1. Which of the following features is not common to algae?
A. Cell wall made of cellulose
B. Autotrophic nutrition
C. Vascular tissue
D. Chlorophyll a

✅Answer: C. Vascular tissue

Explanation:
Algae are non-vascular plants; they lack true roots, stems, and vascular tissue.

2. Match the following algae with their stored food material:

Algae Type	Stored Food
A. Green algae	1. Laminarin
B. Brown algae	2. Floridean starch
C. Red algae	3. Starch

A. A–3, B–1, C–2
B. A–1, B–2, C–3
C. A–2, B–3, C–1
D. A–3, B–2, C–1

✅Answer: A. A–3, B–1, C–2

Explanation:

Green algae → Starch

Brown algae → Laminarin + Mannitol

Red algae → Floridean starch

3. Algae are included in the Plant Kingdom because:
A. They have vascular tissues
B. They reproduce sexually only
C. They are autotrophic and have cellulose cell walls

D. They grow only in soil

✅Answer: C. They are autotrophic and have cellulose cell walls

Explanation:
Algae resemble plants due to autotrophy and cellulose in their walls, hence classified under Plantae.

4. Which one of the following green algae is filamentous and exhibits fragmentation?
A. Chlamydomonas
B. Ulothrix
C. Volvox
D. Porphyra

✅Answer: B. Ulothrix

Explanation:
Ulothrix is a filamentous green alga that reproduces asexually by fragmentation.

5. Which pigment is common in all three types of algae?
A. Chlorophyll a
B. Chlorophyll b
C. Phycocyanin
D. Fucoxanthin

✅Answer: A. Chlorophyll a

Explanation:
Chlorophyll a is universally present in all photosynthetic algae (green, brown, red).

6. Which of the following correctly describes Volvox?
A. Unicellular and motile
B. Multicellular colonial and motile
C. Unicellular and non-motile
D. Filamentous and sessile

✅Answer: B. Multicellular colonial and motile

Explanation:

Volvox is a colonial green alga with motile cells, often used as an example of transition to multicellularity.

7. Which of the following red algae is commercially important for agar extraction?
A. Gelidium
B. Laminaria
C. Ectocarpus
D. Fucus

✅Answer: A. Gelidium

Explanation:
Agar is obtained from red algae like Gelidium and Gracilaria, used in labs and food industry.

8. The life cycle of Fucus shows:
A. Haplontic pattern
B. Diplontic pattern
C. Haplodiplontic pattern
D. Triphasic pattern

✅Answer: B. Diplontic pattern

Explanation:
Fucus (a brown alga) has a diplontic life cycle — the main plant body is diploid.

9. Which of the following is correctly matched regarding flagella in algae?
A. Red algae – Two equal flagella
B. Green algae – One lateral flagellum
C. Brown algae – Lateral flagella of unequal length
D. Cyanobacteria – Flagellated gametes

✅Answer: C. Brown algae – Lateral flagella of unequal length

Explanation:
Brown algae have 2 flagella: one tinsel-type and one whiplash-type, inserted laterally.

10. Which among the following exhibits isogamy with non-flagellated gametes?
A. Ulothrix

B. Spirogyra
C. Chlamydomonas
D. Volvox

✅Answer: B. Spirogyra

Explanation:
Spirogyra shows isogamy, where both gametes are morphologically similar but non-motile.

11. Bryophytes are called ‘amphibians of the plant kingdom’ because:
A. They are aquatic
B. They reproduce only asexually
C. Water is essential for fertilization
D. They grow only on land

✅Answer: C. Water is essential for fertilization

Explanation:
Bryophytes require water to transport male gametes to the female gametophyte, hence likened to amphibians.

12. The main plant body of a moss is:
A. Sporophyte
B. Gametophyte
C. Zygote
D. Spore

✅Answer: B. Gametophyte

Explanation:
In mosses and all bryophytes, the dominant, photosynthetic body is haploid gametophyte.

13. In Marchantia, the gemmae function as:
A. Gametes
B. Sporangia
C. Asexual reproductive bodies
D. Sexual reproductive organs

✅Answer: C. Asexual reproductive bodies

Explanation:
Gemmae are lens-shaped structures that develop in gemma cups and reproduce asexually.

14. Which of the following is correctly matched regarding moss life cycle?
A. Protonema – Sporophytic stage
B. Capsule – Gametophytic stage
C. Rhizoid – Gametophytic stage
D. Zygote – Haploid

✅Answer: C. Rhizoid – Gametophytic stage

Explanation:
Rhizoids are root-like structures of gametophyte. Zygote is diploid, protonema is also gametophytic.

15. Match the following features with correct groups:

Feature Group

A. Protonema 1. Liverwort
B. Gemmae 2. Moss
C. Rhizoids unicellular 3. Both

A. A–2, B–1, C–3
B. A–1, B–2, C–3
C. A–3, B–1, C–2
D. A–2, B–3, C–1

✅Answer: A. A–2, B–1, C–3

Explanation:

Protonema → Moss

Gemmae → Liverwort (Marchantia)

Rhizoids are unicellular in both liverworts and mosses.

16. Which of the following statements is true for pteridophytes but false for bryophytes?
A. Dominant phase is gametophyte
B. Seeds are present
C. Sporophyte is independent and dominant
D. Gametophyte is diploid

✅Answer: C. Sporophyte is independent and dominant

Explanation:
Pteridophytes have dominant diploid sporophyte (independent), unlike bryophytes where it's gametophyte.

17. Which one of the following is heterosporous?
A. Selaginella
B. Lycopodium
C. Dryopteris
D. Equisetum

✅Answer: A. Selaginella

Explanation:
Selaginella produces microspores and megaspores, showing heterospory. It is a precursor to seed habit.

18. The pteridophyte in which reproduction occurs via cone-like structure is:
A. Marsilea
B. Equisetum
C. Lycopodium
D. Pteris

✅Answer: B. Equisetum

Explanation:
Equisetum (horsetail) has cone-like strobili at tips that bear sporangia.

19. Which of the following is the correct sequence in the life cycle of a fern?
A. Sporophyte → Spore → Gametophyte → Zygote
B. Spore → Sporophyte → Gametophyte → Zygote

C. Zygote → Gametophyte → Spore → Sporophyte
D. Gametophyte → Spore → Sporophyte → Zygote

✅Answer: A. Sporophyte → Spore → Gametophyte → Zygote

Explanation:
This is the correct alternation of generations in pteridophytes.

20. Which of the following statements is incorrect regarding pteridophytes?
A. They have true roots, stems, and leaves
B. Gametophyte is photosynthetic and independent
C. Vascular tissues are present
D. Seeds are formed in certain species

✅Answer: D. Seeds are formed in certain species

Explanation:
Pteridophytes are seedless vascular plants. No seeds are formed in any species.

21. The seeds of gymnosperms differ from those of angiosperms in that they:
A. Lack an embryo
B. Are enclosed in a fruit
C. Are naked and not enclosed by ovary
D. Are formed without fertilization

✅Answer: C. Are naked and not enclosed by ovary

Explanation:
Gymnosperm seeds develop on scales of cones and are not enclosed in fruit (naked seeds).

22. In Pinus, the male gametophyte is represented by:
A. Embryo
B. Pollen grain
C. Endosperm
D. Antheridium

✅Answer: B. Pollen grain

Explanation:
The pollen grain of Pinus develops into the male gametophyte and produces male gametes.

23. The structure responsible for the development of the female gametophyte in gymnosperms is:
A. Ovule
B. Archegonium
C. Megaspore
D. Ovary

✅Answer: C. Megaspore

Explanation:
In gymnosperms, the megaspore divides to form the female gametophyte, which produces archegonia.

24. The endosperm of gymnosperms is formed:
A. Before fertilization and is haploid
B. After fertilization and is diploid
C. After fertilization and is triploid
D. Before fertilization and is haploid or diploid

✅Answer: A. Before fertilization and is haploid

Explanation:
Gymnosperm endosperm forms from the female gametophyte (haploid) before fertilization.

25. Which of the following is true about Cycas but false for Pinus?
A. Seeds are enclosed in fruits
B. Archegonia are absent
C. Motile male gametes are present
D. Vascular tissue is absent

✅Answer: C. Motile male gametes are present

Explanation:
Unlike Pinus, Cycas has motile flagellated male gametes, a primitive character.

26. Which of the following is NOT a characteristic of angiosperms?

A. Double fertilization
B. Triploid endosperm
C. Presence of archegonia
D. Ovules enclosed within ovary

✅Answer: C. Presence of archegonia

Explanation:
In angiosperms, archegonia are absent. Female gametophyte is reduced to 7-celled, 8-nucleate embryo sac.

27. Match the following terms with their correct descriptions:

Term Description

A. Double fertilization 1. Endosperm becomes triploid
B. Monocotyledon 2. Single cotyledon
C. Dicotyledon 3. Two cotyledons
D. Angiosperm ovule 4. Enclosed within ovary

Options:
A. A–1, B–2, C–3, D–4
B. A–4, B–1, C–3, D–2
C. A–2, B–1, C–4, D–3
D. A–3, B–4, C–2, D–1

✅Answer: A. A–1, B–2, C–3, D–4

Explanation:
All terms are correctly matched based on standard angiosperm features.

28. Identify the correct statement about the embryo sac in angiosperms:
A. It contains one nucleus and one cell
B. It has 8 nuclei and 7 cells
C. It is diploid and multicellular
D. It is formed from the megaspore mother cell directly

✅Answer: B. It has 8 nuclei and 7 cells

Explanation:
The mature embryo sac (female gametophyte) has 7 cells (3 antipodal, 2 synergids, 1 egg, 1 central cell) with 8 nuclei.

29. In angiosperms, the functional megaspore develops into:
A. Ovary
B. Female gametophyte (embryo sac)
C. Seed coat
D. Fruit

✅Answer: B. Female gametophyte (embryo sac)

Explanation:
The functional megaspore undergoes 3 mitotic divisions to form the embryo sac.

30. Which of the following pairs is correctly matched?
A. Nucellus – Diploid
B. Egg cell – Diploid
C. Antipodal cells – Diploid
D. Synergids – Triploid

✅Answer: A. Nucellus – Diploid

Explanation:

Nucellus is part of ovule tissue and diploid.

Egg cell, antipodals, synergids – haploid.

Only endosperm becomes triploid (after double fertilization).

31. The phenomenon of alternation of generations refers to:
A. Repeating the same generation twice
B. Alternating between gametes and zygotes
C. Alternation between haploid and diploid phases
D. Alternation between male and female plants

✅Answer: C. Alternation between haploid and diploid phases

Explanation:
All plants exhibit alternation of generations — alternating between gametophyte (n) and sporophyte (2n) stages.

32. In the plant life cycle, the zygote develops directly into:
A. Gametophyte
B. Sporophyte
C. Gamete
D. Embryo sac

✅Answer: B. Sporophyte

Explanation:
Zygote (2n) undergoes mitotic divisions to form sporophyte, the diploid generation.

33. In liverworts, the female sex organ is called:
A. Antheridium
B. Archegonium
C. Spermogonium
D. Ovary

✅Answer: B. Archegonium

Explanation:
Archegonia are flask-shaped structures in bryophytes like liverworts that produce eggs.

34. Which of the following represents haplo-diplontic life cycle?
A. Chlamydomonas
B. Fucus
C. Moss
D. Funaria

✅Answer: D. Funaria

Explanation:
Funaria (a moss) shows haplo-diplontic cycle with both multicellular haploid (gametophyte) and diploid (sporophyte) stages.

35. Which of the following groups shows diplontic life cycle?
A. Algae
B. Bryophytes
C. Pteridophytes
D. Gymnosperms

✅Answer: D. Gymnosperms

Explanation:
In gymnosperms and angiosperms, the sporophyte (2n) is dominant; gametophyte is reduced — diplontic life cycle.

36. Which pair shows the correct dominant phase in their life cycle?
A. Algae – Sporophyte
B. Ferns – Gametophyte
C. Moss – Gametophyte
D. Cycas – Gametophyte

✅Answer: C. Moss – Gametophyte

Explanation:
In bryophytes (like mosses), the gametophyte (n) is dominant and photosynthetic.

37. Which of the following statements is incorrect?
A. Gymnosperms have naked ovules
B. Liverworts have true leaves
C. Pteridophytes have vascular tissues
D. Angiosperms produce enclosed seeds

✅Answer: B. Liverworts have true leaves

Explanation:
Liverworts have leaf-like structures, not true leaves (no vascular tissue).

38. Identify the correct combination regarding plant group and special feature:

Group Feature

A. Bryophyte No true roots
B. Pteridophyte Spores but no seeds
C. GymnospermSeeds not enclosed
D. Angiosperm Double fertilization

Options:
A. A, B and C only
B. All four
C. A and B only
D. B and D only

✅Answer: B. All four

Explanation:
All pairs correctly match plant groups with their respective distinguishing features.

39. Polytrichum belongs to:
A. Liverworts
B. Hornworts
C. Mosses
D. Pteridophytes

✅Answer: C. Mosses

Explanation:
Polytrichum is a well-known moss with a prominent gametophyte.

40. A cone-bearing vascular plant that lacks flowers and fruits is likely a:
A. Moss
B. Fern
C. Cycas
D. Mango

✅Answer: C. Cycas

Explanation:

Cycas is a gymnosperm — has cones, vascular tissue, but lacks flowers and fruits.

41. Which plant group has retained the motility of male gametes?
A. Angiosperms
B. Gymnosperms
C. Pteridophytes
D. Both B and C

✅Answer: D. Both B and C

Explanation:
Some gymnosperms (e.g., Cycas) and all pteridophytes retain flagellated motile male gametes requiring water for fertilization.

42. Which one of the following has no independent gametophyte stage?
A. Moss
B. Fern
C. Gymnosperm
D. Liverwort

✅Answer: C. Gymnosperm

Explanation:
In gymnosperms, the gametophyte is dependent on sporophyte and never lives independently.

43. Choose the correct match:

Structure Ploidy

Zygote A. Haploid
Gametophyte B. Diploid
Spore C. Diploid
Endosperm (Angiosperm) D. Triploid

Options:
A. Zygote–B, Gametophyte–A, Spore–A, Endosperm–D
B. Zygote–A, Gametophyte–C, Spore–B, Endosperm–D

C. Zygote–B, Gametophyte–B, Spore–C, Endosperm–D
D. Zygote–D, Gametophyte–A, Spore–B, Endosperm–C

✅Answer: A. Zygote–B, Gametophyte–A, Spore–A, Endosperm–D

Explanation:
Zygote – diploid, gametophyte – haploid, spore – haploid, endosperm (in angiosperms) – triploid.

44. In gymnosperms, pollination occurs by:
A. Water
B. Insects
C. Wind
D. Birds

✅Answer: C. Wind

Explanation:
Gymnosperms are anemophilous (pollinated by wind) due to exposed ovules and absence of attractive flowers.

45. The term "protonema" is specifically associated with:
A. Liverworts
B. Hornworts
C. Ferns
D. Mosses

✅Answer: D. Mosses

Explanation:
Protonema is a juvenile, filamentous stage in mosses, helping in vegetative propagation.