Introduction to Biology - Form 1 Biology Notes

Definition of Biology - What is Biology?

Biology is a branch of science that deals with the study of living things.

There are diverse forms of life on earth ranging from the invisible microscopic living things to the gigantic life forms. It aims at explaining the living world in terms of scientific principles.

It is important to note, however, that living things interact with the non living things in the environment as well. Biology, therefore also entails the study of non living things as well. The role of human beings in shaping the environment is also investigated in biology.

In summary, biology deals with the study of origins, types, nature, growth, development, interactions and maintenance of all life forms on earth.

Branches of Biology

Biology is such a broad field of knowledge. It is divided into two broad branches.

1. **Zoology** - This is a branch of biology that deals with the study of animal life.
2. **Botany**- This is a branch of biology that deals with the study of plant life.

   Within the two branches, there exist even smaller branches because the branches (botany and zoology) are very wide and complex.

   The smaller branches of biology include:

   a. **Ecology** - This is the study of the interrelationships between organisms and their

environment. Ecology aims at establishing how organisms are related to each other and their environment. Ecology is further subdivided into smaller branches. These can be forest ecology, marine ecology, rangeland ecology etc.

b. **Genetics** - This sub-branch of biology deals with the study of inheritance and variation. It deals with the study of how variations (differences) occur between parents and their offspring. It is also concerned with how various characteristics are passed on from parents to offspring.
c. **Entomology** - This is the study of insects.
d. **Parasitology** - This is the study of parasites.
e. **Physiology** - This deals with the study of the functions of various structures of an organism. It deals with the processes that take place in the body of organisms.
f. **Anatomy** - The study of the internal structure of organisms.
g. **Microbiology** - This is the study of microorganisms.
h. **Bacteriology**- The study of bacteria.
i. **Ornithology** - This is the study of birds.
j. **Itchthology** - This is the study of fishes
This list is in-exhaustive as there are very many other branches of biology.

Importance of biology

The study of biology is very important. The knowledge acquired from this study can benefit an individual in myriad ways. The study of biology is important in that:

- The knowledge acquired from the study of biology can be very helpful in solving environmental problems such as food shortage, poor health services, pollution and environmental degradation.
- The study of biology can grant one an entry into various careers such as medicine, veterinary medicine, animal husbandry, horticulture and dentistry.
- The study of biology leads to development of scientific skills which are very useful in life. These include skills of observing, identifying, recording, classifying, measuring, analyzing and evaluating. These skills can enable one learn how to make right choices and lead an improved life.
- Through the study of biology man learns the causes of human, plant and human diseases and how best these diseases can be prevented and cured.
- Biological knowledge acquired in the study of biology is very useful in enhancing international cooperation. Some biology related international conventions include:
    - Joint development of HIV/AIDS vaccine by Kenyan and British scientists.
    - The coordinated fight against Severe Acute Respiratory Syndrome involving scientist all over the world.
    - The fight to save the ozone layer from depletion through various international agreements such as the Kyoto protocol.
    - Management of resources through international treaties such as the CITES (Convention against International Trade on Endangered Species).

Characteristics of Living Organisms

Living things share a lot of characteristics in common. These characteristics are discussed below.

a. Nutrition

Nutrition is the process by which living things obtain and assimilate (utilize) nutrients. Living things require nutrients for various purposes; growth, repair of worn out tissues and for provision of energy. Plants manufacture their own food using light energy, carbon (IV) oxide, water and mineral salts through the process of photosynthesis. Conversely, animals feed on already manufactured