CHAPTER 3

# PLANT KINGDOM

## MULTIPLE CHOICE QUESTIONS

1. Cyanobacteria are classified under
   a. Protista
   b. Plantae
   c. Monera
   d. Algae

2. Fusion of two motile gametes which are dissimilar in size is termed as
   a. Oogamy
   b. Isogamy
   c. Anisogamy
   d. Zoogamy

3. Holdfast, stipe and frond constitutes the plant body in case of
   a. Rhodophyceae
   b. Chlorophyceae
   c. Phaeophyceae
   d. All of the above

4. A plant shows thallus level of organization. It shows rhizoids and is haploid. It needs water to complete its life cycle because the male gametes are motile. Identify the group to which it belongs to
   a. Pteridophytes
   b. Gymnosperms
   c. Monocots
   d. Bryophytes

5. A Prothallus is
   a. A structure in pteridophytes formed before the thallus develops
   b. A sporophytic free living structure formed in pteridophytes

c. A gametophyte free living structure formed in pteridophytes
d. A primitive structure formed after fertilization in pteridophytes

6. Plants of this group are diploid and well adapted to extreme conditions. They grow bearing sporophylls in compact structures called cones. The group in reference is
   a. Monocots
   b. Dicots
   c. Pteridophytes
   d. Gymnosperms

7. The embryo sac of an Angiosperm is made up of
   a. 8 cells
   b. 7 cells and 8 nuclei
   c. 8 nuclei
   d. 7 cells and 7 nuclei

8. If the diploid number of a flowering plant is 36. What would be the chromosome number in its endosperm
   a. 36
   b. 18
   c. 54
   d. 72

9. Protonema is
   a. Haploid and is found in mosses
   b. Diploid and is found in liverworts
   c. Diploid and is found in pteridophytes
   d. Haploid and is found in pteridophytes

10. The giant Redwood tree (*Sequoia sempervirens*) is a/an
    a. Angiosperm
    b. Free fern
    c. Pteridophyte
    d. Gymnosperm

## VERY SHORT ANSWER TYPE QUESTIONS

1. Food is stored as Floridean starch in Rhodophyceae. Mannitol is the reserve food material of which group of algae?

2. Give an example of plants with
   a. Haplontic life cycle
   b. Diplontic life cycle
   c. Haplo- diplontic life cycle
3. The plant body in higher plants is well differentiated and well developed. Roots are the organs used for the purpose of absorption. What is the equivalent of roots in the less developed lower plants?
4. Most algal genera show haplontic life style. Name an alga which is
   a. Haplo-diplontic
   b. Diplontic
5. In Bryophytes male and female sex organs are called _____ and _____.

## SHORT ANSWER TYPE QUESTIONS

1. Why are bryophytes called the amphibians of the plant kingdom?
2. The male and female reproductive organs of several pteridophytes and gymnosperms are comparable to floral structures of angiosperms. Make an attempt to compare the various reproductive parts of pteridophytes and gymnosperms with reproductive structures of angiosperms.
3. Heterospory i.e., formation of two types of spores – microspores and megaspores is a characteristic feature in the life cycle of a few members of pteridophytes and all spermatophytes. Do you think heterospory has some evolutionary significance in plant kingdom?
4. How far does *Selaginella* one of the few living members of lycopodiales (pteridophytes) fall short of seed habit.
5. Each plant or group of plants has some phylogenetic significance in relation to evolution : *Cycas*, one of the few living members of gymnosperms is called as the 'relic of past'. Can you establish a phylogenetic relationship of *Cycas* with any other group of plants that justifies the above statement?

6. The heterosporous pteridophytes show certain characteristics, which are precursor to the seed habit in gymnosperms. Explain.
7. Comment on the lifecycle and nature of a fern prothallus.
8. How are the male and female gametophytes of pteridophytes and gymnosperms different from each other?
9. In which plant will you look for mycorrhiza and corolloid roots? Also explain what these terms mean.

## LONG ANSWER TYPE QUESTIONS

1. Gametophyte is a dominant phase in the life cycle of a bryophyte. Explain.
2. With the help of a schematic diagram describe the haplo-diplontic life cycle pattern of a plant group.
3. Lichen is usually cited as an example of 'symbiosis' in plants where an algal and a fungal species live together for their mutual benefit. Which of the following will happen if algal and fungal partners are separated from each other?
   a. Both will survive and grow normally and independent from each other.
   b. Both will die
   c. Algal component will survive while the fungal component will die.
   d. Fungal component will survive while algal partner will die.

   Based on your answer how do you justify this association as symbiosis.
4. Explain why sexual reproduction in angiosperms is said to take place through double fertilization and triple fusion. Also draw a labelled diagram of embryo sac to explain the phenomena.
5. Draw labelled diagrams of
   a. Female and male thallus of a liverwort.
   b. Gametophyte and sporophyte of *Funaria*.
   c. Alternation of generation in Angiosperm.