CLASS XI BIOLOGY

LESSON 1 : THE LIVING WORLD

MODULE 1/1

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WHAT IS LIVING?

- There are certain distinctive characteristics exhibited by living organisms.
- Such characteristics distinguish living from the non living;they include growth, reproduction. Metabolism, Response to the stimulus and self-organisation,interactions and emergence.

A.Growth

- Growth is defined as an irreversible increase in the number of cells and mass of the living structure.
- If we consider increase in body mass as growth, non-living objects like sand dunes etc grow too.
- Hence, growth cannot be taken as a defining property of living organisms though it is a characteristic of only living organisms.

B.Reproduction

- Unicellular organisms reproduce or multiply by cell division.
- In multicellular organisms, reproduction mostly refers to sexual reproduction, some of them reproduce asexually also.
- Reproduction cannot be considered as a defining characteristic of living organisms for the following reasons:
- _In single so-called organisms, growth and reproduction are synonyms. An increase in number of cells is considered as growth as well as reproduction.

--Organisms like mule,the sterile worker bees etc do not reproduce at all.

C.Metabolism

- The sum total of all chemical reactions occuring in a living organism is called metabolism.
- All living organisms, be they unicellular or multicellular, exhibit metabolism, without exception but no non-living things show metabolism
- Hence metabolism and cellular organisation are considered as defining characteristics of living beings.

Response to stimulus

- It refers to the ability of all living organisms whether prokaryotes or eukaryotes, simple or complex in organisation, have the ability to sense the conditions in their surroundings and respond to these stimuli which may be physical, chemical or biological.
- Consiousness is the defining property of living organisms.
- Human beings are the only organisms to have self-consciousness.

BIODIVERSITY

- Biodiversity refers to the number and types of organisms present on the earth.
- Each different kind of organism represents a species.

IDENTIFICATION

- Identification is to determine the correct place of an organism in a previously established plan of classification.
- The characteristic feature of various parts of an organism are compared with those of the already known species to determine their similarities and differences and to assign it to a particular group.

NOMENCLATURE

- It is not possible to identify the vast number of organisms based on their common names. Hence scientific names are given to them.
- The scientific names ensure that each organism has only one name. Description of an organism should enable the people of any part of the world to arrive at the same name. Such a name has not been used for any other organism.

A. BINOMIAL NOMENCLATURE

- This method was introduced by Carolus Linnaeus.
- It is a method in which every organism is given a scientific name which has two parts-the first I'd the generic epithet and the second is the specific epithet.

Eg;*Mangifera indica* for Mango

Homosapiens for human beings.

PRINCIPLES OF NOMENCLATURE

- The rules for nomenclature are provided in the International Code of Botanical Nomenclature (ICBN)for plants and in the International Code of zoological Nomenclature (ICZN)for animals.
- Biological names are generally in Latin and written in Italics.They are satirised or derived from Latin irrespective of their origin.
- The first word in a biological name represents the genus while the second component denote the specific epithet.
- Both the words in a biological name, when hand written are separately underlined or printed in italics to indicate their Latin origin.
- The first word denoting the genus start with a capital letter while the specific epithet starts with a small letter.

CLASSIFICATION

- It is nearly impossible to study all the living organisms but classification makes possible the scientific study of such a wide variety of organisms.
- Organisms are grouped into categories called taxa and representatives from each taxon is studied.

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DELETED PORTIONS CLASS XI

- **Under Unit 1: Diversity of Living Organisms**
  - **Chapter-1: The Living World**
    - taxonomy and systematics;
    - tools for study of taxonomy- museums, zoological parks, herbaria, botanical gardens, keys for identification.