Classification of Plants

Exercises

Q. 1. Match the proper terms from columns A and C with the description in column B.

'A'	'B'	'C'
Thallophyta	Seeds are formed in fruits.	Fern
Bryophyta	No natural covering on seeds.	Cycas
Pteridophyte	These plants need water for reproduction.	Tamarind
Gymnosperms	These plants need water for reproduction.	Moss
Angiosperms	Tissues are present for conduction of water and food	Algae

Answer :

'A'	'B'	'C'	Explanation:
Thallophyta	These plants need water for reproduction	Algae	Mainly grow in water do not have differentiated leaves, stem, roots so body is thallus like and the division is thallophyte.
Bryophyta	These plants need water for reproduction	Moss	Very small in size and have stem like root like leaves like body parts grow on moist soil, tissue system lack vascular system there is no mechanism of water movement therefore bryophytes require water for reproduction.
Pteridophyte	Tissues are present for conduction of water and food	Fern	Well-developed roots, stem, leaves and tissue system includes vascular tissues xylem and phloem.
Gymnosperms	No natural covering on seeds.	Cycas	Sporophyll are leaves which form male and female reproductive organs the seeds produced from this combination are naked since no ovary is present.
Angiosperms	Seeds are formed in fruits.	Tamarind	The flowers these plants bears have stigma, style, ovary. Male pollen grain travel to the ovary through style fertization takes place ovary develop into fruit which covering the ovule (developed into seed).

Q. 2. Complete the sentences by filling in the blanks and explain those statements.

(angiosperms, gymnosperms, spore, bryophyta, thallophyta, zygote)

A. ..... plants have soft and fibre-like body.
B. ..... is called the 'amphibian' of the plant kingdom.
C. In pteridophytes, asexual reproduction occurs by ..... formation and sexual reproduction occurs by .....formation.
D. Male and female flowers of .....are borne on different sporophylls of the same plant.

Answer : A. Thallophyta

Explanation:

Thallophyta are found mostly in water some in fresh, saline water soft and fibre like body due to absence of mechanical and conducting elements and presence of cellulose cell wall.

B. Bryophyta

Explanation:

Bryophytes lack vascular tissue system ,true roots, leaves, stems.

Found on most places still they require water for transfer of sperms for fertilization hence called amphibians of plant kingdom.

C. Spore, Zygote

Explanation:

Pteridophytes have well developed vascular tissues and leaves,

stems, roots but these plants produce neither flowers nor seeds also called seed less vascular cryptograms. Sporophyll leaves have sporangia which produce spores. Formation and fusion of male and female gamete forms zygote this

further produces well differentiated multicellular sporophyte.

D. Gymnosperms

Explanation:

Spores are produced within sporangia present on sporophyll,

which are leaves which form compact structures called cones these are male and female. Few species of gymnosperms like pinus have both male and female on same tree but located far apart this can be called dioecious and few species of cycas where male and female are produced on different plant can be termed as monoecious.

Q. 3 A. Answer the following questions in your own words.

Write the characteristics of subkingdom Phanerogams.

Answer : (A) The characteristics of subkingdom phanerogamae.

1. Phanerogams means visible gametes. Flowering or seed bearing plants, most developed plants with roots, stem, leaves.

2. These are divided into two main groups –

A) Gymnosperms –

1. Gymnos means naked and sperm means seed.

2. Seeds are naked therefore they do not bear true fruit.

3. Evergreen, perennial, woody found mainly on hills.

4. Some plants male and female cones (flowers) on same plant are called dioecious eg: pinus whereas in some on different plants called monoecious eg: cycas.

B) Angiosperms –

1. Angios means cover and sperm means seed.

2. Seeds are covered as true ovary is found. Pollen Grains and ovules are developed in specialized structures called flowers.

3. These are divided into two classes: dicotyledons and monocotyledons.

4. Dicotyledons are characterized by having two cotyledons in their seeds while the monocotyledons have only one.

Q. 3 B. Answer the following questions in your own words.

Distinguish between monocots and dicots.

Answer : Difference between monocots and dicots-

Monocots differ from dicots in various categories leaves, stem, roots ,flowers.

	MONOCOTS	DICOTS
SEED	One cotyledon	Two cotyledons
ROOTS	Fibrous root system	Well-developed primary root system
STEM	hollow ex- bamboo False ex- banana Disc like ex- onion	Strong, hard Ex- banyan tree
LEAF	Parallel venation	Reticulate venation
FLOWERS	Fl with 4 or 5 parts or in their multiples (pentamerous)	With 3 parts or its multiples trimerous
VASCULAR BUNDLES	complexly arranged	arranged in forms of rings

Q. 3 C. Answer the following questions in your own words.

Write a paragraph in your own words about the ornamental plants called ferns.

Answer : Ornamental flowers ferns –

● Ornamental flowers ferns belong to division pteridophytes.

● Being a pteridophyta it have differentiated stem, root, leaves and well developed vascular system.

● Leaves of Fern are large called microsporophyll.

● Ferns have wide variety of habitats mountains, dry deserts, water or open fields.

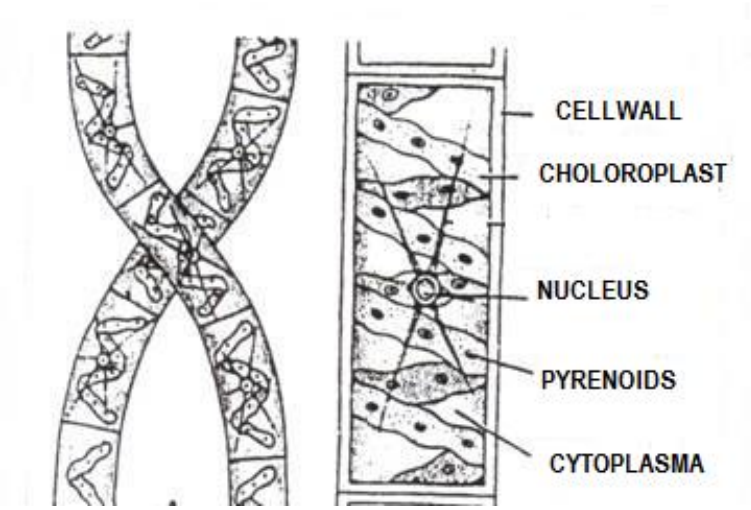
● Ferns are used in food, horticulture etc

● Fern includes pteris, adiantum, equistem, selaginella.

Q. 3 D. Answer the following questions in your own words.

Sketch, label and describe the Spirogyra.

Answer : SPIROGYRA



A green-coloured algae commonly found in stagnant freshwater bodies is known as spirogyra. Mainly, spirogyra is slimy and has filament to touch in which the filaments are present in the cylindrical cells placed one above the Also there is a single large vacuole in each cell.

Q. 3 E. Answer the following questions in your own words.

Write the characteristics of the plants belonging to division Bryophyta.

Answer : Characteristics of bryophytes -

1. This group of plants is also called amphibians of plant kingdom.

2. These plants are thalloid, multicellular, autotrophic.

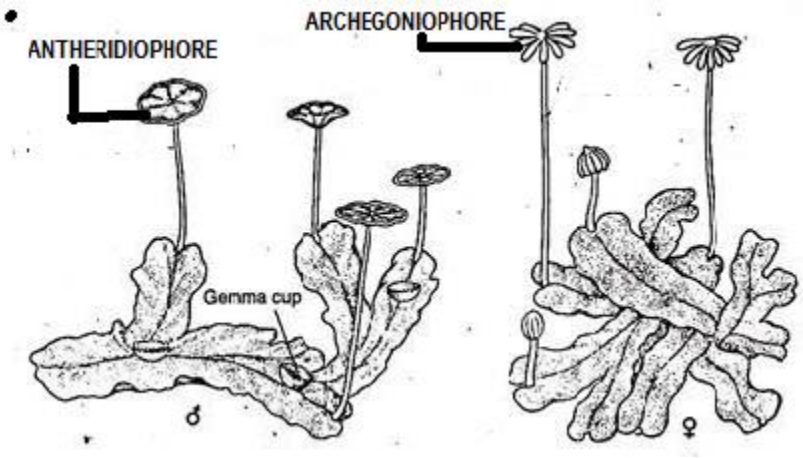
3. Bryophytes grow in moist soil but requires water for transfer of male gametes to female.

4.They have leaf like, stem like ,root like modification.

Q. 4. Sketch and label the figures of the following plants and explain them into brief.

Marchantia, Funaria, Fern, Spirogyra.

Answer :



MARCHANTIA

1. Found mostly on silty clay or moist soil.

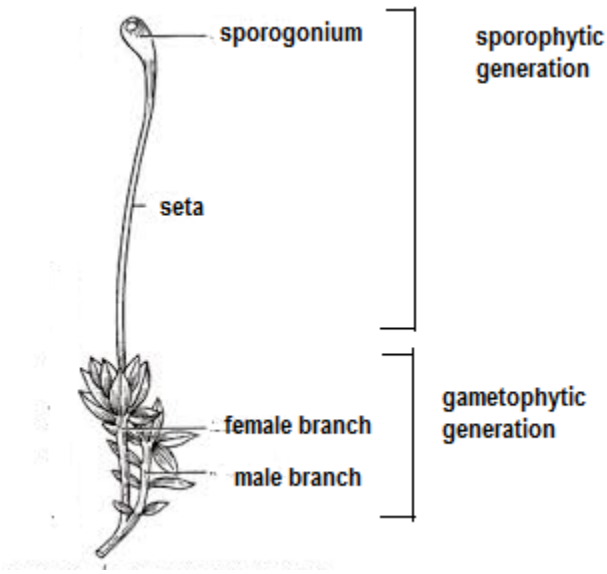
2. Marchantia show differentiation in two layers upper assimilatory region and lower storage.

3. Thallus features has tiny cup like structures called gemma cups used for asexual reproduction.

4. Antheridia and archegonia are born on special stalks antheridiophores and archegoniophores. These are separate thalli therefore plant is dioecious.

5. Asexual reproduction occurs by gemmae discoid clumps of cells.

FUNARIA



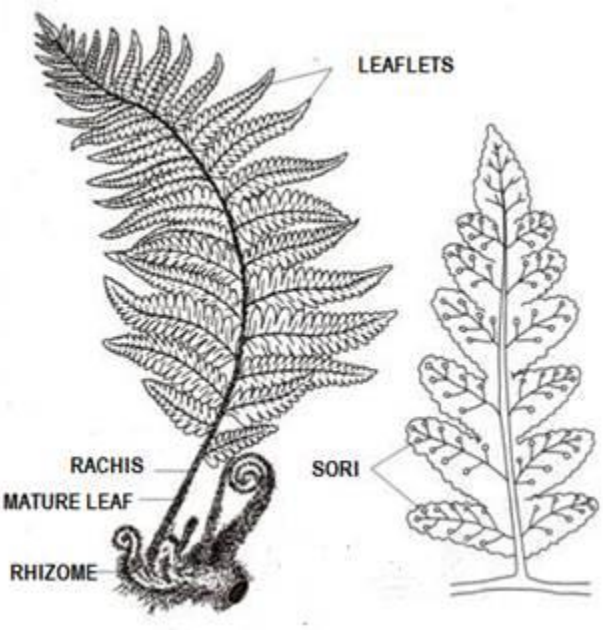
1. Plant is small erect, small & branched.

2. Differentiated into rhizoids, axis, leaves (simple ,small, spirally arranged)

3. Asexual method takes place to give rise to primary protonema, secondary protonema.

4. It consists of multicellular colourless branched rhizoids.

FERN



1. Fern belong to pteridophytes therefore they have vascular tissues well developed roots, stem, leaves.

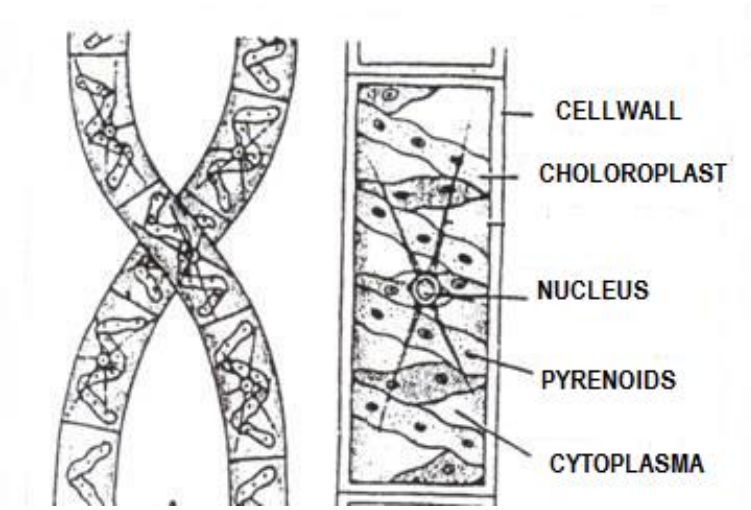
2. Fern stem is often referred to as rhizomes.

3. Green, photosynthetic part of plant is technically megaphylly.

4. Fern species can be found many habitats as remote mountains, dry dessert Some species are lycopodium, selaginella, equisetum.

5. Fern are used as ornamentals, food etc.

SPIROGYRA



1. A green-colored algae commonly found in stagnant freshwater bodies is known as spirogyra. Mainly, spirogyra is slimy and has filament to touch in which the filaments are present in the cylindrical cells placed one above the Also there is a single large vacuole in each cell.

Q. 5. Collect a monocot and dicot plant available in your area. Observe the plants carefully and describe them in scientific language.

Answer : One can differentiate in monocot and dicot based on below observations-

	MONOCOTS	**DICOTS**
SEED	One cotyledon	Two cotyledons
ROOTS	Fibrous root system	Well-developed primary root system
STEM	hollow ex- bamboo False ex- banana Disc like ex- onion	Strong, hard Ex- banyan tree
LEAF	Parallel venation	Reticulate venation
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VASCULAR BUNDLES	complexly arranged	arranged in forms of rings

Q. 6. Which criteria are used for the classification of plants? Explain with reasons.

Answer : Criteria used for classification of plants are-

● Presence or absence of organs in different plant division (Thallophytic, ,bryophyte, pteridophytes, gymnosperms, angiosperms) is the first criterion for classification of plants.

● Presence or absence of several conducting tissues for conduction of water and food, bryophytes do not possess whereas pteridophyta, gymnosperms, angiosperms possess.

● Development of seed as pteridophytes do not have seed whereas gymnosperms and angiosperms have seeds.

● Seeds are developed without seed coat in gymnosperms (naked)and or with seed coat in angiosperms(covered).

● The number of Seed coats in monocot is one cotyledon and dicot have two.