

PLANT KINGDOM

1. Match Column-I with Column-II and select the correct option from the codes given below.

Column-I	Column-II
A. Artificial system (i) of classification	Bentham and Hooker
B. Natural system of classification	(ii) Linnaeus
C. Phylogenetic system of classification	(iii) Englar and Prantl

- (A) A-(ii), B-(i), C-(iii)
(B) A-(i), B-(ii), C-(iii)
(C) A-(iii), B-(ii), C-(i)
(D) A-(iii), B-(i), C-(ii)
2. Which out of the following are included under tracheophyta i.e., vascular plants?
- (A) Pteridophytes (B) Gymnosperms
(C) Angiosperms (D) All of these

3. Match Column-I with Column-II and select the correct option from the codes given below.

Column-I		Column-II	
A. Non-vascular	(i) cryptogams		Gymnosperms, angiosperms
B. Vascular	cryptogams	(ii) Pteridophytes	
C. Phanerogams	(iii) Algae,		bryophytes

- (A) A-(iii), B-(ii), C-(i)
 (B) A-(ii), B-(i), C-(iii)
 (C) A-(i), B-(ii), C-(iii)
 (D) A-(ii), B-(iii), C-(i)
4. System of classification that employs numerical data to evaluate similarities and difference is known as
 (A) cytotaxonomy (B) biosystematics
 (C) phenetics (D) chematonomy
5. Read the given statements about algae and select the correct option.
 (i) Plant body is thalloid.
 (ii) Largely aquatic.
 (iii) Reproduction by vegetative, asexual and sexual methods.

(iv) *Chlamydomonas*, *Volvox* and *Ulothrix* are the multicellular algae.

- (A) Statements (i) and (ii) are true
- (B) Statements (ii) and (iii) are true
- (C) Statements (i), (ii) and (iii) are true
- (D) All statements are true.

6. _____ and _____ are unicellular algae, rich in proteins, which are used as food supplements even by space travelers.

- (A) *Chlorella*, *Spirulina*
- (B) *Gelidium*, *Gracilaria*
- (C) *Porphyra*, *Spirogyra*
- (D) *Laminaria*, *Spirogyra*

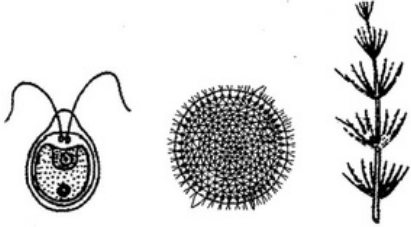
7. Match Column -S

Column-I	Column-II
A. Food	(i) Brown alage
B. Agar	(ii) <i>Porphyra</i> , <i>Laminaria</i>
C. Algin	(iii) <i>Gelidlum</i> <i>,Gracilaria</i>
D. Carrageenin	(iv) Red algae

- (A) A-(ii), B-(iii), C-(i), D-(iv)
- (B) A-(ii), B-(iii), C-(iv), D-(i)
- (C) A-(iii), B-(ii), C-(iv), D-(i)

(D) A-(iii), B-(ii), C-(i), D-(iv)

8. The algae shown in figure belong to the class



- (A) Chlorophyceae (B) Phaeophyceae
(C) Rhodophyceae (D) Cyanophyceae

9. Green algae usually have a rigid cell wall made of an inner layer of _____ and an outer layer of _____.

- (A) cellulose, cellulose (B) pectose, pectose
(C) pectose, cellulose (D) cellulose, pectose

10. Which of the following is a correct match of algal class with its characteristic reserve food ?

- (A) Chlorophyceae - Starch
(B) Phaeophyceae - Mannitol, laminarin
(C) Rhodophyceae - Floridean starch
(D) All of these

11. In most green algae, pyrenoids represent the storage bodies located in _____.

- (A) chloroplasts (B) mitochondria
(C) cytoplasm (D) nucleus

12. Cup-shaped is present in

(A) *Spirogyra*

(B) *Chlamydomonas*

(C) *Ulothrix*

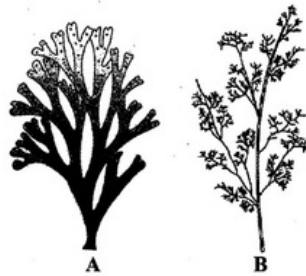
(D) *Chara*

13. Which of the following pigments are found in brown algae?

(A) Chl *a*, Chl *c* (B) Chl *a*, Chl *d* (C) Chl *a*, Chl *c* and

fucoxanthin (D) Chl *a*, phycoerythrin

14. Identify the given figures of algae and select the correct option.



	A	B
(A)	<i>Fucus</i>	<i>Polysiphonia</i>
(B)	<i>Dictyota</i>	<i>Polysiphonia</i>
(C)	<i>Dictyota</i>	<i>Porphyra</i>
(D)	<i>Prophyra</i>	<i>Polysiphonia</i>

15. Select the correct match of algal class and its characteristic flagellation.

- (A) Chlorophyceae - 2 – 8 equal, apical
- (B) Phaeophyceae - 2, unequal, lateral
- (C) Rhodophyceae - Absent
- (D) All of these

16. Read the given statements and select the correct option.

Statement 1: *Volvox* forms spherical colony.

Statement 2: *Volvox* colony is made up of non-motile cells.

- (A) Both statements 1 and 2 are correct and statement 2 is the correct explanation of statement 1.
- (B) Both statements 1 and 2 are correct but statement 2 is not the correct explanation of statement 1.
- (C) Statement 1 is correct and statement 2 is incorrect.
- (D) Both statements 1 and 2 are incorrect.

17. *Batrachospermum* is a

- (A) red algae of sea
- (B) brown algae
- (C) blue algae
- (D) red algae of freshwater

18. Which type of sexual reproduction is found in *Volvox*?

- (A) Isogamous
- (B) Anisogamous
- (C) Oogamous
- (D) All of these

19. Which among the given options is division Thallophyta?

- (A) Ulothrix
- (B) Funaria
- (C) Riccia
- (D) Adiantum

20. Which one of the following cannot fix nitrogen?

- (A) *Nostoc*
- (B) *Azotobacter*
- (C) *spirogyra*
- (D) *Anabaena*

21. Seaweeds are a source of

- (A) chlorine (C) bromine
- (B) fluorine
- (D) iodine

22. Common example of red algae is

- (A) *Porphyra*
- (B) *Batrachospermum*
- (C) *Ectocarpus*
- (D) both A and B.

23. Match Column-I with Column-II and select the correct option from the codes given below.

Column-I	Column-II
A. <i>Spirogyra</i>	(i) Unicellular
B. <i>Chlamydomonas</i>	(ii) Filamentous
C. <i>Volvox</i>	(iii) Colonial form

D. Some giant marine forms	(iv) Kelps
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(A) A-(ii), B-(i), C-(iii), D-(iv) (B) A-(ii), B-(iii), C-(iv), D-(i) (C) A-(iii), B-(ii), C-(iv), D-(i) (D) A-(iii), B-(ii), C-(i), D-(iv)

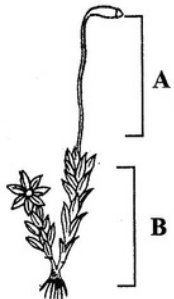
24. Gemmae are multicellular green structures for vegetative propagation. These are found inside gemma cups in

- (A) *Riccia* capsule (B) *Marchantia* thallus
(C) *Funaria* protonema (D) Fern prothallus

25. *Funaria* requires water because

- (A) fertilization occurs in water only
(B) *Funaria* is a hydrophyte
(C) plants need water for gametogenesis
(D) gametangia cannot develop without water.

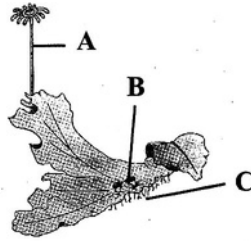
26. Select the option that correctly identifies A and B in the given figure.



	A	B
(A)	Sporophyte	Gametophyte
(B)	Gametophyte	Sporophyte
(C)	Male shoot	Female shoot
(D)	Female shoot	Male shoot

27. Read the given statements and select the correct option.
Statement 1: Bryophytes are amphibians of plant kingdom.
Statement 2: They live in soil but depend on water for sexual reproduction.
- (A) Both statements 1 and 2 are correct and statement 2 is the correct explanation of statement 1.
(B) Both statements 1 and 2 are correct but statement 2 is not the correct explanation of statement 1.
(C) Statement 1 is correct and statement 2 is incorrect.
(D) Both statements 1 and 2 are incorrect.
28. Read the given statement and select the correct option.
Statement 1: Each sperm of moss has two flagella.
Statement 2: Water is essential for fertilization in mosses.
- (A) Both statements 1 and 2 are correct and statement 2 is the correct explanation of statement 1.
(B) Both statements 1 and 2 are correct but statement 2 is not the correct explanation of statement 1.
(C) Statement 1 is correct and statement 2 is incorrect.
(D) Both statements 1 and 2 are incorrect.

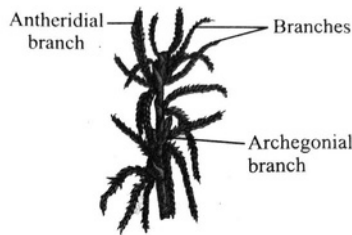
29. Select the option that correctly identifies A, B and C in the given of female thallus of *Marchantia*.



- (A) A – Antheridiophore, B – Gemma cup, C – Rhizoids
(B) A – Antheridiophore, B – Rhizoids, C – Gemma cup
(C) A – Rhizoids, B – Gemma cup, C – Antheridiophore
(D) A – Rhizoids, B – Antheridiophore, C – Gemma cup
30. Select the option that includes liverworts only.
(A) *Riccia*, *Marchantia*
(B) *Riccia*, *Funaria*
(C) *Polytrichum*, *Marchantia*
(D) Both A and C
31. Which of the following is not a moss?
(A) *Polytrichum* (B) *Sphagnum*
(C) *Funaria* (D) *Riccia*
32. Read the following statements regarding bryophytes and select the correct answer.
(i) Lack true roots, stem and leaves.
(ii) Main plant body is haploid.
(iii) Sex-organs are unicellular and non-jacketed.

- (iv) Fertilization produces an embryo inside the water.
- (A) Statements (i) and (ii) are correct
- (B) Statements (ii) and (iii) are correct
- (C) Statements (iii) and (iv) are correct
- (D) All statements are correct

33. Which of the following options correctly identifies the plant shown in figure and the group it belongs to?



- (A) *Selaginella* - Pteridophyte
 - (B) *Sphagnum* - Moss
 - (C) *Sphagnum* - Liverwort
 - (D) *Funaria* - Moss
34. Which of the following statements is incorrect?
- (A) Mosses alongwith lichens are the first organisms to colonise rocks.
 - (B) *Sphagnum* is used as packing material for transportation of living material
 - (C) In liverworts, spores are produced after meiosis within the capsule.
 - (D) *Funaria* possesses unicellular unbranched rhizoids.

35. In pteridophytes, main plant body is a (i), which is (ii) _____ into true roots, stem and leaves.

Fill in the blanks in above statement and select the correct option.

	(i)	(ii)
(A)	Sporophyte	Differentiated
(B)	Sporophyte	Not differentiated
(C)	Gametophyte	Differentiated
(D)	Gametophyte	Not differentiated

36. The given figure shows a/an



(A) *Adiantum* plant

(B) *Dryopteris* plant

(C) *Cedrus* leaf

(D) *Acacia* leaf

37. Match Column-I with Column-II and select the correct option from the codes given below.

Column-I	A.	Column-II
Psilopsida	B.	(i) <i>Psilotum</i>
Lycopsida	C.	(ii) <i>Equisetum</i>
Sphenopsida	D.	(iii) <i>Selaginella</i>
Pteropsida		(iv) <i>Dryopteris</i>

- (A) A-(i), B-(ii), C-(iii), D-(iv) (B) A-(i), B-(iv), C-(iii), D-(ii) (C) A-(i), B-(iii), C-(ii), D-(iv) (D) A-(i), B-(iii), C-(iv), D-(ii)

38. Select the correct pattern of arrangement of reproductive structures for gymnosperms.

- (A) Spores → Sporophylls → Sporangia → Strobili
 (B) Spores → Sporangia → Sporophylls → Strobili
 (C) Sporangia → Sporophylls → Spores → Strobili
 (D) Spores → Sporangia → Strobili → Sporophylls

39. Seed plants are all

- (A) heterosporous (B) dioecious
 (C) monoecious (D) homosporous

40. Match Column-I with Column-II and select the correct option from the codes given below.

Column-I	Column-II
A. Sagopalm	(i) <i>Ephedra</i>
B. Chilgoza fruit	(ii) <i>Pinus gerardiana</i>
C. Ephedrine drug	(iii) <i>Cycas revolute</i>
D. Cedar wood oil	(iv) <i>Juniperus virginiana</i>

- (A) A-(iv), B-(ii), C-(i), D-(iii)
 (B) A-(iii), B-(ii), C-(i), D-(iv)
 (C) A-(iii), B-(iv), C-(i), D-(ii)
 (D) A-(ii), B-(iii), C-(i), D-(iv)

41. Select the mismatched pair.

- (A) Amphibians of plant kingdom – Bryophytes
 (B) First terrestrial plant to possess vascular tissues – Gymnosperms
 (C) Water required for fertilization – Pteridophytes
 (D) Seeds enclosed in fruits – Angiosperms

42. The sporophyte is the dominant phase in

- (A) pteridophytes (B) gymnosperms
 (C) angiosperms (D) All of these

43. In angiosperms, functional megaspore develops into
(A) embryo sac (B) ovule
(C) endosperm (D) pollen sac.
44. Select the mismatched pair. (A) Smallest angiosperm - *Rafflesia* (B) Tallest angiosperm - *Eucalyptus regnans* (C) Marine angiosperms - *Zostera, Thalassia* (D) Angiosperm with smallest seed - Orchid
45. Read the given statements and select the incorrect ones.
(i) Sporophyte in mosses is more elaborate than that in liverworts.
(ii) *Salvinia* is homosporous.
(iii) Life-cycle in all spermatophytes is diplontic.
(iv) In *Cycas*, male cones and megasporophylls are borne on the same trees.
(A) (i) and (ii) (B) (i) and (iii)
(C) (ii) and (iv) (D) (iii) and (iv)

ANSWERS

1. A 2. D 3. A 4. C 11. A 5. C 6. A 7. A 8. A 9. D 10. D
12. B 13. C 14. B 21. D 22. D 15. D 16. C 17. D 18. C 19. A 20. C
D 23. A 24. B 31. D 32. A 25. A 26. A 27. A 27. B 29. C 30. A
33. B 34. D 39. A 40. B 41. 35. A 36. B 37. C 38. B
B 42. D 43. A 44. A 45. C

SOLUTIONS

2. Tracheophyta are those plants which possess conducting or vascular tissues, xylem and phloem. Xylem transports water and minerals while phloem conducts organic food. Tracheophytes include pteridophytes, gymnosperms and angiosperms.
3. Cryptogamae refers to plants without seeds and Phanerogamae refers to plants with seeds. Algae and bryophytes are non-vascular cryptogams. Pteridophytes are vascular cryptogams. Gymnosperms and angiosperms are phanerogams.
4. Phenetics is a system of classification based on similarity between organism without regard to their evolutionary relationships. In this type of classification the organism are arranged according to overall similarity of existing organism based on observation characters.
8. The algae shown in figure are Chlamydomonas, Volvox and Chara respectively, belonging to class Chlorophyceae.

9. Cell wall of green algae is thin, transparent and firm and consist of outer pectic and inner cellulosic layers. It is smooth but in most of species it gets thickened at the anterior end the form an apical papilla.
11. Pyrenoids are cellular micro-compartments, and are not membrane bound organelles. Pyrenoids are fond within chloroplast. Chloroplasts generally contain one to many pyrenoids for storage of starch.
12. A single cup-shaped chloroplast is characteristic of Chlamydomonas. It occupies the major portion of cell and is thick at the base while its sides are relatively thin and projected upward.
17. Batrachospermum is a freshwater filamentous red alga, commonly called frog sprawn alga.
18. Volvox shows advanced oogamy which takes place by the formation of antheridia and oogonia. They may be formed on the same plant (monoecious) or on different plants (dioecious). The sex-organs are produced fewer in number.
19. Ulothrix is an example of division Thallophyta, as Algae and fungi are considered together in Thalophyta, even though there are basic differences in nutrition and Ulothrix is a genus of filamentous green algae, commonly found in fresh and sea water.
20. Nostoc and Anabaena are nitrogen fixing blue-green algae, Azotobacter is free-living nitrogen fixing bacterium, while

Spirogyra is a green alga which does not fix atmospheric nitrogen

21. Seaweeds are rich in minerals such as iodine, calcium, sodium, magnesium, potassium, iron, zinc, copper. Seaweeds also provide fibre, vitamins, enzymes and high quality protein.
22. Porphyra and Batrachosperum, both are red algae (Rhodophyceae). Ectocarpus is a filamentous marine brown alga (Phaeophyceae).
30. The gametophytic plant body of liverworts is usually dorsiventral, leaf-like and gives the appearance of liver. The common examples of liverworts are Riccia, Marchantia, Pellia, etc
31. Riccia is liverwort (Hepaticae), which grows predominantly in wet terrestrial habitats and are free floating or submerged aquatic.
34. Funaria has a radial symmetry with a once branched axis or stem, a number of spirally arranged leaves and branched colourless multicellular rhizoids. The axis is aerial, erect, slender and monopodially branched.
40. Heterospory is the condition of producing two types of spores, i.e., megaspores and microspores. Heterospory occurs in all seed bearing plants i.e. gymnosperms and angiosperms.
41. Pteridophytes are vascular cryptogams. They are the first vascular land plants.

42. In gymnosperms, pteridophytes and angiosperms, the sporophytic phase is dominant and the gametophytic phase is dependent on sporophyte.
43. In angiosperms functional megaspore develops into embryo sac. Embryo sac formation is preceded by meiosis, so all the cell of embryo sac are haploid.
45. Smallest angiosperm is *Wolffia* microscopic, while *Rafflesia arnoldii* is the parasitic plant with world's largest flower.