ATOMIC ENERGY CENTRAL SCHOOL, INDORE

MODULE 3.1

BIOLOGY- STANDARD XI

UNIT 1 :

DIVERSITY IN THE LIVING WORLD

CHAPTER 3 :

PLANT KINGDOM

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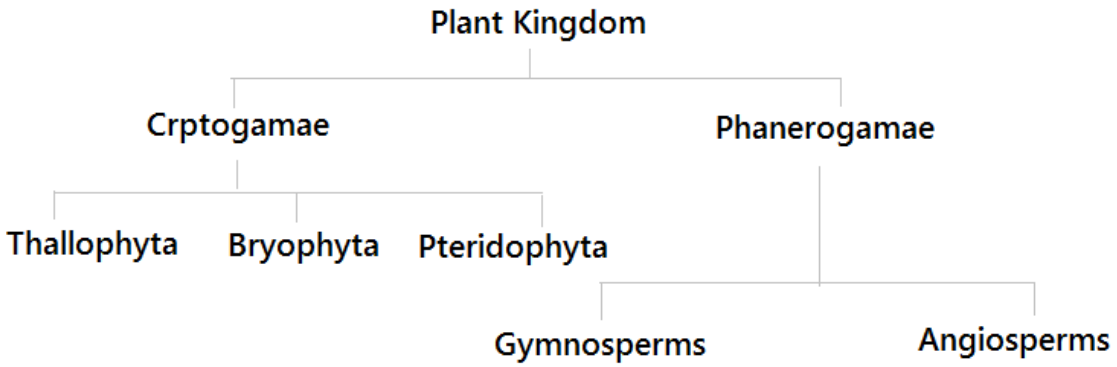
PGT(SS) - BIOLOGY

Kingdom Plantae

Kingdom Plantae includes green, brown and red algae, liwerworts, mosses, ferns and seed plants with or without flowers.

- Multicellular organisms with walled and frequently vacuolate eukaryotic cells.
- Principle mode of nutrition is photosynthesis but number of plants has become absorptive.
- Primarily non-motile, living anchored to a substrate.
- Structural differentiation leading towards organs of photosynthesis, anchorage and support and in higher forms towards specialized photosynthetic, vascular and covering tissues.
- Reproduction is primarily asexual or sexual. The reproductive organs are multicellular.
- A multicellular embryo is formed during development from the zygote. Algae lack embryo stage. Life cycle consists of alternating haploid gametophyte and diploid sporophyte generation. This phenomenon is called alternation of generation.



- **Thallophyta**

ALGAE

- The branch of botany dealing with the study of algae is called as phycology or algology.
- It is derived from the Greek word *Phytos* which means 'alga' or 'sea weed'.
- They are simple, autotrophic non-vascular plants having unicelled sex organs and no embryo formation.
- According to Fritsch, (1935) the designation alga must include all holophytic organisms.

Classification: Linnaeus (1754) differentiated a group of plant and called as 'algae' where he included lichens and liverworts also. Fritsch (1935) classified algae into 11 classes as under

Rhodophyceae

(a) Plants generally marine.

(b) Forms filamentous to parenchymatous.

(c) Cells showing eukaryotic organization.

(d) Chief pigments – Chlorophyll a, d is present but chlorophyll c is absent; a, b–carotene, lutein, violaxanthin, fucoxanthin, myxoxanthin, g–phycoerythrin, g–phycocyanin and allophycocyanin.

(e) Reserve food – Floridean starch, galactan –SO_4 polymers.

(f) No zoospore formation.

(g) Male gametes non-flagellate.

(h) Sexual reproduction by specialized type of oogamy.

(i) Life cycle haplobiontic or diplobiontic.

Chlorophyceae

(a) Plants fresh water or marine.

(b) Forms unicelled to parenchymatous.

(c) Cells showing eukaryotic organization.

(d) Chief pigments – Chlorophyll a, b; a, b, g– carotenes, lycopene, lutein, violaxanthin.

(e) Reserve food – Starch and oils.

(f) Zoospore formation occurs.

(g) Male gametes flagellate.

(h) Flagella identical.

(i) Sexual reproduction – Isogamous, anisogamous or oogamous.

Phaeophyceae

(a) Plants marine

(b) Forms unicelled to parenchymatous

(c) Cells showing eukaryotic organization

(d) Chief pigments – Chlorophyll a, c; beta–carotene, fucoxanthin, lutein, violaxanthin, diatoxanthin.

(e) Reserve food – Laminarin, mannitol and oils.

(f) Zoospore formation occurs.

(g) Male gametes flagellate.

(h) Flagella unequal.

(i) **Sexual reproduction** – Isogamous , anisogamous or oogamous.

References

1. NCERT. BIOLOGY TEXTBOOK FOR CLASS XI
2. CONCEPTS OF BIOLOGY (R.L. KOTPAL / BENDRE/TYAGI)

https://www.ruf.rice.edu/~bioslabs/studies/invertebrates/kingdoms.html