Chapter 3: Kingdom Plantae

EXERCISE [PAGES 27 - 28]

Exercise | Q 1. (A) | Page 27
Choose the correct option.
Which is the dominant phase in Pteridophytes?

1. Capsule
2. Gametophyte
3. **Sporophyte**
4. Embryo

SOLUTION

Sporophyte

Exercise | Q 1. (B) | Page 27
Choose the correct option.
The tallest living gymnosperm among the following is _____.

1. **Sequoia sempervirens**
2. Taxodium mucronatum
3. Zamia pygmaea
4. Ginkgo biloba

SOLUTION

The tallest living gymnosperm among the following is **Sequoia sempervirens.**

Exercise | Q 1. (C) | Page 27
Choose the correct option.
In Bryophytes _____.

1. Sporophyte and gametophyte generation are independent
2. **Sporophyte is partially dependent upon gametophyte**
3. Gametophyte is dependent upon Sporophyte
4. Ginlgo biloba

SOLUTION

In Bryophytes **sporophyte is partially dependent upon gametophyte.**

Exercise | Q 1. (D) | Page 27
Choose the correct option.
A characteristic of Angiosperm is _____.

1. Colloteral vascular bundles
2. Radial vascular bundles
3. Seed formation
4. **Double fertilization**

SOLUTION

A characteristic of Angiosperm is **double fertilization.**

Exercise | Q 1. (E) | Page 27

Choose the correct option.

Angiosperms and Gymnosperms resemble in having _____.

a. Vessels in wood
b. Mode of nutrition
c. Siphonogamy
d. Nature of seed

SOLUTION

Angiosperms and Gymnosperms resemble in having **vessels in wood** and **nature of seed**.

Exercise | Q 2 | Page 27

How you place the pea, jowar and fern at its proper systematic position? Draw a flow chart.

SOLUTION

Classification of Pea	Classification of Jowar	Classification of Fern
Kingdom: Plantae	**Kingdom:** Plantae	**Kingdom:** Plantae
Sub-kingdom: Phanerogamae	**Sub-kingdom:** Phanerogamae	**Sub-kingdom:** Cryptogamae
Division: Angiospermae	**Division:** Angiospermae	**Division:** Pteridophyta
Class: Dicotyledonae	**Class:** Monocotyledonae	**Class:** Pteropsida

Exercise | Q 3 | Page 27

Complete the following table.

Groups of algae	Chlorophyceae	Phaeophyceae	Rhodophyceae
1. Stored food	Starch		
2. Cell Wall		Cellulose and algin	
3. Major pigments			Chl- a, d and Phycoerythrin

SOLUTION

Groups of algae	Chlorophyceae	Phaeophyceae	Rhodophyceae
1. Stored food	Starch	**Mannitol, laminarin**	**Floridean starch**
2. Cell Wall	**Cellulose**	Cellulose and algin	**Cellulose, pectin**
3. Major pigments	**Chl-a, b**	**Chl-a, c, fucoxanthin**	Chl- a, d and Phycoerythrin

Exercise | Q 4 | Page 27

Differentiate between Dicotyledonae and Monocotyledonae based on the following characters:

a. Type of roots
b. Venation in the leaves
c. Symmetry of flower

SOLUTION

	Characters	Dicotyledonae	Monocotyledonae
a.	**Type of roots**	Tap roots	Fibrous roots
b.	**Venation in the leaves**	Reticulate venation	Parallel venation
c.	**Symmetry of flower**	Tetramerous or Pentamerous symmetry	Trimerous symmetry

Exercise | Q 5. (A) | Page 27

Answer the following question.
We observe that land becomes barren soon after monsoon. But in the next monsoon it flourishes again with varieties we observed in season earlier. How you think it takes place?

SOLUTION

1. After monsoon, plants like mosses (bryophytes), ferns (pteridophytes), small herbaceous plants, etc become dry, due to which land becomes barren.
2. However, spores of bryophytes, pteridophytes, and seeds of herbaceous plants, grass remain in a barren land.

3. During next monsoon, these spores and seeds germinate due to availability of water and other favourable conditions.
4. Bryophytes and pteridophytes require water for reproduction. Hence they flourish during the monsoon season.
5. Along with bryophytes and pteridophytes varieties of higher plants like grasses, some seasonal herbs or shrubs grow on barren land during monsoon due to favourable conditions.

Exercise | Q 5. (B) | Page 27

Answer the following question.
Fern is a vascular plant. Yet it is not considered a Phanerogams. Why?

SOLUTION

1. Fern belongs to sub-kingdom Cryptogamae.
2. Cryptogams produce spores but do not produce seeds.
3. Also, in cryptogams, the sex organs are concealed.
4. Phanerogams are seed-producing plants and their sex organs are visible. Hence, fern is a vascular plant. Yet it is not considered a Phanerogams.

Exercise | Q 5. (C) | Page 27

Answer the following question.
Chlamydomonas is microscopic whereas Sargassum is macroscopic; both are algae. Which characters of these plants includes them in one group?

SOLUTION

1. Both Chlamydomonas and Sargassum belong to division Thallophyta.
2. Members of Thallophyta range from unicellular (e.g. Chlamydomonas) to multicellular (e.g. Sargassum).
3. Both are aquatic plants containing photosynthetic pigments.
4. In both Chlamydomonas and Sargassum plant body is not differentiated into root, stem, and leaves.
5. The stored food is mainly in the form of starch and its other forms.
6. The cell wall is made up of cellulose and other components. Due to these characters, both Chlamydomonas and Sargassum are included in one group i.e. Thallophyta.

Exercise | Q 5. (D) | Page 27

Answer the following question.
Which of the following nuts will not be enclosed in fruits? What are the peculiar characteristics of these plants? Betel nut/ Areca nut, pine nut, walnut, almond, cashew nut, nutmeg.

SOLUTION

1. Pine nuts are edible seeds of pines which are not enclosed in a fruit. It belongs to class gymnospermae thus, seeds are not enclosed within the fruit.
2. Nuts like betel nut/ areca nut, walnut, almond, cashew nut, nutmeg will be enclosed in fruits. It is because these plants belong to class angiospermae in which seeds are enclosed within the fruit.

Exercise | Q 6 | Page 27

Girth of a maize plant does not increase over a period of time. Justify.

SOLUTION

1. Maize plant belongs to class monocotyledonae.
2. In monocotyledonous plants, vascular bundles are closed type.
3. Thus, cambium is absent between xylem and phloem, due to which secondary growth does not occur in these plants.
4. Increase in girth of a stem occurs by secondary growth. Thus, the girth of a maize plant does not increase over a period of time.

Exercise | Q 7 | Page 27

Radha observed a plant in rainy season on the compound wall of her school. The plant did not have true roots but rootlike structures were present. Vascular tissue was absent. To which group the plant may belong?

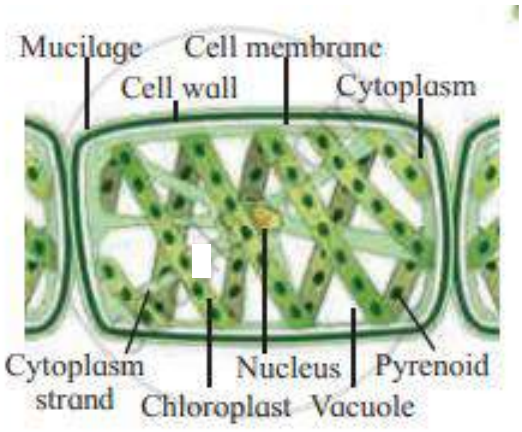
SOLUTION

The plant observed by Radha belongs may belong to division Bryophyta, as it shows root like structures i.e. rhizoids and absence of vascular tissue.

Exercise | Q 8. (A) | Page 28

Draw a neat labelled diagram.
Spirogyra

SOLUTION

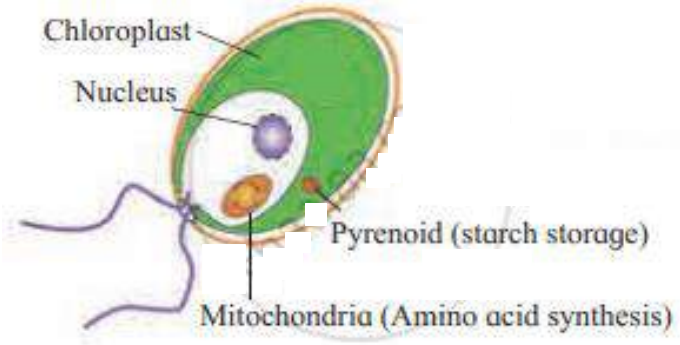


Exercise | Q 8. (B) | Page 28

Draw a neat labelled diagram.

Chlamydomonas

SOLUTION

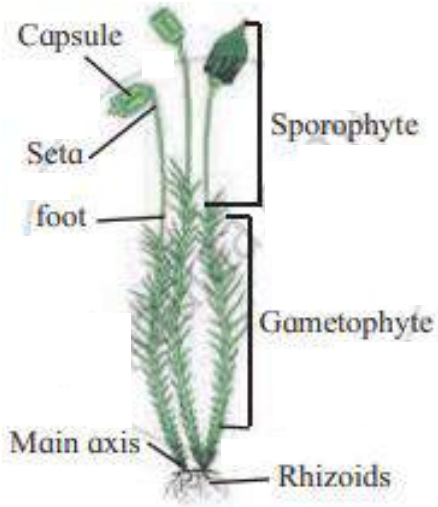


Exercise | Q 8. (C) | Page 28

Draw a neat labelled diagram.

Funaria

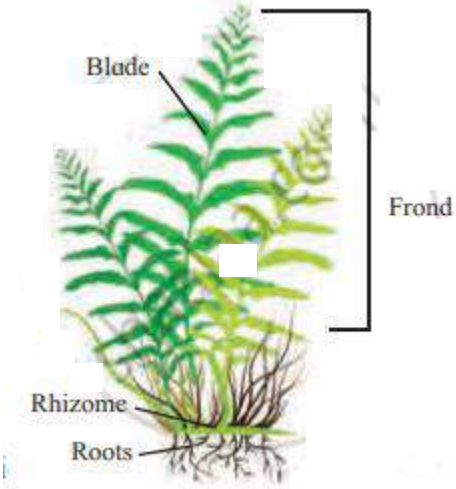
SOLUTION



Exercise | Q 8. (D) | Page 28

Draw a neat labelled diagram.
Nephrolepis

SOLUTION

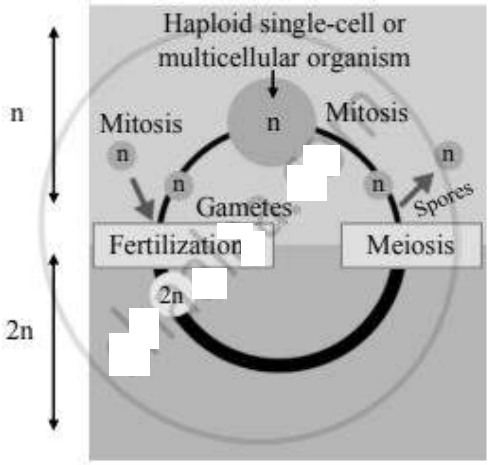


Exercise | Q 8. (E) | Page 28

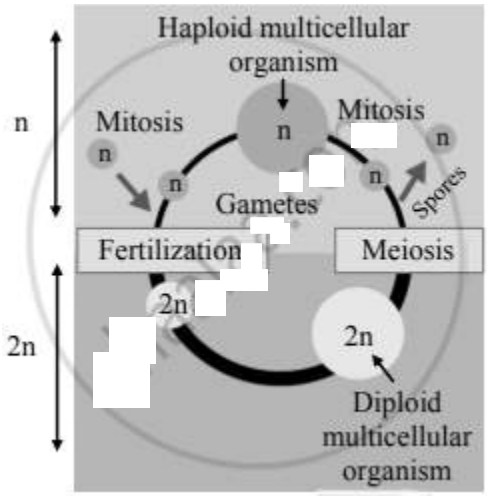
Draw a neat labelled diagram.
Haplontic and haplodiplontic life cycle

SOLUTION

Haplontic life cycle-



Haplo-diplontic life cycle-



Exercise | Q 9. (A) | Page 28
Identify the plant group on the basis of the following feature:
Seed producing plants

SOLUTION

Phanerogams (Angiospermae and Gymnospermae)

Exercise | Q 9. (B) | Page 28
Identify the plant groups on the basis of the following feature:
Spore producing plants

SOLUTION

Cryptogams (Thallophyta, Bryophyta and Pteridophyta)

Exercise | Q 9. (C) | Page 28
Identify the plant groups on the basis of the following feature:

Plant body undifferentiated into root, stem, and leaves

SOLUTION

Thallophyta, Bryophyta

Exercise | Q 9. (D) | Page 28

Identify the plant group on the basis of the following feature.

Plant needs water for fertilization

SOLUTION

Thallophyta, Bryophyta, Pteridophyta

Exercise | Q 9. (E) | Page 28

Identify the plant group on the basis of the following feature.

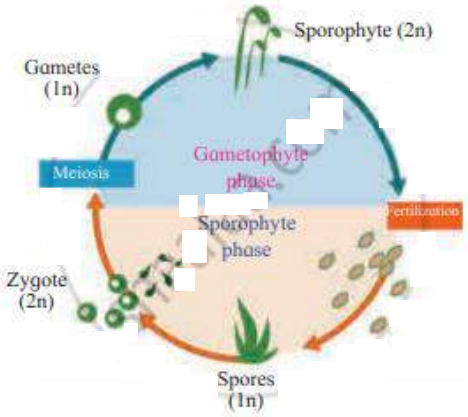
First vascular plants

SOLUTION

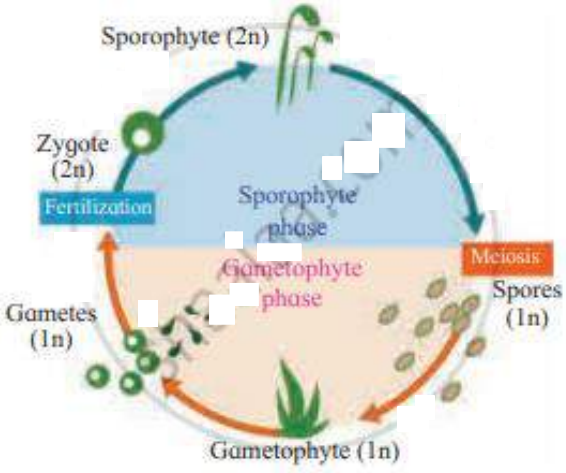
Pteridophytes

Exercise | Q 10 | Page 28

Observe the following diagram. Correct it and write the information in your words.



SOLUTION



1. The given figure indicates the alternation of generation.
2. The life cycle of a plant includes two generations, sporophytic (diploid = 2n) and gametophytic (haploid = n)
3. Some special diploid cells of sporophyte divide by meiosis to produce haploid cells.
4. These haploid cells divide mitotically to produce gametophyte.
5. On maturation, gametophyte produces male and female gametes which fuse during fertilization and produce a diploid zygote.
6. The diploid zygote divides by mitosis and forms a diploid sporophyte.
7. Thus, sporophytic and gametophytic generations generally occur alternately in the life cycle of a plant.
8. Bryophytes and Pteridophytes show distinct alternation of generation.