Solutions

S1. Ans. (b)

In members of Phaeophyceae sexual reproduction is by oogamous, isogamous or anisogamous methods. Therefore, correct set of statements are A, C, D and E.

S2. Ans.(c)

Selaginella and Salvinia are heterosporous pteridophytes. They products two different king of spores Psilotum. Lycopodium and Equisetum are Homosporous pteridophytes.

S3. Ans.(b)

The predominant stage of the life cycle of a moss is the gametophyte which consists of two stages. The first stage is the protonema stage, which develops directly from a spore. Capsule of the sporophyte contains spore which gives rise to protonema. Thus, reason correctly explains the assertion.

S4. Ans.(d)

Assertion is correct but reason is false as in gymnosperms the pollen grains are released from the microsporangium and they are carried in air currents. They come in contact with the opening of the ovules borne on megasporophylls. The pollen tube carrying the male gametes grows towards archegonia in the ovules and discharge their contents neat the mouth of the archegonia.

S5. Ans.(d)

The correct answer is Option D:

(A)-(III), (B)-(IV), (C)-(I), (D)-(II)

S6. Ans.(b)

Phaeophyceae-brown or olive color to the pigment fucoxanthin. Rhodophyceae - pigment r - phycoerythrin.

S7. Ans.(c)

Chlamydomonas is a unicellular alga. Cycas is a gymnosperm. Selaginella is a heterosporous pteridophyte and Sphagnum is a moss.

S8. Ans.(c).

Explanation Alga shown in the diagram is Chara. It is a member of Chlorophyceae. Food is stored in the form of starch.

Chara is monecious plant showing oogonium and antheridium on the same plant body.

S9. Ans.(c)

Hydrocolloids are water holding substances for e.g. carrageen obtained from red algae (Rhodophyceae).

S10. Ans.(b)

Ulothrix is a member of Chlorophyceae (green algae), with reserve food material, starch. Mannitol is stored food material of Phaeophyceae (brown algae).

S11. Ans.(b)

Spirogyra is an alga. It shows haplontic life-cycle.

Fern is pteridophyte. The dominant phase of life-cycle is diploid sporophyte. Its gametophyte is called prothallus.

Funaria is a bryophyte. Its gametophyte is a leafy stage.

Cycas is a gymnosperm. The main plant body in gymnosperm is sporophyte. They have highly reduced gametophyte stage.

S12. Ans.(b)

Carrageen is produced by red algae.

S13. Ans.(c)

The megaspores and microspores germinate and give rise to female and male gametophytes, respectively.

S14. Ans.(d)

Ectocarpus (brown algae) has mannitol as reserve food material.

S15. Ans.(c)

Gemmae are present in some liverworts like Marchantia.

S16. Ans.(c)

Spirulina and chlorella are unicellular algae.

S17. Ans.(a)

The food element floridean starch is preserved in red algae. Its structure is extremely similar to that of amylopectin.

S18. Ans.(c)

Sporophylls are compactly arranged in Equisetum.

S19. Ans.(b)

Male and female gymnosperms and angiosperm. Female gametophytes lack a self-contained reproductive system.

S20. Ans.(d)

Rhodophyceae members are frequently referred to as red algae. They contain r-phycoerythrin, a red pigment.

S21. Ans.(a)

Plants with ovules are known as gymnosperms. They are not surrounded by any ovary wall and are hence exposed. The male and female gametophytes of gymnosperms not have a self-sufficient, free-living existence.

S22. Ans.(c)

The female gametophyte with the developing young embryo is retained on the sporophyte plant body, for a variable period of time in Pteridophytes.

S23. Ans.(b)

Minerals are increased by fungus linked with Pinus roots by boosting the plant's surface area and water absorption.

Plants provide nourishment for the fungus, which in turn provides food for the fungus. Therefore, For Pinus seed, mycorrhizal connection is required.

S24. Ans.(a)

Ovules in gymnosperms are bare, that is, they have no protective covering.

S25. Ans.(a)

Anisogamy, or uneven gametes, is seen in Polysiphonia.

S26. Ans.(d)

Pinus pollen grains are extremely buoyant due to presence of sacs, they float in the fluid. As a result, winged Pinus pollen grains are a distinctive feature.

S27. Ans.(d)

The event of double fertilisation is unique to flowering plants.

S28. Ans.(a)

Pinus is a monoecious plant, meaning it has both male and female flowers.

S29. Ans.(c)

Polysiphonia, and Ectocarpus are some of the algal genera. Haplo-diplontic kelps are a type of kelp. Fucus is a diplontic alga.

S30. Ans.(d)

- Meiosis in the zygote results in the haplontic life cycle.
- The production of haploid spores. The haploid spores divide into two types.
- The gametophyte is formed through mitosis.
- In such plants, the photosynthetic phase is the free- living phase. Algae like Volvox, Spirogyra, and others certain Chlamydomonas species.

S31. Ans.(b)

Algae come in a wide range of shapes and sizes. They consist of microscopic unicellular organisms such as Chlamydomonas, Volvox, and other colonial forms. Ulothrix and Spirogyra are filamentous forms.

S32. Ans.(d)

Sequoia, the redwood tree, is a gymnosperm.

S33. Ans.(a)

The female gametophyte is found within the ovule of angiosperms. Pollen is a male gamete is found in the tube inserted into the embryo-sac, which contains two male gametes.

S34. Ans.(d)

Large amounts of brown and red algae are produced by certain marine brown and red algae.

Algin (brown algae) and carrageen (red algae) are two examples.

S35. Ans.(a)

- The needle-like leaves of conifers minimise the surface area.
- Their thick cuticle and recessed stomata also aid in the reduction of water loss.

S36. Ans.(c)

- Sequoia, a large redwood tree, is a gymnosperm. One of the tallest tree species on the planet.
- Gymnosperms include Cycas, Pinus, and Ginkgo.
- Gymnosperms are heterosporous, meaning they produce spores.
- Microspores and megaspores are Haploid microspores and megaspores, respectively.
- Gymnosperm leaves are well-adapted to tolerate harsh conditions.

S37. Ans.(a)

Mucor spores (also known as sporangiospores) can be simple or complex.

The sporangia are branched and produce apical, spherical sporangia that are supported by the columella is shaped like a column.

S38. Ans.(a)

Pyriform (pear-shaped) gametes have two chromosomes. Flagella in phaeophyceae with laterally attached flagella (Brown algae). For example

Ectocarpus, Dictyota, Laminaria, and Sargassum.

S39. Ans.(d)

Statements D and E both are false.

Male or female cones, sometimes known as strobili, can be found.

Pinus as a result, in the instance of monoecious.

Moss has a more complex sporophyte than other plants.

S40. Ans.(c)

Spirogyra: Non-motile gametes

Volvox: motile / ♀ non-motile

Fucus: motile / ♀ non-motile

S41. Ans.(d)

The female has a considerable size in oogamous reproduction.