

Chapter 1: STUDY NOTES:

TITLE: The Science of Life:

I) What is Biology?

Biology is the study of all the living things around us.

Biologists have not yet named or studied all the living things around us.

Living things do not live in isolation but interact with and depend upon other living things.

>> Why Study Biology?:

To appreciate the world of living things; the diversity of species on the Earth; the dynamic pattern of life

Humans depend upon living things for food & raw materials.

Understanding biology will help humans understand our future on the Earth.

II) What is Life?

An organism = anything that possess all the characteristics of life

Organization = what all living things demonstrate; an orderly structure

In all organisms, body functions interact with one another to create a single, orderly system; the body functions do not operate independently

Hence, **ORGANIZATION** is a characteristic shared by all living things

REPRODUCTION, the production of off spring, is another characteristic of living things

Reproduction is essential for the continuation of an organism's SPECIES = a group of similar-looking organisms that can interbreed and produce fertile offspring

All living things change as they grow. **GROWTH** results in an increase in the amount of living material & the formation of new structures.

The changes that take place during the life of an organism is called **DEVELOPMENT**

Living things live in a constant interface or contact with the ENVIRONMENT (air, water, weather, temperature, etc.); thus, the organism must adjust to these changes or STIMULI; their reaction the stimulus is their REACTION. Responding to a stimulus is an important characteristic of all living things.

Hence, **ADAPTATION** is any structure, behaviour or internal process that enables an organism to respond to a stimuli and better survive the environment.

Reactions to stimuli from internal environment = external temperature; infection from bacteria. HOMESTASIS is the regulation of the organism's internal environment to maintain conditions suitable for life.

III) The themes of biology:

a) energy = the ability to do work or the ability to make things move

- it powers the life processes = to grow, reproduce, move, etc.
- energy flows through organisms, communities

b) systems:

- biology involves the idea of systems, each interacting with other systems

c) unity within diversity:

- all life is unified by these basic characteristics of life

d) homeostasis: uses energy to regulate & maintain the internal environment of the body

e) evolution: the gradual changes in the characteristics of species over time.

f) nature of science:

Biology is a continuous, unfolding process; hence, modifications is normal in science

Biology is a process, a way of knowing about the natural world.