Plant Kingdom

1. Identify the pair of heterosporous pteridophytes among the following : **(2023)**
   (a) Equisetum and Salvinia
   (b) Lycopodium and Selaginella
   (c) Selaginella and Salvia
   (d) Psilotum and Salvinia
2. **Assertion A:-** The first stage of gametophyte in the life cycle of moss is protonema stage.
   Reason R :- Protonema develops directly from spores produced in capsule. **(2023)**
   (a) A is not correct but R is correct.
   (b) Both A and R are correct and R is the correct explanation of A
   (c) Both A and R are correct but R is NOT the correct explanation of A
   (d) A is correct but R is not correct
3. **Assertion A :-** In gymnosperm the pollen grains are released from the microsporanigium and carried by air currents.
   Reason R :- Air currents carry that pollen grains to the mouth of the archegonia where the male gametes are discharged and pollen tube is not formed. **(2023)**
   (a) A is false but R is true
   (b) Both A and R are true and R is the correct explanation of A
   (c) Both A and R are true but R is NOT the currect explanation of A
   (d) A is the true but R is false
4. Match List - I with List - II. **(2023)**

List – I		List – II	
A	Pteropsida	(i)	Psilotum
B	Lycopsida	(ii)	Equisetum
C	Psilpsida	(iii)	Adiantum
D	Sphenopsida	(iv)	Selaginella

   Choose the correct answer from the options given below:
   (a) (A)-(II), (B)-(III), (C)-(I), (D)-(IV)
   (b) (A)-(III), (B)-(1), (C)-(IV), (D)-(II)
   (c) (A)-(II), (B)-(III), (C)-(IV), (D)-(I)
   (d) (A)-(III), (B)-(IV), (C)-(1), (D)-(II)
5. Which classes of algae possess pigment fucoxanthin and pigment phycoerythrin, respectively? **(Manipur 2023)**
   (a) Phaeophyceae and Chlorophyceae
   (b) Phaeophyceae and Rhodophyceae
   (c) Chlorophyces and Rhodophycea
   (d) Rhodophyceae and Phaeophycea
6. Colostrum, the yellowish fluid, secreted by mother during the initial days of lactation is very essential to impart immunity to the new born infants because it contains **(2022)**

List – I		List – II	
a	Chlamydomonas	(i)	Moss
b	Cycas	(ii)	Pteridophyte
c	Selaginella	(iii)	Alga
d	Sphagnum	(iv)	Gymnosperm

   Choose the correct answer from the options given below
   (a) (a)-(ii), (b)-(ii), (c)-(i), (d)-(iv)
   (b) (a)-(iii), (b)-(i), (c)-(ii), (d)-(iv)
   (c) (a)-(iii), (b)-(iv), (c)-(ii), (d)- (i)
   (d) (a)-(iii), (b)-(ii), (c)-(1), (d) (iv)
7. Read the following statements and identify the characters related to the alga shown in the diagram: **(2022)**

   (a) It is a member of Chlorophyceae
   (b) Food is stored in the form of starch
   (c) It is monoecious plant showing oogonium and antheridium
   (d) Food is stored in the form of laminarin or mannitol
   (e) It shows dominance of pigments Chlorophyll a, c and Fucoxanthin

   Choose the correct answer from the options given below:

(a) (c), (d) and (e) only
(b) (a), and (b) only
(c) (a), (b) and (c) only
(d) (a), (c) and (d) only

8. Hydrocolloid carrageen is obtained form: **(2022)**
(a) Chlorophyceae and Phaeophyceae
(b) Phaeophyceae and Rhodophyceae
(c) Rhodophyceae only
(d) Phaeophyceae only

9. Which of the following is incorrectly matched? **(2022)**
(a) Ectocarpus-Fucoxanthin
(b) Ulothrix-Mannitol
(c) Porphyra-Floridian Starch
(d) Volvox-Starch

10. Match the plant with the kind of life cycle it exhibits: **(2022)**

List – I		LIst – II	
A	Spirogyra	(i)	Dominant diploid sporophyte vascular plant, with highly reduced male or female gametophyte
B	Fern	(ii)	Dominant haploid free-living qametophyte
C	Funaria	(iii)	Dominant diploid sporophyte alternating with reduced gametophyte called prothallus
D	Cycas	(iv)	Dominant haploid leafy gametophyte alternating with partially dependent multicellular sporophyte

Choose the correct answer from the options given below:
(a) (a)-(iv), (b)-(i), (c)-(ii), (d)-(iii)
(b) (a)-(ii), (b)-(i), (c)-(iv), (d)-(i)
(c) (a)-(iii), (b)-(iv), (c)-(i), (d)-(ii)
(d) (a)-(ii), (b)-(iv), (c)-(i), (d)-(iii)

11. Which of the following algae produce Carrageen? **(2021)**
(a) Brown algae
(b) Red algae
(c) Blue-green algae
(d) Green algae

12. Genera like Selaginella and Salvinia produce two kinds of spores. Such plants are known as: **(2021)**
(a) Heterosorus
(b) Homosporous
(c) Heterosporous
(d) Homosorus

13. Which of the following algae contains mannitol as reserve food material? **(2021)**
(a) Gracilaria
(b) Volvox
(c) Ulothrix
(d) Ectocarpus

14. Gemmae are present in: **(2021)**
(a) Pteriodophytes
(b) Some Gymnosperms
(c) Some Liverworts
(d) Mosses

15. Which of the following pairs is of unicellular algae? **(2020)**
(a) Gelidium and Gracilaria
(b) Anabaena and Volvox
(c) Chlorella and Spirulina
(d) Laminaria and Sargassum

16. Floridean starch has structure similar to: **(2020)**
(a) Amylopectin and glycogen
(b) Mannitol and algin
(c) Laminarin and cellulose
(d) Starch cellulose

17. Strobili or cones are found in: **(2020)**
(a) Pteris
(b) Marchantia
(c) Equisetum
(d) Salvinia

18. Male and female gametophytes do not have an independent free living existence in: **(2020 Covid Re-NEET)**
(a) Algae
(b) Angiosperms
(c) Bryophytes
(d) Pteridophytes

19. Phycoerythrin is the major pigment in: **(2020 Covid Re-NEET)**
(a) Blue green algae
(b) Green algae
(c) Brown algae
(d) Red algae

20. Which of the following statements is incorrect about gymnosperms? **(2020 Covid Re-NEET)**
    (a) Male and female gametophytes are free living
    (b) Most of them have narrow leaves with thick cuticle
    (c) Their seeds are not covered
    (d) They are heterosporous
21. From evolutionary point of view, retention of the female gametophyte with developing young embryo on the parent sporophyte for some time, is first observed in **(2019)**
    (a) Liverworts
    (b) Mosses
    (c) Pteridophytes
    (d) Gymnosperms
22. Pinus seed cannot germinate and established without fungal association. This is because : **(2019)**
    (a) Its embryo is immature.
    (b) It has obligate association with mycorrhizae.
    (c) It has very hard seed coat.
    (d) Its seeds contain inhibitors that prevent germination.
23. Which of the following statement is correct? **(2018)**
    (a) Ovules are not enclosed by ovary wall in gymnosperms
    (b) Selaginella is heterosporous, while Salvinia is homosporous
    (c) Horsetails are gymnosperms
    (d) Stems are usually unbranched in both Cycas and Cedrus
24. Which one is wrongly matched? **(2018)**
    (a) Uniflagellate gametes - Polysiphonia
    (b) Biflagellate zoospores - Brown algae
    (c) Gemma cups - Marchantia
    (d) Unicellular organism – Chlorella
25. Winged pollen grains are present in **(2018)**
    (a) Mustard
    (b) Cycas
    (c) Mango
    (d) Pinus
26. Double fertilisation is exhibited by **(2017)**
    (a) Gymnosperms
    (b) Algae
    (c) Fungi
    (d) Angiosperms
27. Select the mismatch: **(2017)**
    (a) Pinus – Dioecious
    (b) Cycas – Dioecious
    (c) Salvinia – Heterosporous
    (d) Equisetum – Homosporous
28. Life cycle of Ectocarpus and Fucus respectively are: **(2017)**
    (a) Haplontic, Diplontic
    (b) Diplontic, Haplodiplontic
    (c) Haplo-diplontic, Diplontic
    (d) Haplo-diplontic, Haplontic
29. Zygotic meiosis is characteristic of: **(2017)**
    (a) Marchantia
    (b) Fucus
    (c) Funaria
    (d) Chlamydomonas
30. An example of colonial alga is **(2017)**
    (a) Chlorella
    (b) Volvox
    (c) Ulothrix
    (d) Spirogyra
31. Identify and select the wrong statement out of the following: **(2017)**
    (a) In conifers the needle like leaves are well adapted to extremes of temperature, moisture conservation and onslaught of wind
    (b) Roots of pines enter into a symbiotic relationship with higher fungi
    (c) The coralloid roots in Cycas have nitrogen fixing cyanobacteria
    (d) The giant redwood tree Sequoia, one of the tallest trees in an angiosperm.
32. What is not true for an angiospermic embryo sac? **(2017)**
    (a) One male gamete is discharged into it during ferilisation
    (b) It is present within an ovule
    (c) It represents female gametophyte
    (d) Its formation is preceded by meiosis
33. Which one of the following statements is wrong? **(2016 - II)**
    (a) Agar-agar is obtained from Gelidium and Gracilaria
    (b) Laminaria and Sargassum are used as food
    (c) Algae increase the level of dissolved oxygen in the immediate environment
    (d) Algin is obtained from red algae, and carrageen from brown algae.
34. Conifers are adapted to tolerate extreme environmental conditions because of: **(2016 - II)**
    (a) Thick cuticle
    (b) Presence of vessels
    (c) Broad hardy leaves

(d) Superficial stomata

35. Select the correct statement **(2016 - I)**
    (a) Gymnosperms are both homosporous and heterosporous
    (b) Salvinia, Ginkgo and Pinus all are gymnosperms
    (c) Sequoia is one of the tallest trees
    (d) The leaves of gymnosperms are not well adapted to extremes of climate
36. Which one is wrong statement? **(2015)**
    (a) Mucor has biflagellate zoospores
    (b) Haploid endosperm is typical feature of gymnosperms
    (c) Brown algae have chlorophyll a and c and fucoxanthin
    (d) Archegonia are found in Bryophyta, Pteridophyta and Gymnosperms.
37. Male gametes are flagellated in: **(2015)**
    (a) Ectocarpus
    (b) Spirogyra
    (c) Polysiphonia
    (d) Anabaena
38. Read the following statements (A-E) and answer the question which follows them: **(2013)**
    A. In liverworts, mosses, and ferns gametophytes are free-living
    B. Gymnosperms and some ferns are Heterosporous
    C. Sexual reproduction in Fucus, Volvox and Albugo is oogamous
    D. The sporophyte in liverworts is more elaborate than that in mosses
    E. Both Pinus and Marchantia are dioecious.

    How many of the above statements are correct?
    (a) Four
    (b) One
    (c) Two
    (d) Three
39. Isogamous condition with non-flagellated gametes is found in: **(2013)**
    (a) Fucus
    (b) Chlamydomonas
    (c) Spirogyra
    (d) Volvox
40. Select the wrong statement: **(2013)**
    (a) Chlamydomonas exhibits both isogamy and anisogamy and Fucus shows oogamy
    (b) Isogametes are similar in structure, function and behaviour
    (c) Anisogametes differ either in structure, function or behaviour
    (d) In oogamous reproduction, female gamete is smaller and motile, while male gamete is larger and non motile

Answer Key

S1. Ans. (c)

S2. Ans. (b)

S3. Ans. (d)

S4. Ans. (d)

S5. Ans. (b)

S6. Ans. (c)

S7. Ans. (c)

S8. Ans. (c)

S9. Ans. (b)

S10. Ans. (b)

S11. Ans. (d)

S12. Ans. (c)

S13. Ans. (d)

S14. Ans. (c)

S15. Ans. (c)

S16. Ans. (a)

S17. Ans. (c)

S18. Ans. (b)

S19. Ans. (d)

S20. Ans. (a)

S21. Ans. (c)

S22. Ans. (b)

S23. Ans. (a)

S24. Ans. (a)

S25. Ans. (d)

S26. Ans. (d)

S27. Ans. (a)

S28. Ans. (c)

S29. Ans. (d)

S30. Ans. (b)

S31. Ans. (d)

S32. Ans. (a)

S33. Ans. (d)

S34. Ans. (a)

S35. Ans. (c)

S36. Ans. (a)

S37. Ans. (a)

S38. Ans. (d)

S39. Ans. (c)

S40. Ans. (d)

Solutions

S1. Ans.(c)

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

S2. 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.

S3. Ans.(b)

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.

S4. Ans.(d)

The correct answer is Option D:
(A)-(III), (B)-(IV), (C)-(1), (D)-(I)

S5. Ans.(b)

Phaeophyceae-brown or olive color to the pigment fucoxanthin.

Rhodophyceae-pigment r-phycoerythrin.

S6. Ans.(c)

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

S7. 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.

S8. Ans.(c)

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

S9. Ans.(b)

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

S10. 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.

S11. Ans.(b)

Carrageen is produced by red algae.

S12. Ans.(c)

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

S13. Ans.(d)

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

S14. Ans.(c)

Gemmae are present in some liverworts like Marchantia.

S15. Ans.(c)

Spirulina and chlorella are unicellular algae.

S16. Ans.(a)

The food element floridean starch is preserved in red algae. Its structure is

extremely similar to that of amylopectin.

S17. Ans.(c)

Sporophylls are compactly arranged in Equisetum.

S18. Ans.(b)

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

S19. Ans.(d)

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

S20. 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.

S21. 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.

S22. Ans.(b)

Minerals are increased by fungus linked with Pinus rootsby 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.

S23. Ans.(a)

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

S24. Ans.(a)

Anisogamy, or uneven gametes, is seen in Polysiphonia.

S25. 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.

S26. Ans.(d)

The event of double fertilisation is unique to flowering plants.

S27. Ans.(a)

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

S28. Ans.(c)

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

S29. 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 specie.

S30. Ans.(b)

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

S31. Ans.(d)

Sequoia, the redwood tree, is a gymnosperm.

S32. 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.

S33. 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.

S34. 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.

S35. 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.

S36. 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.

S37. 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.

S38. 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.

S39. Ans.(c)

Spirogyra: Non-motile gametes

Volvox: motile / ♀ non-motile

Fucus: motile / ♀ non-motile

S40. Ans.(d)

The female has a considerable size in oogamous reproduction.