THE HUMAN NERVOUS SYSTEM

3 Main Parts of the Nervous System
1. Brain
2. Spinal Cord
3. Nerves – Sensory and _____________ Nerves

The Neurone
- Nerve cells are called _____________.
- A neurone consists of a cell body (with a nucleus and cytoplasm), dendrites which carry electrical _____________ to the cell, and a long axon which carries the impulses away from the cell.
- The axon of one neurone and the dendrites of the next neurone do not actually touch. The __________ between neurones is called the synapse.

Neuronal Function
There are 3 processes involved in nerve transmission:
1. Generation of a nerve impulse (action potential) of a sensory neurone occurs as a result of a stimulus such as light, a particular chemical or stretching of a cell membrane by sound.
2. Conduction of an impulse along a neurone occurs from the _____________ to the cell body to the axon.
3. A chemical transmitter substance is released across the _____________ to allow the electrical impulses to pass from one neurone to the next. This substance causes the next neurone to be electrically stimulated and keeps the signal going along a nerve.
The Central Nervous System

- The **Central Nervous System** comprises the parts that are enclosed and protected by bone - the Brain and the __________ Cord.
- The **Brain** is composed of __________ of interconnected neurones. It is protected within the __________ or **cranium**.
- The **Spinal Cord** is a bundle of nerve fibres made of many neurones. It is protected by the **vertebral column**.
- **Cerebro-spinal Fluid** surrounds the brain and spinal cord and acts as a buffer against hard knocks or jolts.
- **3 Parts of The Brain**
  1. Cerebrum (Forebrain) – the largest section of the brain, which lets us think, interpret sensory messages, carry out voluntary __________ movements, remember and have consciousness
  2. Cerebellum (Midbrain) – helps us to keep our balance, and have repetitive muscle control
  3. Medulla Oblongata (Hindbrain or Brain Stem) – control the vital functions of heartbeat and __________

The Hypothalamus

- The hypothalamus is a small cluster of neurones deep within the brain. It plays a central role by regulating many vital processes (e.g. regulating body temperature, heart rate, water balance and blood pressure, carbohydrate and fat metabolism, appetite, sleep and sex drive).
- It also links the nervous system with the endocrine system, because it controls the **pituitary gland** which is the master gland of the __________ system.

The Peripheral Nervous System

- This is the part of the nervous system that does not include the brain and the spinal cord.
- There are 2 types of nerves – sensory and motor nerves.
- **Sensory Nerves** carry information about the surroundings from the sense receptors in the skin, ______, ears, nose and tongue along the spinal cord to the brain to be interpreted.
- **Motor Nerves** carry messages from the brain through the spinal cord to the muscles and other organs to produce an action.
- Some of the nerves of the peripheral nervous system are under voluntary control (e.g. ____________________________). Other nerves are involuntary or uncontrolled (e.g. regulating heartbeat).
A Reflex Arc

- A reflex arc involves transmission of a nervous impulse or message from sensory receptors to the spinal cord and back to muscles. Later, the message also reaches the brain for interpretation.