RECEPTION, RESPONSE AND COORDINATION

REFLEX ACTION

Lesson Objectives

By the endo of the lesson, you should be able to

- 1. Describe a reflex action
- 2. Describe how a reflex action occurs
- Describe of the importance of a reflex action

Reflect Action

- A reflex action is a rapid automatic/ involuntary response to a certain stimulus.
- There are two types of reflex actions;
 - a) Simple reflex action
 - b) Conditioned reflex action

Simple Reflex Action Activity;

In pairs (in case you are alone as a student, you can engage any other member of the family nearby) do the following activities;

- Pass your note book across the face of the pair. (note book should not touch the face)
- ii. Write down the observation made.

- Expected observation. The eyes blink.
- In the above activity, one did not take time to think of how to respond. The response was quick and involuntary
- Above is an example of a simple reflex action.

A simple reflex action is an involuntary quick response to a stimulus without conscious thought. In a simple reflex action there is a specific single and automatic response to a particular stimulus. Simple reflex action does not depend on learning. Lets do some activities on simple reflex action Video InShot 20200512 130152651.mp4

Observe the following video And note some of the reflex Actions.

Examples of simple reflex action

Quiz

- 1. What simple reflex actions have you identified from the video?
- From your day to day activities, give other examples of simple reflex actions; Hint: These are responses which are quick, involuntary and do not depend on learning

Examples of simple reflex actions

- Withdrawal of a finger/foot from a hot or sharp object
- 2. Blinking of the eye when an object passes close
- 3. Enlargement/closing of the eye pupil in different light intensities
- 1. Knee jerk reflex action when the knee is tapped
- 2. Coughing or sneezing
- 3. Salivation and swallowing..
- 4. Others think about Yawning



How is a Reflex action effected? The Reflect Arc

- The structural basis of a reflex action is called **Reflex arc.** This is the pathway followed by a nerve impulse.
- A simple reflex arc is made up of 3 neurones;
 - i. Sensory
 - ii. Relay Neurones
 - iii. Motor
- The neurones link the receptor (sense organ) with the effector through the CNS -Spinal cord.



Example of a Simple Reflex Action/Arc Illustration: What is the series of events that leads to the withdrawal of a finger from a sharp/hot object?



- When the finger is pricked, the pain receptors in skin of the finger are stimulated. Nerve impulses triggered off and transmitted via the sensory neurone to the grey matter of the spinal cord through the dorsal root.
- The impulse is then transmitted to the relay neurone via a synapse then to the motor neurone through another synapse.
- Through the ventral root, the impulse is transmitted via the motor neurone to the effector which in this case is the biceps of the upper arm. The biceps contract and the forearm is raised/withdrawn from the sharp object

Lessson Evaluation

- 1. Why is a simple reflex action is important to an animal?
- 2. Describe the events that leads to blinking of the eye when something passes fast in front?

Significance of the Simple reflex Action

- Simple reflex action minimizes damage/ danger to the body from potentially harmful conditions, such as heat
- The **quick response** is devoid of the brain thinking process of brain that may take time and delay the response which may harm the animal.
- It avoids overloading of the brain
- However note the stimulus still reach the brain and other responses can be effected...Like you can decide not to blink!

Assignment.

- **1. Practical activity**; work in pairs, one person should sit on a chair with the right leg crossed over the left leg. The other person taps the patella tendon (found just below the knee cap) of the right leg sharply with the edge of the ruler.
 - a) What observation is made?
 - b) Use some well labeled diagram to illustrate the observation in (a) above.
- 2. Below are components of a simple reflex action pathway:
 - Interneurone/relay
 - Muscle
 - Motor neurone
 - Sensory neurone
 - Pain receptor
 - Central nervous system

List the components in their proper sequence during transmission of impulse. (3mks)

