

1.0 BIOLOGY

Biology can be derived from two Greek words (Bio - Life & Logy/logo's - Study). Biology is the study of life or animate object e.g plant and animal.

1.1 MAJOR BRANCH OF BIOLOGY

- A. Botany: This deal with the study of plants.
- B. Zoology: This deal with the study of animal.
- C. Anatomy: This deal with the structure of cells, tissues, organ and system.
- D. Physiology: This deal with different part of the body functions.
- E. Micro-Biology: This deals with the study of microscopic organism (virus, fungi, bacteria).
- F. Mycology: This deal with the study of fungi
- G. Virology: This deal with the study of virus
- H. Cytology: This deal with the study of cells
- I. Histology: This deal with the study of tissues.
- J. Pantology: This deal with the study of diseases.
- K. Bacterophage: This deal with the study of bacteria.

1.2 BIOLOGY AS AN INQUIRY OF SCIENCE

Science is the systematic approach of making inquiry about the living and non-living things in an environment. Living things posses some characteristics which can be represented with a formula called MR NIGER CAD

M >> Movement: Every living organism must be able to move from one place to another. They move in search of food to escape from danger and in respond to stimuli are unlimited.

R >> Respiration: Is the process by which an organism exchange gases within its environment. They breath in oxygen & breath out carbondioxide and water vapor.

N >> Nutrition: Is the process by which an organism either plants or animals feeds. They must be able to feed in order to gain for growth and productions.

I >> Irritability: This is the ability of an organism to respond to stimuli. They change in environment.

G >> Growth: All living organism must grow. This is irreversible increase in size and complexity of an organism due to a synthesis of new protoplasm. The growth in plant is indefinite and apical, while growth in animal is definite and intercalany.

E >> Excretory: This is the removal of metabolic waste product from the body of an organism. The waste product which are toxic in organism must be removed. Animals have excretory organs while plants do not have.

R >> Reproduction: This is the ability of any organism to give birth to a new offspring or progeny. Reproduction is classified into;

- (i) Sexual Reproduction: Reproduction that involves two parents (Male & Female).
- (ii) Asexual Reproduction: Reproduction that involves one parents.

C >> Competition: This is the ability of an organism to compete for limited available resources. examples; water , food, in order to survive the environment.

A >> Adaptation: This is the process by which organism get used to an environment in order to survive. Every living organism posses some structure and function that enable them to live successfully in environment.

D >> Death: All living organism have a life span.

1.3 DIFFERENCE BTW PLANT & ANIMAL

{ PLANT }

1. Plant can photosynthesis.
2. Plant have large vacuole.
3. Plant have no excretory organs.
4. Plant have no respiratory organs.
5. Plant have chlorophyll.
6. Plant respond slowly to stimuli.
7. Plant have no sense organs.
8. Plant have no bromatory organs.
9. Plant feeding system is Autotrophic.
10. Plant cannot move.

{ ANIMAL }

1. Animal cannot photosynthesis.
2. Animal have small vacuole.
3. Animal have excretory organs.
4. Animal have respiratory organs.
5. Animal don't have chlorophyll.
6. Animal respond fast to stimuli.
7. Animal have sense organs.
8. Animal have bromatory organs.
9. Animal feeding system is heterotropic.

10. Animal can move.

1.4 CLASSIFICATION OF LIVING THINGS

This involves placing together organism that have the characteristics or that resemble one another into the same group. The system classified of living things was introduced by the scientist "Carl Linnaeus" in 1707 - 1778. He published his first book on plant in 1753, and on animal in 1758. He used 7 Hierarchies in classification of living organism, These include; Classification of MAN & DOG.

1. KINGDOM == (MAN >> Animalia) & (DOG >> Animalia)
2. PHYLUM == (MAN >> Chordata) & (DOG >> Chordata)
3. CLASS == (MAN >> Mamalia) & (DOG >> Mamalia)
4. ORDER == (MAN >> Primates) & (DOG >> Carnivora)
5. FAMILY == (MAN >> Homonidea) & (DOG >> Felidea)
6. GENUS == (MAN >> Homo) & (DOG >> Panthera)
7. SPECIES == (MAN >> Sapiens) & (DOG >> Leo)

1.5 BINOMIAL NOMENCLATURE

This is the act of given name to an organism. The Generic which begins with capital letter and the Specific method of naming was introduced by Carl Linnaeus, which is used by most science today. Example;

1. RICE -- *Oryza sativa*
2. COCOA -- *Theobroma cacao*
3. HOUSEFLY -- *Musca domestical*
4. DOG -- *Carnis domestical*
5. COCKROACH - *Periplanata americana*
6. POTATO -- *Ipomea babatas*
7. CASHEW -- *Anarcadium occidentalis*
8. ORANGE -- *Citrus sinesis*
9. TANGERINE -- *Citrus recticalata*
10. PAWPAW - *Carica papalia*
11. TOMATOES -- *Hypersicon esculentum*
12. CASSAVA -- *Manihot esculentum*
13. MAIZE -- *Zea mays*

1.6 DIVISION OF PLANT

Plants are divided into 5, which can be represent by a formula called "STBPS"

S >> Schizophyta

T >> Thallophyta

B >> Bryophyta
P >> Pteridophyta
S >> Spermatophyta

1.6.1 (A) SCHIZOPHYTA

- * They are unicellular organism
- * They reproduced by binary fission
- * They have prokaryotic cell
- * They belong to manera
- * Examples are Virus, Bacteria, Blue-green-algae

virus

Blue-green-algae

1.6.2 (B) THALLOPHYTA

This consist of "FUNGI" and "ALGAE" Which may exist together as "LICHEN". They are usually found in most environment or dirty place.

FUNGI

- * They does not have chlorophyll
- * They lack true root stem and leave
- * They are mostly found in moist environment
- * Some are parasitic, other are saprophytic
- * Example; Mushroom,yeast,muccor,pericillum.

Mushroom

ALGAE

- * Some are unicellular, Others are multi-cellular
- * They are mainly of antic
- * They produce their own food
- * They have cellular wall
- * Example; Euglena,chlamydomonas,spirogyra,volvox.

1.6.3 (C) BYROPHYTA

- * They lack true root, stem and leaf but possess rhizoid
- * They are non vascular plant
- * They are complex and multi-cellular green plant
- * Some are terrestrial, others are aquatic
- * Examples; Mosses and liverwort

1.6.4 (D) PTERIDOPHYTA

- * They are non flowering plants
- * They do not bear seed
- * They are multi-cellular green plant
- * They are vascular plant
- * They reproduce asexually by spore

1.6.5 (E) SPERMATOPHYTA

- * They are multi-cellular, seed producing & flowering plant
- * They are vascular green plant
- * They are mainly terrestrial
- * They reproduce sexually
- * They have true root stem and leaves

NOTE: Spermatophyta can be classified into main classes (i) Gymnosperm (ii) Angiosperm

1. Gymnosperm

- * They are plant with naked seed
- * They do not bear flowers
- * They are mainly terrestrial plant

2. Angiosperm

- * They are vascular plant
- * They are most complex green flowering plant
- * They are mainly terrestrial plant

DIVISION OF ANGIOSPERM

Angiosperm can be sub-divided into (i) Monocotyledon (ii) Dicotyledon plants

1. MONOCOTYLEDON PLANT

- * They have fibrous root
- * They don't undergo secondary growth
- * They have parallel venation
- * Example; Cashew

2. DICOTYLEDON

- * They have tap root system
- * They have two seed leaves
- * They undergo secondary growth
- * Example; Mango, Orange, Cowpea, Groundnut.

REVISION EXERCISE

- [1] What is biology
- [2] List & Explain the branches of biology
- [3] Explain the Characteristics of Living things called MR NIGER D
- [4] Difference btw plant and animal
- [5] What is binomial nomenclature of (Rice, cockroach, maize, pawpaw)
- [6] List the 5 division of plant
- [7] Give 3 characteristics each of the 5 division of plants
- [8] Draw a well labeled diagram of Spirogyra, Euglena, Volvox, Chlamydomonas
- [9] List 5 each characteristics of Angiosperm and Gymnosperm
- [10] Differentiate btw Monocotyledon and Dicotyledon

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