

THE BOARD STUDY

Premium Notes - Selected Sample Pages

CLASS 11 BIOLOGY

ENGLISH MEDIUM

10-PAGE DEMO

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The Living World

What is 'Living'?

When we consider something living, we use some criterias such as growth, reproduction, ability to sense, metabolism, ability to self-replicate, self organise, interaction and emergence.

But can we consider all these things as a defining feature of life form.

Defining feature → 100% present in living
0% Present in Non-living.

1. Growth :-

— Increase in mass and increase in number of individuals are twin characteristics of growth.

— Unicellular organisms grow by cell division. So, growth and reproduction are mutually inclusive in case of unicellular org.

— In Multicellular organisms, growth and reproduction are exclusive events.

Plant Kingdom

Do not have differen-
tiated plant Parts
(Leaf, stem, Root)

Thalophyta (Algae)

- chlorophyceae
- Phaeophyceae
- Rhodophyceae

Have differentiated
Plant parts

without
specialised
Vascular
tissue

Bryophyta

- Liverworts
- Mosses

with
Vascular
tissue

Do not produce seeds
(Cryptogamous)

Pteridophyta

Produce seed -
Phanerogamous

Bear naked
Seeds

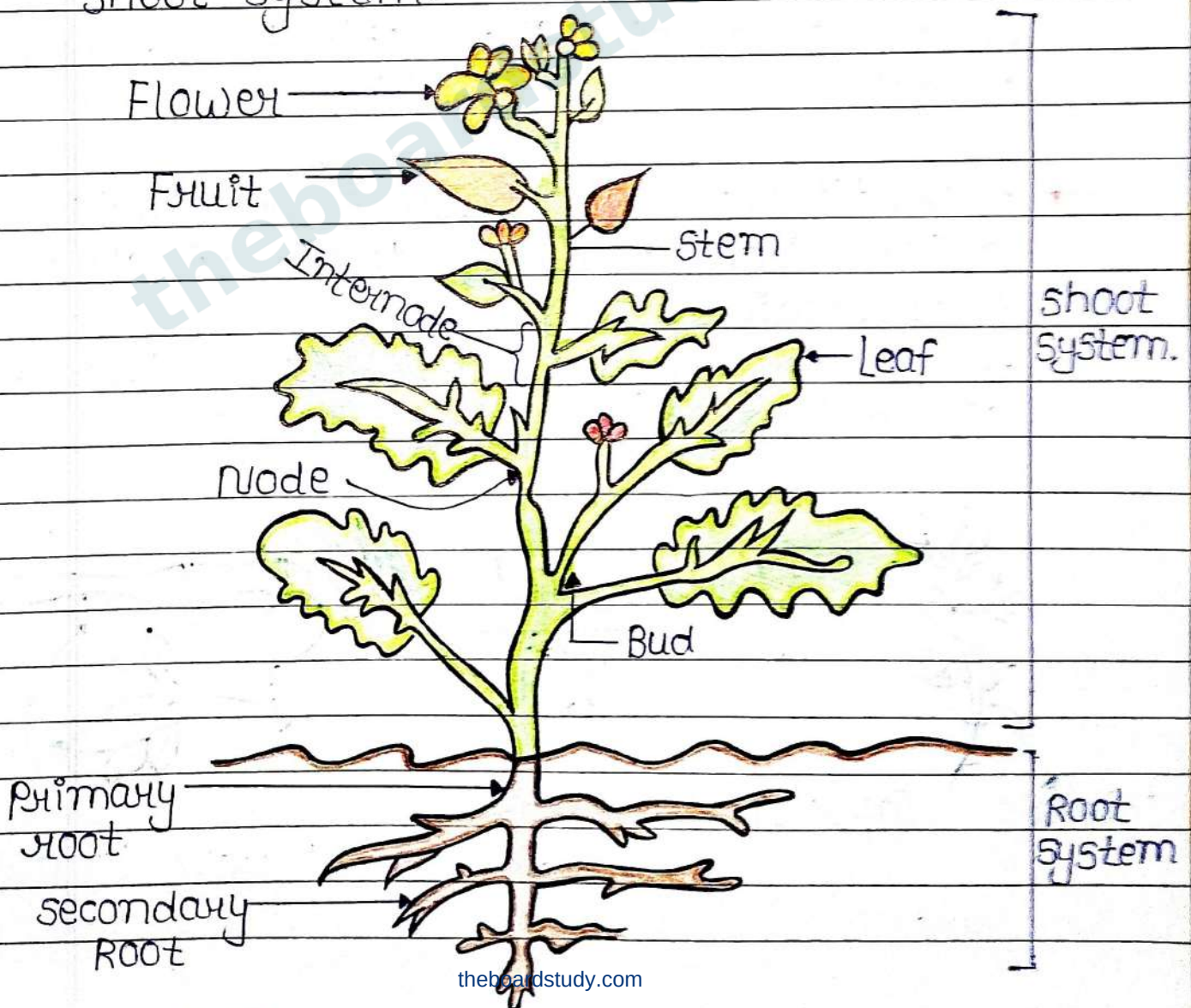
Gymnosperms

Bear Seeds
inside fruits

Angiosperms

Morphology of Flowering Plants

- Angiosperm are the flowering plants. They show a large diversity in external structures (morphology).
- The underground part of flowering plant is root system, the above portion forms shoot system.



Cell : The Unit of Life

Cell : It is the structural and functional unit of life.

Cell is the key feature of living beings.

Anything less than a complete structure of a cell does not ensure independent living.

- Robert Hooke — Discovered first a non-living cell (1665).
- Anton von Leeuwenhoek — Saw and described a live cell (1674).
- Robert Brown — Discovered nucleus (1831).

Unicellular Organisms are composed of single cell. e.g. Monera, Protista.

They are capable of —

→ Independent existence

→ Performing essential function of life.

Multicellular Organisms — Composed of many cells.

e.g. Fungi, Plants, animals.

Minimum Requirement to be a cell :-

→ Plasma - Membrane

→ Cytoplasm

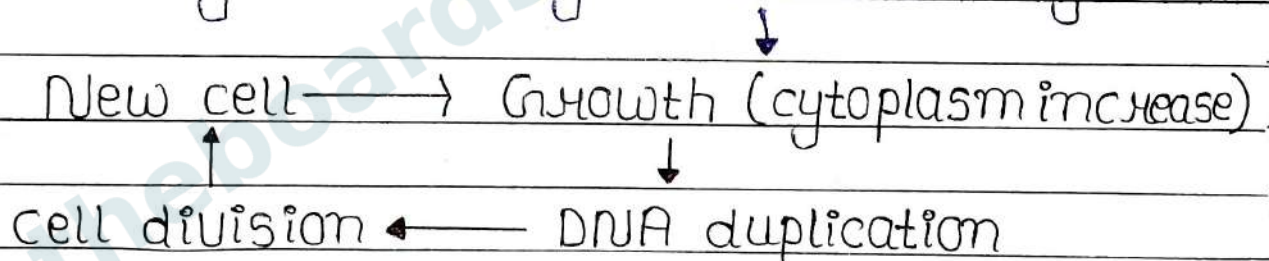
Cell Cycle and Cell Division

→ According to cell - theory. cells arise from pre - existing cells.

The process by which it occurs is known as cell - division.

→ Newly formed cells grow and prepare it self for next division.

So cell grow through a basic cell cycle.



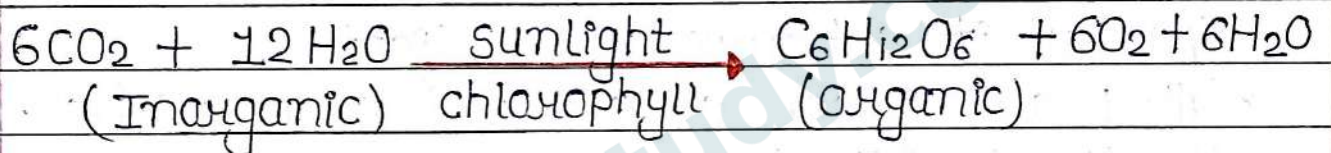
Cell - Cycle

→ The sequence of events by which a cell duplicates its genome, synthesis the other constituents of the cell and eventually divides into two daughter cell is termed cell cycle.

→ The stages through which a cell passes from one division to the next is called cell cycle.

Photosynthesis in Higher Plants

- ◆ Photosynthesis is conversion of inorganic substances (CO_2 and H_2O) into organic food (Glucose) by green plants with the help of sunlight and chlorophyll.



Importance of photosynthesis

- ~ Primary source of all food
- ~ Release oxygen into atmosphere.

» Photosynthesis is a :-

- Anabolic (formation) process.
- Endothermic process
- Redox reaction $\begin{cases} \rightarrow \text{oxidation of } \text{H}_2\text{O} \text{ into } \text{O}_2 \\ \rightarrow \text{Reduction of } \text{CO}_2 \text{ into } \text{C}_6\text{H}_{12}\text{O}_6. \end{cases}$
- Physico-chemical change.

► What do we know ?

Breathing & Exchange of Gases

✦ Respiration — It is a physicochemical process, which includes :-

1. Breathing or Ventilation
2. Diffusion of gases (external respiration)
3. Transport of gases
4. Diffusion (Internal)
5. cellular respiration → chemical

Physical

S.NO.	Respiratory organs	Eg. of Animals
1.	General Body surface.	Porifera to Aschelminths.
2.	Moist skin / cuticle	Earthworm, Frog, etc. (Amphibians)
3.	Gills	Fish, Aq. arthropoda, Tadpole of Frog.
4.	Book Gills	Limulus (king crab) — Living fossil.
5.	Book Lungs	Scorpion and spider.
6.	Tracheal tubules	cockroach, insects (Arthropoda).

Excretory Products & Their Elimination

- Animals accumulate ammonia, urea, uric acid, carbon dioxide, water and ions like Na^+ , K^+ , Cl^- , PO_4^{3-} , SO_4^{2-} , etc by — (i) metabolic activities
Excess ingestion

» Carbohydrate and fats ($\text{C}, \text{H}, \text{O}$) $\xrightarrow[\text{waste}]{\text{Metabolism}}$ $\text{CO}_2 + \text{H}_2\text{O}$

» Protein ($\text{C}, \text{H}, \text{O}, \text{N}$) $\xrightarrow[\text{waste}]{\text{metabolic}}$ Nitrogenous waste (NH_3 , urea, uric acid)

» Excess ingestion $\longrightarrow$ water and minerals

→ These substances have to be removed totally or partially from the body.

→ EXCRETION :- Mechanism or process of removing metabolic waste (especially nitrogenous waste) and substance accumulated due to excess ingestion.

→ Excretory structures of different organisms :-

Chemical Coordination & Integration

► Endocrine Gland and Hormones

- Gland :- cell or organ which forms or secrete something.

On the basis of their exine (secretion), glands are 3 types :-

Glands

Exocrine Gland	Endocrine Gland	Heterocrine/composite Gland
- Have duct.	- Ductless Gland	- Contain both.
- e.g. sweat Gland, oil Gland.	- Glands of internal Secretion.	- e.g. Pancreas
	- Blood to target organ.	Insuline Hormone
	- Secretion are called Hormone.	Gonads (Testis+ovary)
		Gametes Hormone

cannot broken in energy

Hormones are non-nutrient chemicals which act as intercellular messengers and are produced in trace amounts. (in ng)

primary messenger