

THE LIVING WORLD

Notes for KITE Victers Zoology Class (Class :1) 10/11/2020

For viewing the class click the link below

<https://www.youtube.com/watch?v=cmjQOsibFmE>



Concepts

- 1) Characteristics of living organisms
- 2) Biodiversity
- 3) Taxonomic categories
- 4) Taxonomical aids

Characteristics exhibited by living organisms

- Growth
- Reproduction
- Metabolism
- Cellular organisation of the body
- Consciousness

Growth

- All living organisms grow
- Increase in mass and increase in number of individuals are twin characteristics of growth.
- Unicellular organisms and multi cellular organism grow by **cell division**.

What is the difference between the growth of Plants and Animals ?

- In plants, growth by cell division occurs continuously throughout their life span.

- In animals, growth is seen only up to a certain age.

Why growth is not considered as a defining property of living things.

- Non-living objects also grow if we take increase in body mass as a criterion for growth.
- Mountains, boulders and sand mounds do grow.
- However, this kind of growth exhibited by non-living objects is by accumulation of material on the surface.
- In living organisms, growth is from inside.
- In non living things growth is an external property.
- Growth, therefore, cannot be taken as a defining property of living organisms.

REPRODUCTION

- In multicellular organisms, reproduction refers to the production of progeny possessing features more or less similar to those of parents
- Two types of Reproduction are there ,Sexual reproduction and Asexual reproduction

Examples for Asexual reproduction

- Fungi multiply and spread easily due to the millions of asexual spores
- In lower organisms like yeast and hydra, reproduction is by budding.
- In Planaria (flat worms), reproduction is by regeneration.
- The fungi,the filamentous algae, the protonema of mosses, all easily multiply by fragmentation.

Why reproduction cannot be considered as an all-inclusive defining characteristic of living organisms.

- Unicellular organisms like bacteria, unicellular algae or Amoeba, reproduction is synonymous with growth, i.e., increase in number of cells is growth as well as reproduction.

- There are many organisms which do not reproduce (**mules, sterile worker bees, infertile human couples**, etc).
- Hence, reproduction also cannot be an all-inclusive defining characteristic of living organisms.

METABOLISM

- The sum total of all the chemical reactions occurring in our body is metabolism.
- Metabolism includes catabolism and anabolism.
- There are thousands of metabolic reactions occurring simultaneously inside all living organisms.

Metabolism is considered as a defining feature of all living organisms.

Justify the statement.

- No non-living object exhibits metabolism.
- Metabolic reactions can be demonstrated outside the body in cell-free systems.
- An isolated metabolic reaction(s) outside the body of an organism, performed in a test tube is neither living nor non-living.
- Isolated metabolic reactions in vitro are not living things but surely living reactions.
- Hence, metabolism is considered as a defining feature of living organisms. another

Cellular organisation of the body is another defining feature of life forms.

Consciousness

- All organisms, from the prokaryotes to the most complex eukaryotes can sense and respond to environmental stimulus.
- Plants respond to external factors like light, water, temperature, other organisms, pollutants, etc
- We sense our environment through our sense organs.
- Human being is the only organism who is aware of himself, i.e, has self-consciousness.

- **Consciousness therefore, becomes the defining property of living organisms**

When it comes to human beings, it is difficult to define the living state. Justify.

- We observe patients lying in coma in hospitals virtually supported by machines which replace heart and lungs.
- The patient is otherwise brain-dead.
- The patient has no self-consciousness.
- While considering such situations it is difficult to define living state in human beings.

ASSIGNMENT

Identify atleast 100 living organisms (including animals and plants from your surroundings

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