Grade 11 pool 1 work sheet

In this lesson you should be able to :

1. describe the main divisions of the nervous system
2. distinguish between a neurone and a nerve
3. explain the functions of motor and sensory neurones and spinal synapses
4. describe the mechanisms of a reflex action
5. explain the process by which voluntary actions occur
6. distinguish between a voluntary and involuntary action

Instruction :

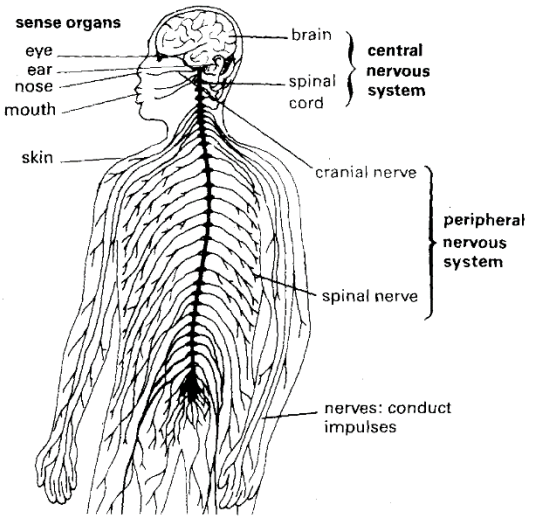
1. Read and make notes from the content below and answer the questions at the end.
2. Send answers to kcirreds@yahoo.com . be sure to put your **name** , **grade** and **the topic** in the subject bar.
3. Check the WhatsApp group for explanations, videos and links to videos. If you are not in the group by now please send a request to 1-876-388-7594**. or** ask Taguean Thomas to add your number to the group.

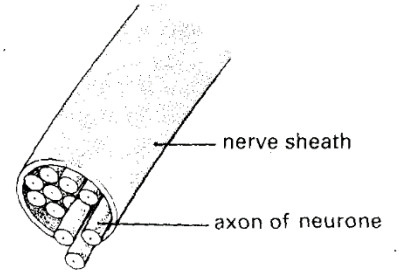
The body achieves control by these two systems :

1. **Nervous System** - in which messages are sent by nerves
2. **Endocrine System** - which is controlled by chemicals called hormones.

Nervous System

The nervous system is made up of the brain, spinal cord and the peripheral nerves. Its functions include the control and coordination of all the bodies' activities. The control is achieved through receptors (sense organs and cells) and effectors (muscles and glands) which react to stimuli. Effectors send messages to muscles or glands by hormones or nervous impulses around the body. There are two methods of sending these messages from receptors to effectors.



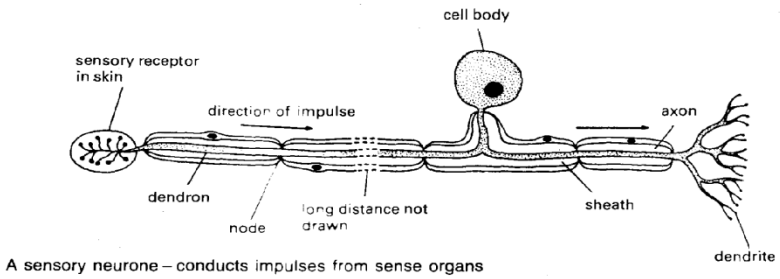


A nerve

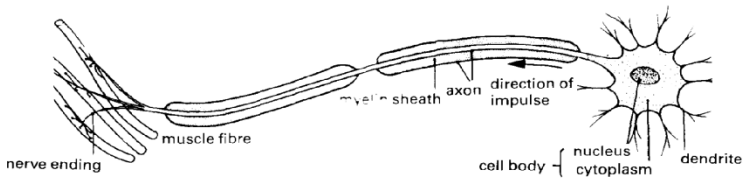
Nerves and Neuron

A nerve is a group of nerve cells bundle together in one sheath.
A neuron is a nerve cell.

Types of Neurons



A sensory neurone – conducts impulses from sense organs



A motor neurone – conducts impulses to muscles

Sensory neuron - These conduct impulses from the sense organs to the central nervous system.

The Motor Neuron - It conducts impulses away from the central nervous system to the effector organs.

these axon is at the end, the dendrite (nerve ending) is at the other end in the

muscle.

Relay Intermediate Neuron - these are in the central nervous system and connect sensor neurons to

motor neurons.

Structure of the Neurons

All neurons consist of a dendrite, axon, a cell body and a myelin sheath. The dendrite conducts impulses towards the synapse. The axon conducts impulses away from the cell body to the dendrite. The myelin sheath is a fatty coating around the axon and it helps speed up the of impulse transmission. It also acts as an insulator for the neuron.
The cell body - is the part of the cell which contains the nucleus and the cytoplasm.
The dendrite - these are usually at the end of the neurons in the brain and spinal cord they transmit nerve

impulses to each other as a chemical across a time gap between themselves called the synapse.

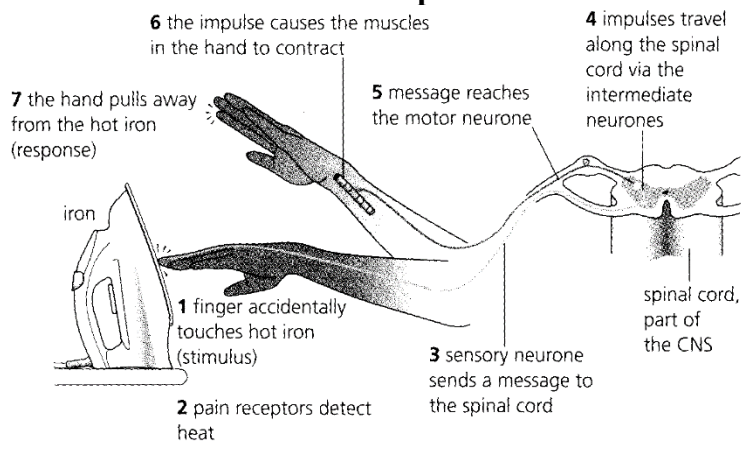
Voluntary And Involuntary Actions

Voluntary actions - these are actions which you decide to do unlike *involuntary actions* which only takes place between the receptors, effectors and spinal cord impulses are also sent to the brain.

Involuntary Action : these are action which are done without you thinking about or deciding to do.

When you have a sudden sharp pain such as a prick then you remove your body from that source of pain it's considered a reflex action. Reflex action is an automatic response to stimuli it is usually involuntary done thought some can be learned i.e. riding a bicycle

Reflex Arc/ Spinal reflex Arc.



A reflex arc can have a protective role in the body.

I. Stimulus is received and impulse is sent to the sensory nerve by the sensory neurone. Neurons make up nerves

II. The relay neurons is the grey matter of the spinal cord

III. The motor neurone receives the impulse from the relay neurone and then sends it to the effector Muscle which contracts in response to the impulse.

Questions

1. Which two ways is control achieved in the body ?
2. Name two parts off the nervous system
3. What is a neuron ?
4. What is a a nerve ?
5. Differentiate between a nerve and a neuron

6. Name the three types of neurons
7. What direction do impulses travel in each neuron ?
8. What is an involuntary action ?
9. Describe a voluntary action ?
10. Outline the stages of an involuntary action, for example when you touch me hotplate and move your hands away involuntarily