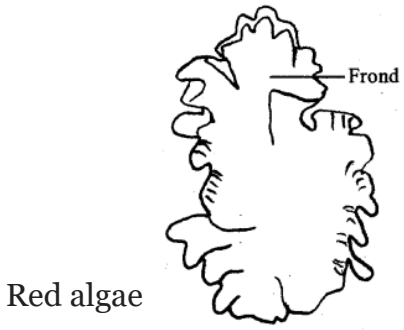
IMPORTANT QUESTIONS CLASS – 11 BIOLOGY
CHAPTER - 3 PLANT KINGDOM

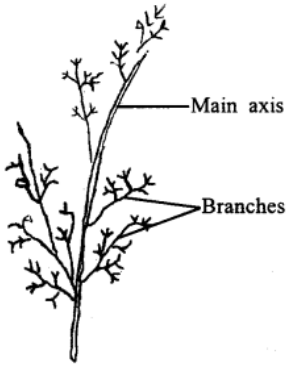
Question 1.
How do red algae differ from brown algae?

Answer:
Differences between red algae and brown algae:

Red algae	Brown algae
1. Unicellular and microscopic only a few are filamentous and Heterotrichous.	1. Filaments and heterotrichous.
2. Phycoerythrin, phycocyanin and phycobilins pigments are present.	2. Fucoxanthin pigment is present.
3. Reserve food material is Floridian starch.	3. Reserve food material is Laminarian starch.
4. Chlorophyll 'a' present.	4. Chlorophyll 'a' + 'c' present.
5. e.g. Gelidium Polysiphonia.	5. e.g. Laminaria, Fucus and Surgaassum.



Red algae



Porphyra or Polysiphonia

Question 2.
Distinguish the reproductive organs of gymnosperms and angiosperms.

Answer:

Gymnosperms	Angiosperm
1. The sporophylls are aggregated to form cones.	1. The sporophylls are aggregated to produce flowers.
2. Microporosphyll consists of micro-sporangia bearing microspores.	2. Microsporophyll is differentiated into anther and filament.
3. Stigma and style are absent.	3. Stigma and style are present.
4. Ovule lies on the lower side and exposed to the megasporophyll.	4. Ovules are attached to the funic-ulus and are present inside the ovary.
5. One too many cotyledons are present.	5. One or two cotyledons are present.
6. Fruit formation doesn't take place.	6. Fruit formation takes place.
7. Double fertilization is absent.	7. Double fertilization is present.
8. Archaegonia are present.	8. Archaegonia are present.

Question 3.
Mention the changes that take place when the fruit ripens.
Answer:

1. Starch is converted into sugar.
2. The production of various organic substances gives it a texture, taste and flavour.
3. The breakdown of chlorophyll leads to changes in the colour of the skin of the fruit.

Question 4.
Describe the important characteristics of gymnosperms.

Answer:
Characteristic features of gymnosperms:

1. Gymnosperms are evergreen woody, perennial plants.
2. Plants are heterosporous.
3. Reduction of gametophytic generation.

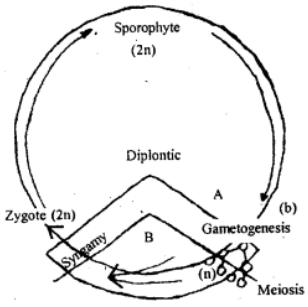
4. The enclosure of the female gametophyte by the megasporangium.
5. Ovules are exposed to receive pollen grains.
6. Gymnosperms possess exposed or naked seeds.
7. Polyembryony is a common occurrence.
8. Xylem lacks vessels and phloem lacks companion cells. Example Cycas, Pinus and Cedms.

Question 5.
Explain briefly the alternation of generation in bryophytes.

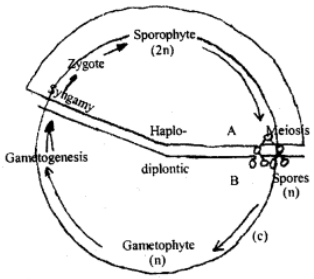
Answer:
Alternation of generations: Moss plants are a gametophyte. Spore is the beginning of the gametophytic generation. It develops into protonema which rises to male and female gametes produced in them. Club-shaped antheridium bears biflagellate sperms or antherozoids. Flask-shaped archegonium encloses the female egg. a zygote is formed after the fertilization (syngamy) of male and female gametes with the help of water

Repeated divisions of the zygote give rise to the embryo (2n) which soon develop into a sporophyte. The sporophyte of moss gets differentiated into three parts -foot, seta and capsule. Inside the capsule, single-celled spores are produced. After the dehiscences, they begin to germinate and give rise to the protonema to start the cycle again. Gametophytic generation alternates the sporophytic generation.

Question 6.
Draw the diplontic and haplo-diplontic cycles.
Answer:



Diplontic cycles



Haplo-diplontic cycles

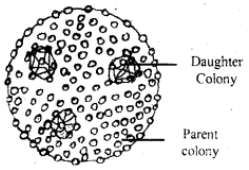
Question 7.
What are angiosperms? Give their characteristic features.
Answer:
Angiosperms are a group of flowering plants where seeds are embedded in the fruits.

They show the following characters:

1. The ovules/seeds are enclosed within the ovary, or we may say that after fertilization seeds are located in the fruit.
2. Male and female gametes i.e. pollen grains and egg nucleus are borne by the flowers.
3. During pollination pollen grains fall on the stigma, they develop on the stigma of the ovary and male gametes enter the egg nucleus through Onicropyh.
4. Male gametophyte is a three-celled structure when dehisced.
5. Embryosac or female gametophyte is eight celled when young and becomes seven celled at the time of fertilization.
6. There is double fertilization wherein one male gamete fuses with the egg nucleus to form a diploid zygote and another fuse with the secondary nucleus to form a triploid endosperm.
7. Xylem consists of tracheids, vessels fibres and parenchyma while phloem consists of sieve tubes, companion cells and phloem parenchyma and fibres. Xylem conducts water to the tip of tall trees and phloem is responsible for the translocation of food.

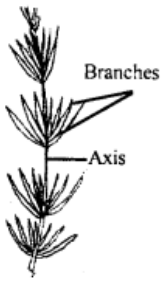
Question 8.
Write brief notes on:

(i) Green algae
Answer:
Green Algae: The Class (Chlorophyta: 'GK' choros = green: phyton = plant) has over 7,000 species. They are in several shapes and sizes. Some are unicellular and microscopic. Some are motile colonies like Volvox. Some, are multinucleated but unicellular i.e. coenocytic like cholera.



Volvox

Chlamydomonas



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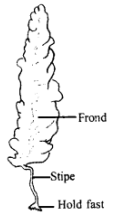
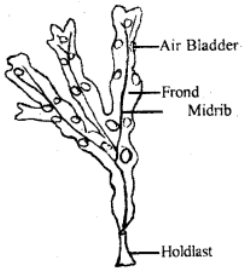
(ii) Brown algae
Answer:
Brown Algae: The Class (Phaeophyta: GK: pharos = brown: phyton = plant) has about 2,000

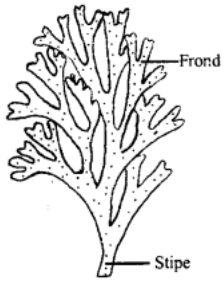
species, mostly marine. Some of, the world's largest sea plants measuring 40-60 metres long. Brown algae occur chiefly in cooler seas. Some are filamentous. Brown algae like Laminaria are attached firmly to the rocks below by holdfasts.



Laminaria



Fucus



Dictyota

(iii) Club moss
Answer:
Club mass: It belongs to Lycopsida. In most parts of the world, Lycopodium is found. Sporangia' are produced on mature leaves.

(iv) Horsetail
Answer:
Horsetail: Also called Sphenopsida. This group exists only Equisetuin. Because they look like the tail of a horse, so they are called horsetail. These plants are up to 1 metre in length. But some extinct species are of several metres. The root, stem and leaves are true.

(v) Sporophyll
Answer:
SporphyMs: They are special spore-bearing leaves and. produce sporangia in sori on their underside, where haploid spores are formed by meiosis. Spores germinate to form an independent, small gametophyte, the prothallus. This bears archegonia and antheridia. Male gamete from antheridia and swim in a film of water to egg cells in archegonia and fertilize them.

Question 9.
Discuss the development of seed habit.

Answer:
The seed plants have two kinds of sporangia. These sporangia are born on the sporophylls.

One type of sporangia are ovule or megasparangium. The other type of sporangia is the pollen sac or archegonium. The egg develops a pollen sac or microsporangium. The egg develops in the ovule from the megaspores. Many pollen grains are produced in the pollen sac.

The pollen grains are dispersed by the air! They reach the ovule. The male gamete and the female egg cell fuse together. The zygote is formed as a result of fertilization. Later on, the zygote forms the embryo. The seed is developed from the ovule. The development of seed habit in gymnosperm and angiosperm do not require liquid water during fertilization

Question 10.
What are the different lifestyles shown by Angiosperms?
Answer:

1. Hydrophytic plants are the plants that live in water or swampy places. Hydrophytes are categorised into, two groups:
   (a) Submerged plants like Hydrilla, Vallisneria, Utriculria and
   (b) Floating plant-like Nymphea, Wolffia and Pistia.
2. Xerophytic plants are those plants that live in the scarcity of water e.g. cactus.
3. Halophytes are a type of xerophytic plants that are present in saline conditions.
4. Insectivorous plants-A few angiosperms, though green and autotrophic trap insects to overcome the shortage of nitrogen. For example, pitcher plant, sundew, bladderwort.