose we went there.

Is the brain like a computer ? It is. But it is more correct to say that computer is like our brain. Both can receive and remember information and can learn to do new things. But there is a big difference. The brain can think of a new story or a good poem. A computer cannot produce a good story or a good poem. A computer cannot do anything that it hasn't already been *commanded* to do. Brain can do all that without someone telling it to do.

Moreover a computer is not aware of itself. We have a brain, so we know we are here. A computer cannot feel things. The brain can feel things. It can be happy, or sad.

Small creatures also have brains but a very small one. Smaller animals such as bees can 'remember' where their hive is and know the time of the day. The *massive* Dinosaur, Stegosaurus weighed one and a half ton, yet its brain was the size of a walnut. Of all the animals, the human brain is the most developed one.

Word Treasure

organ : part of the body for a particular function
membrane : skin-like structure that covers (the brain)
impulse : a sudden urge to act
underneath : situated directly below
complicated : made of many connected elements
coordinate : make to work together
issues : gives out
transmit : send to
interpret : explain the meaning of
extension : an extra length of
enormous : very large

EXERCISE TIME

Comprehension Skills

A. Tick (✓) the option :

1. The organ of the body that controls all the body organs is :
   a. heart ☐ b. kidneys ☐ c. brain ☐
2. The largest part of the brain is the :
   a. cerebrum ☐ b. cerebellum ☐ c. medulla ☐
3. The nerve impulses travel at a speed of _____ kilometres per hour.
   a. two ☐ b. three ☐ c. several hundred ☐
4. Cerebrum is concerned with intelligent _____.
   a. pulse ☐ b. sight ☐ c. activity ☐

5. _____ is the most developed one.

a. impulse ◯ b. brain ◯ c. both ◯

B. Fill in the blanks with the correct option :

sight, medulla, neurons, several, experiences

1. The brain is made up of special type of cells called _____.
2. The sense of _____ is concentrated at the back of the cerebrum.
3. The _____ controls the heartbeats and breathing automatically.
4. The nerve impulses travel at a speed of _____ hundred kilometres per second.
5. The brain stores our _____ and thus we learn.

C. Answer the following questions :

1. What are the parts of the brain and their functions ?
2. How does the brain work to save us from a snake ?
3. How does the brain store information and remember things ?
4. What are nerves ? What is their function ?
5. How is the brain like a computer ?

Fun with Words

D. Read and learn the terms for doctors :

1. One who treats eyes – Opthalmologist
2. One who treats eyes – Orthopedic
3. One who treats nervous system – Neurologist
4. One who treats – Cardiologist
5. One who treats cild sickness – Pediatrician

Essential Grammar

Some forms of verbs do not change their form with the singular or plural subject or with tense. These are called non-finite verbs.

Non-finite verbs are of three kinds—Participle, Gerund and Infinitive.

Participle has three forms—Present Participle, Past Participle.

Present Participle is the ing form of a verb mostly used as an adjective.

Ex. : Look at the bird perching on the branch.

The boys are in the field, flying their kites.

Floating clouds look very pretty.

They heard someone shouting for help.

We saw her hurrying to catch the bus.

She wore a sleeveless dress, thinking that it was going to be a hot day.

D. Join each pair of sentences, using a Present Participle :

1. We found the child. She was hiding under the bed.

   _____

2. He was whistling loudly. He walked into the garden.

   _____

3. He smelt the gas. The gas was leaking.

   _____

4. Is there somebody upstairs ? He is playing the piano.

   _____

5. We noticed some men. They were digging up the road.

   _____

6. Move to the left. You will find the school.

   _____

7. He jumped up. He ran away.

   _____

8. He rode a horse. He came to me.

   _____

Essential Writing

E. Fill in the blanks with the correct word from the brackets :

1. She has given _____ to a female child.
   I reserved a _____ in Rajdhani Express. (berth/birth)
2. Nauchandi _____ is very famous.
   What is the second class train _____ from Mumbai to Delhi. (fare/fair)
3. Did he _____ his purse yesterday ?
   Your coat is _____ at the shoulders. (lose/loose)

4. Kalpana Chawla was at the _____ of her career when she died.
   She took a quick _____ of herself in the mirror. (peek/peak)
5. The police will _____ any vehicles passing this road.
   The manager will issue a _____ for your payment. (check/cheque)
6. Don't _____ these glass pieces further.
   Apply the _____ at once when the light turns to red. (brake/break)
7. She will _____ her sareie tomorrow.
   Everyone will _____ one or the other day. (die/dye)

Essential Speaking

F. Talk about a patient :

Lucy : How is your sister now, Sarah ?

Sarah : Better than before.

Lucy : Which doctor have you consulted ?

Sarah : Doctor Samson.

Lucy : I have heard about Doctor Samson. He is a child specialist.

Sarah : Yes, and my mother has faith in him.

Lucy : Why so ?

Sarah : He is our family doctor. In every case we first go to him. He treats us himself or refers to another good doctor.

Lucy : For how long has she been ill ?

Sarah : For the last fifteen days.

Lucy : Your sister has become very pale. I think you consult another specialist.

Sarah : I shall talk to mother about it

Fun to Do

G. Solve the riddles :

1. Thirty white horses
   On a red hill;
   Now they tramp
   Now they champ
   Now they stand still.

2. Little Nancy Etticoat,
   in a white petticoat,
   And a red nose.
   The longer she stands
   The shorter she grows.