BIOLOGY

BOOKS - A2Z BIOLOGY (HINGLISH)

PLANT KINGDOM

Section A Topicwise Questions Topic 1 Classification

1. Which are true about numerical taxonomy ?

(a) Equal importance given to each character

(b) Based on all observable charcacters

(c) Easily carried out using computers

(d) At the same time only few character can be considered.

A. a, b and d

B. b, c and d

C. a, c and d

D. a, b and c

Answer: D

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2. Natural system of classification consider

A. Externa and internal features

B. Ultrstructure and anatomy

C. Embryology and phytochemistry

D. All of the above

Answer: D

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3. Read the following statements and find out the incorrect statement.

A. Our understanding of the plant kingdom has changed over time. Fungi, and members of the Monera and Protisa having cell walls have now been excluded from Plantae.

B. Cyanobacteria that are also referred to as blue green algae are not 'algae' any more

C. Numberical taxonomy is based on chromosome number structure and behaviour

D. Chemotaxonomy that uses the chemical constituents of the plant to resolve confusion, are also used by taxonomists these days.

Answer: C

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4. Algae are placed in

A. Thallophyta

B. Embryophyta

C. Spermatophyta

D. Tracheophyta

Answer: A

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5. Tracheophyta includes

A. Bryopyta and Pteridophyta

B. Pteridophyta and Gymnosperm

C. Gymnosperm and Angiosperm

D. Pteridophyta, Gymnosperm and Angiosperm.

Answer: D

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6. Which is/are included in the phanergams ?

A. Pteridophytes

B. Gymnosperms

C. Angiosperms

D. Both B and C

Answer: D

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7. Classification for flowering plants was given by

A. R.H Whittaker

B. Aristotle and G.J Mendel

C. George Bentham and J.D Hooker

D. Aristotle and George Bentham

Answer: C

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8. Classification which is based on evolutionary relationships of various organism is

A. Artifical

B. Natural

C. Phylogenetic

D. Two kingdom classification

Answer: C

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9. The system of classification of plants proposed by these two botnists is claimed to be a natural system.

A. Bentham and Hooker

B. Aristotle and Theophrastus

C. John Hutchinson and Takhtajan

D. Engler and Prantl

Answer: A

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10. Classification which is based only on morphological characters is called

A. Artificial system

B. Natural system

C. Phylogenetic system

D. Numerical taxonomy

Answer: A

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11. Classification based on cytological information like chromosome number, structure and behaviour is called

A. Numerical Taxonomy

B. Cytotaxonomy

C. Chemtaxonomy

D. Nuclear Taxonomy

Answer: B

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Section A Topicwise Questions Topic 2 Algae Chlorophyceae Phaeophyceae Rhodophyceae

1. Read the following statements and find out the incorrect statement.

A. Algae usually reproduce vegetatively by fragmentation, asexually by formation of different types of spores and sexually by formation of gametes.

B. Algae are classified into three classes, pteridophytes into four classes and angiosperms into two classes

C. Algae are chlorophyll bearing simple, thalloid, autotrophic and largely aquatic organisms.

D. The plant body of algae is more differentiated than that of bryophytes.

Answer: D

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2. Study of algae is called

A. Phycology

B. Mycology

C. Algology

D. Both A and C

Answer: D

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3. Phycoreythrin pigment is found in

A. Green algae

B. Red algae

C. Brown algae

D. All of the above

Answer: B

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4. In which alga, motile colonies are found ?

A. Volvox

B. Spirogyra

C. Ulothrix

D. All of the above

Answer: A

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5. In contrast to algae, fungi

A. are multicellular

B. have chitinised cell walls

C. are non-chlorophyllous

D. Both B and C

Answer: D

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6. Match the column I and II, and choose the correct combination from the options given

	Column-I (Class)		Column-II (Stored food material)
a.	Chlorophyceae	(i)	Floridean starch
b.	Phaeophyceae	(ii)	Starch
c.	Rhodoohyceae	(iii)	Laminain and mannitol

A. a-i,b-ii,c-iii

B. a-ii,b-iii,c-i

C. a-i,b-iii,c-ii

D. a-ii,b-i,c-iii

Answer: B

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7. Largest unicellular organism is

A. Ostrich

B. Yeast

C. Acetabularia

D. Ulothrix

Answer: C

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8. Algae growing on shells and bodies of animals are called

A. Epiphytic

B. Epilithic

C. Epizoic

D. Endophytic

Answer: C

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9. Which of the following is non-flagellate ?

A. Chlorella

B. Ulothrix

C. Spitogyra

D. All of the above

Answer: D

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10. Fusion between a larger non-motile female gamete and smaller motile male gamete is called

A. Isogamy

B. Anisogamy

C. Oogamy

D. None of the above

Answer: C

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11. A cell of Ulothrix has how many chlorophasts ?

A. Single

B. Many

C. Few

D. None

Answer: A

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12. Pyrenoids are found in the chloroplast of

A. Algae

B. Pteridophytes

C. Gymnosperm

D. Angiosperm

Answer: A

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13. Match the columsn I and II, and choose the correct combination from the options given

A. a-ii,b-i,c-iii

B. a-iii,b-ii,c-i

C. a-i,b-iii,c-ii

D. a-ii,b-iii,c-i

Answer: D

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14. Pyrenoid consists of

A. Protein besides starch

B. Protein around starch

C. Starch around protein

D. Both A and C

Answer: D

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15. Sea weeds belongs to

A. Green algae

B. Red algae

C. Brown algae

D. BGA

Answer: C

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16. Pyrenoids are related to

A. Protein storage

B. Starch formation

C. Metabolism

D. Reproduction

Answer: B

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17. Fucoxanthin pigment is found in

A. Green algae

B. Brown algae

C. Red algae

D. All of the above

Answer: B

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18. Algae which is used as food by space travellers is

A. Chlorella

B. Nostoc

C. Spirulina

D. Both A and C

Answer: D

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19. Fusion of two motile gamtes which are dissimilar in size is termed as

A. Oogamy

B. Isogamy

C. Anisogamy

D. Zoogamy

Answer: C

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20. Ulothrix and Spirogyra are

A. Colonial and branched

B. Solitary and branched

C. Filamentous and unbranched

D. Filamentous and branched

Answer: C

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21. Agar and Algin are the product of

A. Cell-membrane

B. Cell-wall

C. Mitochondria

D. Vacuole

Answer: B

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22. Recognise the figure and find out the correct matching :

A. a-front,b-stipe,c-holdfast

B. a-stipe,b-front-c-holdfast

C. a-front,b-holdfast,c-stipe

D. a-stipe,b-holdfast,c-front

Answer: A

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23. Most of the algae are

A. aquatic

B. terrestrial

C. saprophytic

D. parasitic

Answer: A

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24. Who is called father of phycology ?

A. M.O.P. Iyenger

B. F.E Fritsch

C. De Bary

D. Butler

Answer: B

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25. Who is called father of Indian phycology ?

A. Ramdeo Mistra

B. M.S Swaminthan

C. Birbalm Sahni

D. M.O.P Iyenger

Answer: D

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26. Ulothrix releasing spores during

A. Morning

B. Evening

C. Night

D. Any of the above

Answer: A

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27. Sexual reproduction in Ulothrix is

A. Isogamous

B. Anisogamous

C. Oogamous

D. All of the above

Answer: A

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28. In Ulothrix, meiosis taken place during

A. Gamete formation

B. Zoospore formation

C. Zoospore germination

D. Zygote germination

Answer: D

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29. Ulothrix and Spirogyra reproduces vegetatively by

A. Fragmentation

B. Fission

C. Budding

D. All of the above

Answer: A

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30. Find out the incorrect statement about the Rhodophyceae

A. Majority are marine with greater concentrations found in the warmer areas.

B. They are also at great depths of oceans where relatively little light penetrates

C. Usually reproduce vegetatively by fragmentation.

D. They reproduce asexually by biflagellate zoospores.

Answer: D

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31. Match the column I and II, and choose the correct combination from the options given

	Column-I (Class)		Column-II (Major pigments)
(a)	Chlorophyceae	(i)	Chlorophyll a,c, fucoxanthin
(b)	Phacephyceae	(ii)	Chlorophyll a,d, phycoerythrin
(c)	Rhodophyceae	(iii)	Chlorophyll a,b

A. a-iii,b-i,c-ii

B. a-iii,b-ii,c-i

C. a-ii,b-i,c-iii

D. a-i,b-iii,c-ii

Answer: A

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32. Type(s) of the sexual reproduction found in red algae is/are

A. Isogamous

B. Anisogamous

C. Oogamous

D. All of the above

Answer: C

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33. In chlorophyceae and phaephyceae, the type(s) of sexual reproduction is/are

A. isogamous

B. Anisogamous

C. Oogamous

D. All of the above

Answer: D

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34. In phaeophyceae, the gametes are

A. Pyriform and bear 2 flagells (one longitudinal and othe transverse)

B. Pear-shaped and bear 2 flagella that are laterally attached

C. Pyriform and bear 2-8, equal and apical flagella

D. Pear-shaped and bear 2-8, equal and apical flagella

Answer: B

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35. In phaeophyceae, the spores (zoospores) are

A. Pyriform and ber 2 flagella (one longitudinal and other transverse)

B. Pear-shaped and bear 2 flagella that are laterally attached

C. Pyriform and bear 2-8, equal and apical flagella

D. Pear-shaped and bear 2-8, equal and apical flagella

Answer: B

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36. The plant body of the brown algae is attched to the substratum by

A. Holdfast

B. Stipe

C. Stalk

D. Front

Answer: A

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37. In which class, the cell wall possesses pectin and polysulphate esters beside the cellulose ?

A. Chlorophyceae

B. Phaeophyceae

C. Rhodophyceae

D. All of the above

Answer: C

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38. In Fucus, the male and female gametes are

A. Motile

B. Non-motile

C. Motile and non-motile respectively

D. Non-motile and moltile respectively

Answer: C

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39. Match the column I and II, and choose the correct combination from he options given.

Find the correct match.

A. a-i,b-iii,c-ii

B. a-iii,b-ii,c-i

C. a-ii,b-iii,c-i

D. a-ii,b-i,c-iii

Answer: C

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40. In phaephyceae, vegetative reproduction takes place by

A. Fragmentation

B. Fission

C. Budding

D. All of the above

Answer: A

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41. Pyrenoids are located in the

A. Nucleus

B. Nucleolus

C. Chloroplast

D. Mitochonrin

Answer: C

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42. How many species of marine algae are used as food ?

A. 17

B. 7

C. 70

D. 71

Answer: C

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43. Massive plant bodies are formed by

A. Ulothrix

B. Spirogyra

C. Both A and B

D. Kelp

Answer: D

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44. Floridean starch is very similar to

A. Amylopectin

B. Cellulose

C. Glycogen

D. Both A and C

Answer: D

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45. Pectin and polysulphate esters are present in the cell wall of

A. Red algae

B. Brown algae

C. Green algae

D. Both A and B

Answer: A

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46. Recognise the figure and find out the correct matching :

A. a-Chlamydomonas, b-Spirogyra

B. a-Volvox, b-Spirogyra

C. a-Volvox,b-Chlamydomonas

D. a-Chlamydononas, b-Volvox

Answer: D

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47. Algae are classfied into three classes on the basis of

A. Type of pigment

B. Type of stored food material

C. Type of reproduction

D. Both A and B

Answer: D

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48. Match the columns I,II and III, and choose the correct combination from the options given

Column-I (Product)	Column-II (Obtained from)	Column-III (Class)
(a) Iodine and Algin	(1) Macrocystis	(K) Red algae
(b) Bromine	(2) Chondrus	(L) Brown algae
(c) Potash	(3) Fucus and Laminaria	
(d) Agar	(4) Gelidium and Gracularia	
(e) Carrageen	(5) Polysphonia	

A. a-5-K,b-3-L,c-4-K,d-2-K,e-1-L

B. a-3-K,b-5-L,c-2-K,d-1-L,e-4-L

C. a-3-L,b-5-K,c-1-K,d-4-K,e-2-L

D. a-3-L,b-5-K,c-1-L,d-4-K,e-2-K

Answer: D

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49. Cell wall is made of an inner layer of cellulose and an outer layer of pectose, in

A. Ectocarpus

B. Sargassum

C. Chara

D. Gracilaria

Answer: C

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50. At least a half of the total CO_2 fixation on earth is carried out by

A. Green algae

B. Brown algae

C. Red algae

D. Algae

Answer: D

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Section A Topicwise Questions Topic 3 Bryophytes Liverworts And Mosses

1. Moss peat is used as a packing material for sending flower and live plants to distant places because

A. It is easily available

B. It reduces transpiration

C. It is hygroscopic

D. All of the above

Answer: C

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2. Indepdent sporophyte is not found in

A. Bryophyta

B. Pteridophyta

C. Gymnosperm

D. Angiosperm

Answer: A

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3. Which of the following is used as a fuel and has a good capacity of water absorption ?

A. Riccia

B. Marchanita

C. Sphagnum

D. Funaria

Answer: C

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4. Moss plant develops from

A. Protonema

B. Prothallus

C. Gamete

D. Zygote

Answer: A

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5. Recognise the figure and find out the correct matching :

A. a-archegonia,b-antheridia

B. a-antheridia,b-archegonia

C. a-antheridophore,b-archegoniophore

D. a-archegoniophore,b-antheridphore

Answer: D

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6. In moss, sporophyte is formed on

A. Antheridium

B. Archegonium

C. Prothallus

D. Leafy stage

Answer: B

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7. Plant body in Furaria or Bryophyte is

A. Predominantly gametophyte with sporophyte

B. Predominantly sporophyte with gametophyte

C. Completely gametophyte

D. Completely sporophyte

Answer: C

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8. Mosses grow in moist and shady place because they

A. Lack root

B. Lack vascular tissue

C. Require water for the transport of gametes

D. All of the above

Answer: C

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9. In Riccia, gametophyte starts from spore and ends in

A. Zygote

B. Spore

C. Capsule

D. Prothallus

Answer: A

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10. In bryophytes/Riccia the archegonium is

A. Flask-shaped

B. Kidney-shaped

C. Heart-shaped

D. Rounded

Answer: A

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11. An economically important bryophyte is

A. Riccia

B. Marchanita

C. Sphagnum

D. Funaria

Answer: C

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12. In bryophyte embryo develops inside the

A. Archegonia

B. Anteridia

C. Sori

D. Cone

Answer: A

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13. In Funaria, spores shows the beginning of

A. Gametophytic generation

B. Sporophytic generation

C. Capsule

D. Prothallus

Answer: A

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14. In Funaria, the haploid structure is

A. Capsule

B. Seta

C. Columella

D. Protonema

Answer: D

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15. In Funaria, meiosis occurs in

A. Protonema

B. Prothallus

C. Spore mother cells

D. Spore

Answer: C

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16. In bryophytes, multicellular jacketed female sex organ is called

A. Antheridium

B. Archegonium

C. Protonema

D. Prothallus

Answer: B

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17. Vegetative propagation by Gemma occurs in

A. Riccia

B. Marchanita

C. Sphagnum

D. Funaria

Answer: B

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18. What is the unique feature of bryophytes ?

A. Vascular bundles

B. Medicinal importance

C. Gametophyte attached to the sporophyte

D. Sporophyte attached to the gametophyte

Answer: C

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19. In moss, stomata are found on

A. Leaves

B. Stem

C. Capsule

D. Spore

Answer: D

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20. Rhizoids of Funaria are

A. Unicellular, colourless with oblique septa

B. Multicellular, coloured wih transverse septa

C. Multicellular, colourless with oblique septa

D. Multicellular, colourless with oblique and transverse septa

Answer: C

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21. A spore of moss on germination form

A. Sporophyte

B. Leafy gametophyte

C. Protonema

D. Prothallus

Answer: C

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22. Protonema is

A. Haploid nd 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

Answer: A

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23. Recognise the figure and find out the correct matching :

A. a-Antheridial branch, b-Archegonial branch, c-Sphagnum gametophyte

B. a-Antheridial branch,b-Archegonial branch,c-Sphagnum sporophyte

C. a-Archegonial branch,b-Antherodial branch, c-Sphagnum sporophyte

D. a-Archegonial branch,b-Antheridial branch,c-Sphagnum gametophyte

Answer: A

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24. The protonema of moss which is not formed from spore is called

A. Prothallus

B. Leafy stage

C. 1° protonema

D. 2° protonema

Answer: D

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25. In Funaria, archegonia attracks antherozoids by

A. Sucrose/Sugar

B. Malic acid

C. Maleic acid

D. Citric acid

Answer: A

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26. In moss, meiosis occurs in

A. Antheridia

B. Archegonia

C. Capsule

D. Both A and B

Answer: C

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27. Marchantia is

A. Monoecious

B. Dioecious

C. Heterosporous

D. Phanerogams

Answer: B

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28. Leafy gametophyte of moss is formed from

A. 1° protonema

B. 2° protonema

C. Prothallus

D. Sporophyte

Answer: B

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29. Rhizoids of the bryophytes are

A. Unicellular

B. Multicellular

C. Both A and B

D. None of the above

Answer: C

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30. In liverworts, how many rows of leaf-like appendages are present on the stem-like structure ?

A. 1

B. 2

C. 3

D. 4

Answer: B

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31. Antherozoids that are produced by bryophytes are

A. Non-flagellated

B. Briflagellated

C. Multiflagellated

D. Multiciliated

Answer: B

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32. Which provides peat that have long been used as fuel ?

A. Marchantia

B. Furnaria

C. Sphagnum

D. Polytrichum

Answer: C

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33. Polytrichum is

A. a liverwort

B. a moss

C. a horsetail

D. a ferm

Answer: B

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34. Sex-organs in mosses are produced at

A. Protonema

B. Leafy stage

C. Secondary protonema

D. Sporophyte

Answer: B

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35. Leafy stage develops from the secondary protonema as a

A. Apical bud

B. Terminal bud

C. Lateral bud

D. Meristem

Answer: C

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36. Which stage of the moss consist of upright, slender axis bearing spirally arranged leaves ?

A. Protonema stage

B. Prothallus stage

C. Leafy stage

D. Sporophyte

Answer: C

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37. Vegetative reproduction in mosses is by fragmentation and budding in the

A. 1° protonema

B. Leafy stage

C. 2° protonema

D. Both A and C

Answer: C

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38. The sporophyte of the bryophyte is totally or partially dependent on the gametophyte for its

A. Anchorage

B. Nutrition

C. Reproduction

D. Both A and B

Answer: D

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39. Recognise the figure and find out the correct matching :

A. Seta-a,Capsule-b,Gametophyte-c,Sporophyte-d

B. Seta-b,Capsule-a,Gametophyte-d,Sporophyte-c

C. Seta-a,Capsule-b,Gametophye-d,Sporophyte-c

D. Seta-b,Capsule-a,Gametophyte-c,Sporophyte-d

Answer: C

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40. Bryophytes are called amphibians of the plant kingdom because

A. Bryophytes can live in soil but are dependent on water for sexual reproduction

B. They usually occur in damp, humid and shaded area

C. They play an important role in plant succession on bare rocks and soil.

D. All of the above

Answer: A

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41. Thallus of the Marchantia is

A. Dorsiventral

B. Isobilateral

C. Both A and B

D. None of the above

Answer: A

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Section A Topicwise Questions Topic 4 Pteridophytes

1. Prothallus of ferm produces

A. Gametes

B. Spores

C. Both A and B

D. None of the above

Answer: A

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2. Recognise the figure and find out the correct matching :

A. a-Leaves,b-Stem,c-Rhizoid,d-Psilopsid

B. a-Fronds,b-Stem,c-Rhozoid,d-Sphenopsid

C. a-Leaves,b-Front,c-Root,d-Pterosid

D. a-Leaves,b-Stem,c-Root,d-Lycopsid

Answer: D

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3. Which is/are correct for the ferm Dryopteris ?

A. Sporophyte is partially dependent on gametophyte

B. Sporophyte is independent

C. Gametophyte is independent

D. Both B and C

Answer: D

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4. In pteridophytes or ferms or Dryopteris meiosis occurs during

A. Spore formation

B. Gamete formation

C. Formation of sex organs

D. Both A and B

Answer: A

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5. Pteridophytes are called vascular cryptogams because they are without seeds and flowers but having

A. Xylem

B. Phloem

C. Both A and B

D. None of the above

Answer: C

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6. The term prothallus is used for the

A. Reduced gametophyte of bryophytes

B. Reduced gametophyte of pteridophytes

C. Reduced sporophyte of pterodophytes

D. Reduced sporophyte of bryophytes

Answer: B

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7. Match the column I and II, and choose the correct combination from the options given

	Column-I		Column-II
a.	Selaginella	i.	Psilopsida
b.	Equisetum	ii.	Lycopsida
c.	Adiantum and Pteris	iii.	Sphenopsida
d.	Dryopteris	iv.	Pteropsida

A. i-a,ii-b,iii-c,iv-d

B. iii-d,iv-c,i-b,ii-a

C. ii-a,iii-b,ii-d,iv-c

D. iv-c,ii-a,iii-b,iv-d

Answer: D

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8. Gametophyte of ferm has

A. Antheridia

B. Archegonia

C. Capsule

D. Both A and B

Answer: D

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9. In ferm, prothallus develops from

A. Gametic union/fertilization

B. Zygote

C. 2° protonema

D. Spore

Answer: D

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10. Rudimentary seed habit is found in

A. Selaginella

B. Lycopodium

C. Equisetum

D. Adiantum

Answer: A

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11. Seed habit originated in some

A. Bryophytes

B. Pteridophytes

C. Gymnosperms

D. Angiosperms

Answer: B

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12. In Dryopteris, presence of multiflagellate antherozoids shows

A. Heterosporous development

B. Homosporous development

C. Seed habit

D. Aquatic ancestry

Answer: D

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13. In ferm, mature archegonia attract antherozoids chemotactically by

A. Sucrose/Sugar

B. Malic acid

C. Maleic acid

D. Citric acid

Answer: B

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14. In ferm, fertilization does not involves

A. Archegonia

B. Water

C. Pollen tube

D. Flagellated antherozoids

Answer: C

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15. Prothallus is

A. a structured in pterodophytes formed before the thallus develops

B. a sporophytic inconspicuous free living structure formed in pterodophytes

C. a gametophytes inconspicuous free living structure formed in pteridophytes

D. a gametophytic conspicuous structure formed after fertilization in pteridophytes

Answer: C

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16. Ancestors of seed plant possess

A. Vascular bundles

B. Seed habit

C. Heterospory

D. Heterotrichous habit

Answer: C

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17. Match the columns I and II, and choose the correct combination from the options given

Find the correct match.

A. a-ii,b-iv,c-iii,d-i

B. a-iii,b-iv,c-ii,d-i

C. a-iii,b-i,c-ii,d-iv

D. a-iii,b-i,c-iv,d-ii

Answer: D

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18. Which of the following are heterosporous pteridophytes ?

A. Selaginella and Salvinia

B. Marsilea and Azolla

C. Salvia and Salvinia

D. Both A and B

Answer: D

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19. In ferm, sex organs are found on

A. Protonema

B. Prothallus

C. Sporophyte

D. Sporophyll

Answer: B

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20. In pteridophytes, the sporophyte is produced by the

A. Gamete

B. Spore

C. Zygote

D. Gametophyte

Answer: C

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21. In pteridophytes, well-differentiated vascular tissues are found in

A. Roots

B. Stems

C. Leaves

D. All of the above

Answer: D

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Section A Topicwise Questions Topic 5 Gymnosperms And Angiosperms

1. Read the following statements :

(a) This is an exceptionally large group of plants occuring in wide range of habitats

(b) They provide us with food, fooder, fuel,medicines and several other commercially important products.

(c) They range in size from tiny, almost microscopic to tall tress over 100 metres

Here, we are taking about

Here, we are talking about

A. Bryophytes

B. Pteridophytes

C. Gymnosperms

D. Angiospherms

Answer: D

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2. Why of the following is the characteristic feature of gymnosperms ?

A. Winged seeds

B. Living fossils

C. Naked seeds

D. Multiciliated male gametes

Answer: C

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3. Cycas antherozoids are

A. Kidney-shaped

B. Heart-shaped

C. Liver-shaped

D. Top-shaped

Answer: D

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4. Gymnosperms are called naked seeded plants due to the absence of

A. Endosperm

B. Ovary wall

C. Vessels

D. Tracheids

Answer: B

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5. Which of the following are not seed producers (spemtatophytes) ?

A. ficus and pinus

B. Salvia and salvinia

C. Funaria and Ferm

D. Pyrus and Riccia

Answer: C

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6. Recognise the figure and find out the correct matching :

A. Cycas-a,Pinus-b,Ginkgo-c

B. Cycas-c,Pinus-a,Ginkgo-b

C. Cycas-b,Pinus-c,Ginkgo-a

D. Cycas-c,Pinus-b,Ginkgo-a

Answer: C

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7. Among plant kingdom, Cycas has the

A. largest spermatozoids

B. largest egg

C. largest ovule

D. All of the above

Answer: D

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8. Pollen grains in Pinus, develops inside the

A. Pollen chamber

B. Microsporangium

C. Microgametangium

D. Anther

Answer: B

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9. In Pinus, gametophytes generation is represented by

A. Microspores

B. Megaspores/Macrospores

C. Male and female cones

D. Both A and B

Answer: D

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10. In Pinus, male and female cones occurs on

A. different plants

B. same branch of same plant

C. different branches of same plant

D. different branch of different plants

Answer: C

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11. Pinus or Gymnosperms differs from angiosperms in having

A. Vascular bundles

B. Heterospory

C. Seeds

D. Ovules not enclosed in ovary

Answer: D

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12. In Cycas or gymnosperms, pollination takes place by

A. Water/Hydrophily

B. Wind/Anemophily

C. Insects/Entomophily

D. Animals/Zoophily

Answer: B

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13. Gnetum shows similarity with angiosperms due to

A. absence of resin ducts

B. absence of archegonia

C. presence of vessel elements

D. both B and C

Answer: D

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14. In Cycas, an ovule has how many archegonium/archegonia ?

A. 1

B. 2

C. $4 - 6$

D. $2 - 8$

Answer: D

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15. In gymnosperms, number of male gamete(s) produced by each pollen grain is/are

A. 1

B. 2

C. 3

D. 4

Answer: B

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16. Earth is dominated by angiosperms because of their

A. Large number of seeds

B. Domestication by humans

C. Entomophily

D. Adaptation to various habitats

Answer: D

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17. Recognise the figure and find out that to which division that plant belongs :

A. Monocotyledonae

B. Dicotyledonae

C. Angiospermae

D. Anacardiaceae

Answer: C

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18. Cycas has two cotyledons but not inclided in angiosperms because it has

A. No vessels

B. No seeds

C. Naked seeds

D. Flowers

Answer: C

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19. The structure that are haploid in Pinus are

A. Megaspore, embryo and endosperm

B. Megaspore, pollen grain and endosperm

C. Leaf, root and embryo

D. Integument,megaspore and root

Answer: B

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20. The gaint Redwood tree (Sequoia sempervirens) is a/an

A. Angiosperm

B. Tree fern

C. Pteridophyte

D. Gymnosperm

Answer: D

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21. In Cycas

A. Male cones and female cones are present on same plant

B. Male cones and female cones are present on different plants

C. Male cones and megasporophylls are present on same plant

D. Male cones and megsporophylls are found one different plants

Answer: D

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22. Roots of the Cycas are

A. Caoralloid

B. Simple

C. Both A and B

D. None of the above

Answer: C

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23. How many chromosormes are present in gymnospermic endosperm if leaf has 12 chromosomes ?

A. 6

B. 12

C. 18

D. 24

Answer: A

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24. Which of the following is not found in gymnosperms ?

A. Ovule

B. Seed

C. Archegonium

D. Antheridium

Answer: D

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25. In gymnosperms, the female gametophyte gametophyte bears how many archegonium/archegonia ?

A. One

B. 1 or 2

C. Two or more

D. None of the above

Answer: C

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26. Wolfia is the member of

A. Bryophytes

B. Angiosperms

C. Pteridophytes

D. Gymnosperms

Answer: B

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27. Types of leaves that are found in the gymnosperms is/are

A. Simple

B. Compound

C. Both A and B

D. None of the above

Answer: C

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28. Gymnosperms include

A. Shrubs

B. Medium sized trees

C. Tall trees

D. All of the above

Answer: D

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29. In gymnosperms, ovules are borne on

A. Megasporangia

B. Megasporophyll

C. Nucellus

D. Archegonia

Answer: B

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30. Read the following statements :

a. The male or female cones or strobili may be borne on same tree in Pinus

b. In Cycas, male cones and megasporophylls are borne on different tress.

c. Stem of Cycas is branched and of Pinus and Cedrus is unbranched

d. In gymnosperms, generally tap roots are found

Select the correct statements :

A. a,b

B. a,b,d

C. a,b,c

D. c,d

Answer: B

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31. This plant belongs to class

A. Angiospermae

B. Monocotyledonae

C. Dicotyledinae

D. Both A and B

Answer: B

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32. In gymnosperms, spores are produced within sporangia that are borne on sporophylls which are arranged.....along an axis to form lax or cones.

A. Radially

B. Longitudinally

C. Spirally

D. Transversely

Answer: C

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33. Consider the following statements regarding gymnosperms and choose the correct option

I. In gymnosperms, the male and female gametophytes have an independent existence

II. The multicellular female gametophyte is retained within the megasporangium

III. All gymnosperms are heterosporous.

Of these statements :

A. I and II are true but III is false

B. I and III are true but II is false

C. II and III are false but I is true

D. II and III are true but I is false.

Answer: D

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Section A Topicwise Questions Topic 6 Plants Life Cycles And Alternation Of Generations

1. The type of life-cycle in which there is no free-living sporophyte and the dominant, photosynthetic phase in such plants is the free-living gametophyte. We are talking about

A. Haplontic life cyclic shown in Volvox and some species of Chlamydomonas

B. Diplontic life cycle as shown in seed-bearing plants

C. Halpo-diplontic life cycle as shown in bryophytes and pteridophytes

D. Haplo-diplontic life cycle as shown in Kelps

Answer: A

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2. Recognise the figure and find out the correct matching :

A. a-Haplontic life cycle, b-diplontic life cycle, c-haplodiplontic lide cycle

B. a-Haplodiplontic life cycle, b-diplontic life cycle, c-haplontic life cycle

C. a-Diplontic life cyclic, b-haplodiplontic life cycle, c-haplontic life cycle

D. a-Haplontic life cycle, b-haplodiplontic life cycle, c-diplontic life cycle

Answer: C

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3. A dominant, independent, photosynthetic, thalloid or erect phase is represented by a haploid gametophyte and it alternates with the short-lived multicellular sporophyte totally or partially dependent on the gametophyte for its anchorage and nutrition. This type of pattern is present in

A. Bryophytes (mosses and liverworts)

B. Pteridophytes (ferns and horsetails)

C. Gymnosperms (Cycas and Pinus)

D. Most of the algae (Ulothrix and Spirogyra)

Answer: A

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4. The diploid sporophyte is represented by a donoate independent, photosynthetic, vasuclar plant body. Alternates with multicellular, saprophytic/autotrophic independent but short-lived haploid gametophyte. This type of pattern is exhibited by

A. Bryophytes (Sphagnum and Polytrichum)

B. Pteridophytes (Selaginella and Lycopodium)

C. Most of the algal genera (Fucus, Chara and Polysiphonia)

D. Seed plants (gymnosperms and angiosperms)

Answer: B

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5. In most of the algal genera, the dominant phase of life cycle is

A. Haplontic

B. Diplontic

C. Haplodiplontic

D. Isomorphic

Answer: A

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6. Zygotic meiosis occurs in

A. Algae/Thallophyta

B. Bryophyta

C. Pteridophyta

D. Gymnosperms

Answer: A

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7. Match the columns I and II, and choose the correct combination from the options given

	Column-I		Column-II
a.	Haplontic life-cycle	i.	Gymnosperms
b.	Diplontic life-cycle	ii.	Spirogyra
c.	Haplo-diplontic life-cycle	iii.	Bryophytes and pterodophytes

A. a-i,b-ii,c-iii

B. a-iii,b-i,c-ii

C. a-ii,b-i,c-iii

D. a-ii,b-iii,c-i

Answer: C

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8. The plant group in which sporophytes generation is represented by zygote only

A. Algae/Chlamydomonas/Ulothrix

B. Bryophyte/Moss/Liverwords

C. Pteridophyte/Ferm/Selaginella

D. Gymnosperm/Cycas/Pinus

Answer: A

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9. Which type of life-cycle is shown by Kelps, Ectocarpus and Polysiphonia ?

A. Haplontic

B. Diplontic

C. Haplodiplontic

D. Isomorphic

Answer: C

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10. Gametophyte is dominant, photosynthetic, sexually reproducing and independent in

A. Bryophyta

B. Pteridophyta

C. Gymnosperm

D. Angiosperm

Answer: A

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11. Recognize the figure and find our that which type of life cycles is present in these plants.

A. a-Haplontic, b-Diplontic

B. a-Diplontic, b-Haplontic

C. a-Haplodiplontic, b-Diplontic

D. a-Diplontic, b-Haplodiplontic

Answer: C

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Section B Assertion Reasoning Questions

1. Assertion : Plants lead to the formation of different plants bodies-haploid gametophyte and diploid sporophyte

Reason : In plants, both haploid and diploid cells can divide by mitosis.

A. If both assertion and reason are true and the reason is the correct explanation of the assertion

B. If both assertion and reason are true and but reason is not the correct explanation of the assertion

C. If assertion is true but reason is false

D. If both assertion and reason are false

Answer: A

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2. Assertion : The haploid plant body (gametophyte) produces gametes by mitosis

Reason : Diploid sporophytic plant body produces spores by meiosis.

A. If both assertion and reason are true and the reason is the correct explanation of the assertion

B. If both assertion and reason are true and but reason is not the correct explanation of the assertion

C. If assertion is true but reason is false

D. If both assertion and reason are false

Answer: B

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3. Assertion : Artificial system separates the closely related species

Reason : Artificial systems were based on a few characteristics.

A. If both assertion and reason are true and the reason is the correct explanation of the assertion

B. If both assertion and reason are true and but reason is not the correct explanation of the assertion

C. If assertion is true but reason is false

D. If both assertion and reason are false

Answer: A

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4. Assertion : The artificial systems gave equal weightage to vegetative and sexual characteristics , this is not acceptable

Reason : Vegetative characters are more easily affected by environment.

A. If both assertion and reason are true and the reason is the correct explanation of the assertion

B. If both assertion and reason are true and but reason is not the correct explanation of the assertion

C. If assertion is true but reason is false

D. If both assertion and reason are false

Answer: A

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5. Assertion : Agar is used to grow microbes and in preparation of ice-creams and jellies

Reason : Agar is a hydrocolloid which is produced by certain marine brown algae.

A. If both assertion and reason are true and the reason is the correct explanation of the assertion

B. If both assertion and reason are true and but reason is not the correct explanation of the assertion

C. If assertion is true but reason is false

D. If both assertion and reason are false

Answer: C

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6. Assertion : Mosses reduce the impact of falling rain and prevent soil erosion

Reason : Mosses form dense mats on the soil.

A. If both assertion and reason are true and the reason is the correct explanation of the assertion

B. If both assertion and reason are true and but reason is not the correct explanation of the assertion

C. If assertion is true but reason is false

D. If both assertion and reason are false

Answer: A

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7. Assertion : Gemmae are green, unicellular, asexual buds, which develop in small receptacles called gemma cups located on the thalli

Reason : In liverwords, spores germinate to form free-living sporophyte.

A. If both assertion and reason are true and the reason is the correct explanation of the assertion

B. If both assertion and reason are true and but reason is not the correct explanation of the assertion

C. If assertion is true but reason is false

D. If both assertion and reason are false

Answer: D

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8. Assertion : The spread of living pteridophyte is limited and restricted to narrow geographical regions

Reason : Prothallus require cool, damp, shady places to grow and water is required for fertilisation.

A. If both assertion and reason are true and the reason is the correct explanation of the assertion

B. If both assertion and reason are true and but reason is not the correct explanation of the assertion

C. If assertion is true but reason is false

D. If both assertion and reason are false

Answer: A

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9. Assertion : The leaves in gymnosperms are well-adapted to withstand extremes of temperature, humidity and wind

Reason : In conifers, the needle-like leaves reduce the surface area. Their thick cuticle and sucken stomata also help to reduce water loss.

A. If both assertion and reason are true and the reason is the correct explanation of the assertion

B. If both assertion and reason are true and but reason is not the correct explanation of the assertion

C. If assertion is true but reason is false

D. If both assertion and reason are false

Answer: B

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10. Assertion : In angiosperms, each of the cells of an embryo-sac (highly reduced female gametophyte) is haploid

Reason : The embryo-sac formation is preceded by meiosis.

A. If both assertion and reason are true and the reason is the correct explanation of the assertion

B. If both assertion and reason are true and but reason is not the correct explanation of the assertion

C. If assertion is true but reason is false

D. If both assertion and reason are false

Answer: A

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Section D Chapter End Test

1. In contrast to Marchantia, Funaria has

A. Capsule

B. Calyptra

C. Foot

D. Protonema

Answer: D

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2. Which one of the following is true moss

A. Club moss

B. Irish moss

C. Peat moss

D. Reindeer moss

Answer: C

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3. Formation of gametophyte directly from sporophyte without meiosis is.

A. Apomixis

B. Apogamy

C. Apospory

D. Parthenocarpy

Answer: C

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4. Dichotomous branching is found in

A. Liverworts

B. Mosses

C. Ferns

D. Hornworts

Answer: A

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5. Walking fern is named so as

A. It walks in forest

B. Its spores walks

C. It propagates through walking

D. It propagates vegetatively and spreads by leaf tips

Answer: D

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6. The formation of embryo without fusion of gametes is termed as

A. Apomixis

B. Apogamy

C. Apospory

D. Parthenocarpy

Answer: B

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7. Archegonia are not found in

A. Thallophyta

B. Bryophyta

C. Pteridophyta

D. Gymnosperm

Answer: A

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8. Pteridophytes differ from bryophytes and thallophytes in having

A. Archegonia

B. Antheridia

C. Alternation of generation

D. Vascular tissues

Answer: D

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9. Archegoniate are

A. Algae,bryophyta and pteridophyta

B. Bryophyta,pteridophyta and gymnosperm

C. Bryophyta, pteridophyta,gymnosperm and angiosperm

D. Pteridophyta,gymnosperm and angiosperm

Answer: B

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10. Largest gametophyte is found in

A. Bryophyta

B. Pteridophyta

C. Gymnosperm

D. Angiosperm

Answer: A

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11. In Dryopteris, kidney shaped soral covering are known as

A. Indusium

B. Ramenta

C. Calyptra

D. Annulus

Answer: A

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12. Pinus has

A. Winged pollen

B. Winged seeds

C. Winged fruit

D. Both A and B

Answer: D

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13. 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. Pteridophyta

D. Gymnosperm

Answer: D

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14. A plant shows thallus level of organization. It shows rhizoids and is haploid. It needs water to complte 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

Answer: D

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15. Recognise the figure and find out the correct matching :

A. a-Long shoot,b-Dwarf shoot,c-Seed

B. a-Dwarf shoot, b-Long shoot, c-Seed

C. a-Dwarf shoot,b-Long shoot, c-Fruit

D. a-Long shoot,b-Dwarf shoot, c-Fruit

Answer: A

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16. First land plants are

A. Bryophytes

B. Pteridophytes

C. Gymnosperms

D. Angiosperms

Answer: A

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17. Plants produce embryo and spores but lacks seed and vascular tissue belongs to

A. Bryophyta

B. Pteridophyta

C. Gymnosperm

D. Angiosperm

Answer: A

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18. The plants that are used for medicinal purposes and as soil binders.

A. Bryophytes

B. Lichens

C. Pteridophytes

D. Gymnosperms

Answer: C

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19. The sporophytes bear sporangia that are subtended by leaf-like appendages called

A. Strobili

B. Cones

C. Sporophylls

D. Both A and B

Answer: C

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20. Read the following statements :

a. Majority of the pteridophytes are heterosporous

b. Gymnosperms are usually heterosporous

c. Microphylls are found in Selaginella

d. Dicotyledonae is the class of pea

Which statements are incorrect ?

A. b,d

B. a,b

C. a,c

D. b,c

Answer: B

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21. Root-like, leaf-like and stem-like structures are present in

A. Bryophytes

B. Pteridophytes

C. Gymnosperms

D. Both A and B

Answer: A

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22. Which group of plant has little economic importance but great ecological importance ?

A. Bryophytes

B. Pteridophytes

C. Gymnosperms

D. Both A and B

Answer: A

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23. In which one of the following male and female gametophyts do not have free living independent existence ?

A. Polytrichum

B. Ginkgo

C. Pteris

D. Funaria

Answer: B

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24. Match the column I and II, and choose the correct combination from the options given

	Column-I		Column-II
a.	Chrysophytes	i.	Phycomycetes
b.	Dinoflagellates	ii.	Gonyaulax
c.	Polytrichum	iii.	Basidiomycetes
d.	Bread mould	iv.	Diatoms
e.	Puffballs	v.	Liverwort
		vi.	Moss

A. a-ii,b-iv,c-v,d-iii,e-i

B. a-iv,b-ii,c-vi,d-i,e-iii

C. a-ii,b-iv,c-vi,d-i,e-iii

D. a-iv,b-ii,c-v,d-iii,e-i

Answer: B

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25. Consider the following statements regarding the major pigments and stored food in the different groups of algae and select the correct options given

(A) In chlorophyceae the stored food material is starch and the major pigments are chlorophyll-a and d

(B) In phaeopphyceae, laminarin is the stored food and major pigments are chlorophyll-a and b

(C) In rhodophyceae, floridean starch is the stored food and the major pigments are chlorophyll-a, d and phycoeythrin.

A. I is correct, but II and III are incorrect

B. I and II are correct, but III is incorrect

C. I and III are correct, but II is incorrect

D. III is correct, but I and II are incorrect

Answer: D

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26. Sago of Cycas is given to patients with stomach disorder because it is

A. with high nutritive value

B. cheap

C. easily digestible with less starch

D. tastier

Answer: C

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27. Coralloid root of Cycas shows a symbiotic association with

A. Anabaena

B. Nostoc

C. Aulosira

D. Both A and B

Answer: D

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28. The number of neck canal cells is Cycas/Pinus is/are

A. $4 - 6$

B. $6 - 10$

C. One with two nuclei

D. Absent

Answer: D

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29. Which of following can be used as food ?

A. a,b

B. b,c

C. a,b,c

D. a only

Answer: D

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30. Ephedrine is obtained from Ephedra by

A. Root

B. Stem

C. Leaves

D. Both A and B

Answer: B

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31. Botanical name of 'Sanjeevani Booti' is

A. Selaginella rupestris

B. Selaginella braunii

C. Selaginella bryopteris

D. Both A and C

Answer: C

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32. First vascular plants or vascular cryptogames are

A. Thallophyta

B. Bryophyta

C. Pteridophyta

D. Spermatophyta

Answer: C

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33. Horse-tail is the common name of the pteridophyte

A. Selaginella

B. Equisetum

C. Adiantum

D. Ginkgo

Answer: B

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34. Which of the following propagates through leaf tip ?

A. Ginkgo

B. Adiantum

C. Salvinia

D. Equisetum

Answer: B

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35. Anabaena have symbiotic association with

A. Azolla

B. Rhizobium

C. Leguminous plants

D. All of the above

Answer: A

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36. Father of Indian bryology is

A. S.R. Kashyap

B. Barun

C. Iyenger

D. P. Maheshwari

Answer: A

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37. Bryophytes are called amphibians of plant kingdom because

A. They live in both land and water

B. They are dependent on water for fertilization

C. Both A and B

D. None of the above

Answer: B

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38. Gemmae' are specialized structures which participate in

A. Asexual reproduction

B. Sexual reproduction

C. Parasexual reproduction

D. None of the above

Answer: A

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39. Branched rhizoids and leafy gametophytes are the characteristic of

A. Liverworts

B. Mosses

C. Ferns

D. Conifers

Answer: B

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40. In which of the following bryophytes, thallus contains a N_2- fixing cyanobacteria

A. Azolla

B. Marsilea

C. Cycas

D. Anthoceros

Answer: D

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41. Funaria is attched to substratum with the help of

A. Unicellular, branched rhizoids

B. Unicellular, unbranched rhizoids

C. Multicellular, branched and oblique spetate rhizoids

D. Multicellular,unbranched and oblique septa rhizoids

Answer: C

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42. Recognise the figure and find out the correct matching :

A. a-Parent colony,b-daughter colony,c-Chlamydomonas

B. a-Parent colony,b-daughter colony,c-Volvox

C. a-Daughter colony,b-parent colony,c-Volvox

D. a-Daughter colony,b-parent colony,c-Chlamydomonas

Answer: C

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43. Find out the incorrect match :

A. Ulothrix and Spirogyra-Filamentous

B. Chlamydomonas-Unicellular flagellate

C. Chlorella -Unicellular,non-flagellate

D. Volvox-Colonial,non-flagellate

Answer: D

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44. In most of the algae, the storage food product is

A. Starch

B. Mannitol

C. Laminarin

D. Glycogen

Answer: A

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45. Which of the following groups are included in embryophyta ?

A. Bryophyta and Pteridophyta

B. Pteridophyta and Gymnosperm

C. Gymnosperm and Angiosperm

D. Bryophyta,Pteridophyta,Gymnosperm and Angiosperm

Answer: D

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46. Algae having coenocytic condition is

A. Wuchereria

B. Vaucheria

C. Vauchereria

D. Spirogyra

Answer: B

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47. Match the columns I and II, and choose the correct combination form the options given

	Column-I (Organisms)		Column-II (Shapes of chloroplast)
(a)	Ulothrix	(i)	Stellate
(b)	Chlamydomonas	(ii)	Ribbon shaped
(c)	Zygnema	(iii)	Girdle shaped
(d)	Spirogyra	(iv)	Cup shaped

A. a-iv,b-iii,c-i,d-ii

B. a-iv,b-iii,c-ii,d-i

C. a-iii,b-iv,c-ii,d-i

D. a-iii,b-iv,c-i,d-ii

Answer: D

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48. Non-flowering plants are also called

A. Cryptogams

B. Phanerogams

C. Tracheophytes

D. Archegoniates

Answer: A

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49. Spermatophyta includes

A. Bryophyta and Pteridophyta

B. Pteridophyta and Gymnosperm

C. Gymnosperm and Angiosperm

D. Pteridophyta, gymnosperm and angiosperm

Answer: C

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50. Which of the following are called botanical snakes ?

A. Bryophytes

B. Pteridophytes

C. Gymnosperms

D. Angiosperms

Answer: B

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Others

1. How many prothallial cell(s) is/are present in male gametophyte of Pinus ?

A. 4

B. 1

C. 2

D. None

Answer: C

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2. In the prothallus of Dryopteris, antherozoids and eggs are mature at different time which leads to

A. Heterospory

B. Heterophylly

C. Seed habit appears

D. Prevention of self-fertilization

Answer: D

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3. Independent alternation of generation is found in

A. Bryophyta

B. Pteridophyta

C. Gymnosperm

D. Angiosperm

Answer: B

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4. Term bryophyta was given by

A. S.R. Kashyap

B. Braun

C. Iyenger

D. P. Maheshwari

Answer: B

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5. Elater mechanism of spore dispersal is found in

A. Liverworts

B. Mosses

C. Ferns

D. Cycads

Answer: A

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6. Gametophyte do not have free independent existence in

A. Dryopteris

B. Cedrus

C. Funaria

D. Polytrichum

Answer: B

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7. In Pinus, male cone is made up of

A. Microsporophylls

B. Megasporophylls

C. Anthers

D. Embryo sae

Answer: A

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8. Which of the following is a vascular cryptogam

A. Marchantia

B. Ginkgo

C. Equisetum

D. Cedrus

Answer: C

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9. Which one of the following is considered important in the development of seed habit

Or

Seloginella has the character of evolutionary importance. That character is

A. Free-living gametophyte

B. Heterospory

C. Haplontic life cycle

D. Dependent sporophyte

Answer: B

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10. Dominant gametophytic phase alternated by multicellular dependent sporophyte occurs in

A. Pinus

B. Polytrichum

C. Adiantum

D. Equisetum

Answer: B

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11. Mannitol (sugar alcohol) is the stored food in

A. Porphyra

B. Polysiphonia

C. Fucus

D. Chara

Answer: C

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12. In which of the following all listed genera belong to the same class of algae

A. Ectocarpus, Ulothrix, Porphyra

B. Chara,Polysiphonia,Fucus

C. Sargassum,Gracilaria,Laminaria

D. Chlamydomonas,Spirogyra,Volvox

Answer: D

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13. At the time of germination of zygospore in Spirogyra,how many haploid nucleus/nuclei is/are functional or on germination, each zygospore of Spirogyra produces how many plants ?

A. 3

B. 4

C. 2

D. 1

Answer: D

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14. Fucus shows which type of life-cycle ?

A. Haplontic

B. Diplontic

C. Haplo-diplontic

D. Isomorphic

Answer: B

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15. Alginic acid is obtained from

A. Greem algae

B. Red algae

C. Brown algae

D. BGA

Answer: C

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16. Macrocystis is a

A. Green algae

B. Brown algae

C. Red algae

D. Bryophytes

Answer: B

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17. Male and female gametophytes are independent and free-living in

A. Pinus

B. Mustard

C. Cycas

D. Sphagnum

Answer: D

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18. Which is incorrect with respect to bryophytes ?

A. Fertilization takes place in presence of water

B. True stem, leaf and root are not found

C. Zygote undergoes meiosis to produce haploid spores

D. Zygote undergoes mitosis to produce sporophyte

Answer: C

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19. Select the incorrect statements.

(a) Sporophyte of liverwords is more elaborate than that of mosses

(b) Salvinia is heterosporous

(c) Life of all seed plants is diplontic

(d) In Pinus, male and female cones are borne on different trees.

A. a,b

B. a,c

C. a,d

D. b,c

Answer: C

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20. Gametophyte is not an independent free-living generation in

A. Liverworts/Marchantia

B. Mosses/Polytrichum

C. Ferns/Funaria

D. Gymnosperms/Pinus

Answer: D

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21. Similarity between pteridophytes and gymnosperms is in

A. Seed

B. Fruit

C. Archegonia

D. Independent gametophytes

Answer: C

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22. As compound to the gametophyte of bryophytes, the gametophyte of vascular plants are

A. Smaller with larger sex organs

B. Larger with smaller sex organs

C. Smaller with smaller sex organs

D. Larger with larger sex organs

Answer: C

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23. Find out the correct statement about mosses.

A. Sporophyte is independent

B. Antherozoids are multiflagellate

C. Archegonia produce many eggs

D. None of the above

Answer: D

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24. Archegoniophore is present in

A. Funaria

B. Marchantia

C. Adiantum

D. Cycas

Answer: B

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25. Selaginella and Salvinia are considered to represent a significant step toward evolution of seed habit because

A. Female gametophyte lacks archegonia

B. Megaspores possess endosperm and embryo surrounded by seed coat

C. Embryo develops in female gametophyte which are retained on parent sporophyte

D. Female gametophyte is free and get dispersed like seeds

Answer: C

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26. In Liverworts, the specialized asexual reproductive structures are called

A. Cones

B. Strobili

C. Gemmae

D. Protonema

Answer: C

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27. Leaves of ferns are

A. Microphylls

B. Macrophylls

C. Sporangia

D. Sporophylls

Answer: B

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28. Heterosporous pteridophyte belong to class lycopsida is

A. Lycopodium

B. Selaginella

C. Salvinia

D. Pteris

Answer: B

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29. Sex-organs of pteridophytes are

A. Multicellular and non-jacketed

B. Multicellular and jacketed

C. Unicellular and jacketed

D. Unicelluar and non-jacketed

Answer: B

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30. In Cycas, at the time of pollination, the pollen grains is/are

A. 3-celled

B. 2-celled

C. 4-celled

D. 1-celled

Answer: A

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31. Non-archegoniate gymnospermic plant is

A. Ephedra

B. Gnetum

C. Ginkgo

D. Cedrus

Answer: B

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32. Tallest gymnosperm is

A. Sequoia

B. Ginkgo

C. Cedrus

D. Juniperus

Answer: A

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33. Cycas and Adiantum resemble each other in having

A. Cambium

B. Vessels

C. Motile sperms

D. Seeds

Answer: C

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34. Zoospores are absent in

A. Vaucheria

B. Spirogyra

C. Cladophora

D. Chlmydomonas

Answer: B

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35. Which is a character of Rhodophyceae ?

A. Major pigments are chlorophyll a and b

B. Commonly called brown algae

C. Stored food is mannitol and laminarin

D. Flagella are absent

Answer: D

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36. Vascular plants lacking vessels and companion cells are

A. Angiosperm

B. Thallophyte

C. Bryophytes

D. Gymnosperms

Answer: D

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37. In which group the gametophytic phase is dominant, photosynthetic, independent and sexually reproducing ?

A. Angiosperm

B. Gymnosperm

C. Bryophyta

D. Pteridophyta

Answer: C

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38. Pteridophytes are called vascular cryptogams as they are non-seeded plants containing

A. Only xylem

B. Only phloem

C. Neither xylem nor phloem

D. Xylem and phloem

Answer: D

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39. Which part different from others with reference to ploidy number of Cycas ?

A. Nucellus

B. Endosperm

C. Seed coad

D. Perisperm

Answer: B

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40. Select the wrong statements :

A. In Oomycetes, female gamete is smaller and motile, while male gamete is larger and non-motile

B. Chlamydomonas exhibits both isogamy and anisogamy and Fucus shows oogamy

C. Isogametes are similar in structure, function and behaviour

D. Anisogametes differ either in structure, function or behaviour.

Answer: A

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41. Which one of the following is wrongly matched ?

A. Spirogyra-Motile gametes

B. Sargassum-Chlorophyll c

C. Basidiomycetes -Puffballs

D. Nostoc - Water blooms

Answer: A

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42. The red colour of Rhodophyta is due to the preponderance of

A. Phycobilins

B. Phycocyanin

C. Phycoerythrin

D. Xamthophyll

Answer: C

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43. Monoceius plant of Chara shows occurrence of

A. Upper antherodium and lower oogonium on the same plant

B. Upper oogonium and lower antherdium on the same plant

C. Antheodiophore and archegoniophore on the same plant

D. Stamen and carpel on the same plant

Answer: B

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44. Amphibians of plant kingdom are

A. Algae

B. Bryophytes

C. Pteridophytes

D. Gymnosperms

Answer: B

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45. Which is not a character of bryophytes ?

A. Main plant body is haploid

B. They posses multicellular sex organs

C. They need water for sexual reproduction

D. They possess well differentiated vascular tissues

Answer: D

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46. I. In Rhodophyceae, food is stored as mannitol and laminarin

II. Ovules of Gymnosperms are not enclosed by ovary wall

III. Salvinia is heterosporous

IV. In diplontic life cycle, free living gametophyte represents dominant phase

Of the above statements :

A. II and III are correct, I and IV are wrong

B. II and IV are correct, I and III are wrong

C. III and IV are correct, I and II are wrong

D. I and II are correct, III and IV are wrong

Answer: A

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47. Match the columns I and II, and choose the correct combination from the options given

	Column-I		Column-II
(a)	Algae	(p)	Gymnosperm
(b)	Riccia	(q)	Pond scum
(c)	Spirogyra	(r)	Autotrophic
(d)	Gnetum	(s)	Liverwort

A. a-(r),b-(s),c-(q),d-(p)

B. a-(p),b-(s),c-(q),d-(r)

C. a-(s),b-(p),c-(r),d-(q)

D. a-(r),b-(q),c-(s),d-(p)

Answer: A

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48. The plant body is thalloid in

A. Sphagnum

B. Salvinia

C. Marchantia

D. Funaria

Answer: C

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49. What is common in all the three, Funaria, Dryopteris and Ginkgo ?

A. Presence of archegonia

B. Well developed vascular tissues

C. Independent gametophyte

D. Independent sporophyte

Answer: A

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50. Megasporophyll of Cycas is equivalent to

A. Stamen

B. Petal

C. Sepal

D. Carpel

Answer: D

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51. In Dryopteris, the opening mechanism of sporangium is effectively operated by

A. Stomium

B. Stalk

C. Peristome

D. Rhizoids

Answer: A

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52. Read the following statement (A-E) and answer the equestion which follows them

(A) In liverworts, mosses and fems fametophytes are free living

(B) Gymnospers and some ferms are heterosphorous

(C) Sexual reproduction if Fucus, Volvox and Allbugo 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. Three

B. Four

C. One

D. Two

Answer: A

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53. Leaves of fern are covered with

A. Ramenta

B. Spores

C. Wax

D. Indusium

Answer: A

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54. What is the meaning of suffix 'sperm' in angiosperm and gymnosperm ?

A. Both produce motile sperms

B. Both produce non-motile sperms

C. Both produce seeds

D. Both produce fruits

Answer: C

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55. Which is obtained from gymnosperm plant ?

A. Cashewnut

B. Almond

C. Chilgoza

D. Pistachio

Answer: C

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56. Which one of the following is wrong about Chara ?

A. Globule is male reproductive structure

B. Upper oogonium and lower round antherodium

C. Globule and nucule present on the same plant

D. Upper antheridium and lower oogonium

Answer: D

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57. Which one of the following shows isogamy with non-flagellated gametes ?

A. Spirogyra

B. Sargassum

C. Ectocarpus

D. Ulothrix

Answer: A

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58. An alga which can be employed as food for humna being is

A. Ploysiphonia

B. Ulothrix

C. Chlorella

D. Spirogyra

Answer: C

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59. Which of the following groups of algae belongs to class Rhodophyceae ?

A. Laminaria,Fucus,Porphyra, Volvox

B. Gelidium, Porphyra,Dictyota,Fucus

C. Gracilaria,Gelidium,Porphyra,Poltsiphonia

D. Sargassum,Laminaria,Fucus,Dictyota

Answer: C

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60. Match the column I and II and choose the correct combination from the options given

	Column-I		Column-II
(a)	Green alga	(i)	Dictyota
(b)	Brown alga	(ii)	Porphyra
(c)	Red alga	(iii)	Spirogyra

A. a-3,b-2,c-1

B. a-3,b-1,c-2

C. a-2,b-3,c-1

D. a-1,b-2,c-3

Answer: B

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61. The life cyclic of algae such as Spirogyra is

A. Haplontic

B. Diplontic

C. Haplo-diplontic

D. Diplo-haplontic

Answer: A

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62. Which of the following produces seeds but not the flowers ?

A. Bryophytes

B. Pteridophytes

C. Gymnosperms

D. Angiosperms

Answer: C

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63. Botanical name of peat moss if

Or

Which of the following is responsible for peat formation

A. Sphagnum

B. Marchantia

C. Riccia

D. Funaria

Answer: A

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64. Which is the first group of vascular plants

A. Thallophyta

B. Bryophyta

C. Pteridophyta

D. Spermatophyta

Answer: C

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65. Prothallus of pteridophytes is

A. Inconspicuous, small, multicellular, free living, photosynthetic thalloid gametophyte

B. Inconspicuous, small, multicellular, free living, non-photosynthetic thalloid saprophyte

C. Inconspicuous, large, unicellular, free-living, photosynthetic thalloid gametophyte

D. Conspicuous, small, multicellular, free living photosynthetic thalloid gametophyte

Answer: A

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66. Which of the following are heterosporous pteridophytes ?

I. Lycopodium

II. Selaginella

III. Equisetum

IV. Salvinia

A. I and II only

B. II and III only

C. III and IV only

D. II and IV only

Answer: D

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67. Choose the correct statement :

A. Bryophytes can live in soil but are dependent on water for sexual reproduction

B. The sex organs in bryophytes are unicellular

C. In bryophytes, the main plant body is a gametophyte which is differentiated into true root, stem and leaves

D. Common example of liverwort is Ploytrichum

Answer: A

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68. Which one is a wrong statement ?

A. Mucor has biflagellate zoospores

B. Haploid endosperm is typical features of gymnosperms

C. Brown algae have chlorophyll a and c, and Fucoxanthin

D. Archegonia are found in Bryophyta, Pteridophyta and Gymnosperms

Answer: A

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69. Which one of the following statement is wrong ?

A. Chlorella and Spirulina are used as space food

B. Mannitol is stored food in Rhodophyceae

C. Algin and carrageen are products of algae

D. Agar-agar is obtained from Gelidium and Gracilaria

Answer: B

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70. Male gametes are flagellated in

A. Ectocarpus

B. Spirogyra

C. Polysiphonia

D. Anabaena

Answer: A

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71. In which of the following pairs of algal genera, both belongs to phaeophyceae ?

A. Laminaria and Chara

B. Fucus and Porphyra

C. Laminaria and Dictyota

D. Porphyra and Polysiphonia

Answer: C

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72. Which one of the following is a rootless fossil plant ?

A. Lepidodendron

B. Rhynia

C. Williamsonia

D. Lyginopteris

Answer: B

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73. Which of the following genera shows vessels in xylem ?

A. Gnetum

B. Cycas

C. Pinus

D. Marsilea

Answer: A

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74. Heterospory and origin of seed habit was noticed for the first time in

A. Isoetes

B. Lycopodium

C. Selaginella

D. Dryopteris

Answer: C

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75. Which one of the following bryophytes has stomata present in the sporophytes ?

A. Riccia

B. Anthoceros

C. Marchantia

D. Funaria

Answer: D

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76. In which of the following, gametophyte is not independent in free living ?

A. Pteris

B. Pinus

C. Funaria

D. Marchantia

Answer: B

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77. Match the columns I and II, and choose the correct combination from the options given

	Column-I		Column-II
(a)	Chlorophyta	(i)	Equisetum
(b)	Lycopsida	(ii)	Chara
(c)	Phaeophyta	(iii)	Selaginella
(d)	Sphenopsida	(iv)	Ectocarpus

A. (a)-(ii),(b)-(iii),(c)-(iv),(d)-(i)

B. (a)-(iv),(b)-(i),c-(ii),d-(iii)

C. (a)-(ii),(b)-(iii),(c)-(i),d-(iv)

D. (a)-(iv),(b)-(i),(c)-(iii),(d)-(ii)

Answer: A

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78. Assertion: In gymnosperms, the male and female gametophytes do not have indepenent existance.

Reason: They remain within the sporangia retained on the sporophyte.

A. a,d and e

B. b,c and e

C. a,c and d

D. b,c and d

Answer: A

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79. Which of the following statements is correct ?

A. Sexual reproductive structures in Marchantia,Cycas,Pinus and Ginkgo are unisexual.

B. Yellowing and vein-clearing of bhindi is caused by a viroid

C. Cell wall composition of Nostoc and Methanococcus is similar

D. In R.H Whittaker's classification lichens are included in plantae.

Answer: A

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80. Porphyra belongs to

A. Fungi

B. Algae

C. Bacteria

D. Bryophyta

Answer: B

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81. In bryophytes and pteridopohytes, transport of male gametes requires

A. Wind

B. Insects

C. Birds

D. Water

Answer: D

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82. Select the correct statement.

A. Gymnosperms are both homosporous and heterosporous

B. Salvinia, Ginkgo and Pinus all are gymnosperms

C. Squoia is one of the tallest trees.

D. The leaves of gymnosperms are not well adapted to extremes of climate

Answer: C

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83. Conifers are adapted to tolerate extreme environment conditions because of

A. Thick cutile

B. Presence of vessels

C. Braod hardy leaves

D. Superficial stomata

Answer: A

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84. Which one of the following statement is wrong ?

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. Algae is obtained from red algae, and carrageenan from brown algae.

Answer: D

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85. An example of colonial alga is

A. Volvox

B. Ulothrix

C. Spirogyra

D. Chlorella

Answer: A

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86. Zygotic meiosis is characteristic of

A. Fucus

B. Funaria

C. Chlamydomonas

D. Marchantia

Answer: C

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87. Life cycle of Ectocarpus and Fucus respectivley are

A. Diplontic, Haplodiplontic

B. Haplodiplontic,Diplontic

C. Haplondiplontic, Haplontic

D. Haplontic,Diplontic

Answer: B

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88. Which of the following statements is correct ?

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

Answer: A

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89. Which one is wrongly matched ?

A. Uniflagellate gametes-Polysiphonia

B. Biflagellate zoospores-Brown algae

C. Gemma cups-Marchantia

D. Unicellular organism-Chlorella

Answer: A

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90. Winged pollen grains are present in

A. Mustard

B. Cycas

C. Mango

D. Pinus

Answer: D

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91. Sex organs in Funaria develop

A. in protonema

B. outside capsule

C. in the axil of leaf

D. at the tip of gametophore

Answer: D

View Text Solution

92. In which portion of Cycas diploxylic vascular bundles are found ?

A. Root

B. Stem

C. Leaflet

D. Rachis and leaflet

Answer: D

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93. Funaria gametophyte is

A. dioecious

B. heteroecious

C. autoecious

D. monoecious and autoecious

Answer: D

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94. Sometimes, the fern plant arises from fern prothallus without fertilization. This is an example of

A. apospory

B. apogamy

C. parthenocarpy

D. gametogenesis

Answer: B

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95. Zygospore of Spirogyra at the time of meiosis is divided into 4 nuclei.

How many nuclei degenerate out of these four ?

A. One

B. Two

C. Three

D. Four

Answer: C

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96. Cycas is

A. monoecious

B. bisexual

C. dioecious

D. hermaphrodite

Answer: C

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97. Algae are useful because they

A. purify the atmosphere

B. are large in number

C. are used in fermentation

D. are used to study respiration

Answer: A

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98. The plant body of Funaria is

A. sporophyte

B. gametophyte

C. predominantly sporophyte with independent gametophyte

D. perdominantly gametophyte with dependent sporophyte

Answer: D

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99. Elaters help in dispersal of spores of

A. Riccia

B. Marchantia

C. Dryopteris

D. Funaria

Answer: B

Watch Video Solution

100. Megasporophyll of Cycas is homologous to

A. stamen

B. carpel

C. sepal

D. petal

Answer: B

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101. In Ulothrix, meiosis takes place in

A. cells of the filament

B. holdfast

C. zygote

D. zoo spores

Answer: C

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102. Mosses and ferns are found in moist and shady places because both

A. require presence of water for fertilization

B. do not need sunlight for photosynthesis

C. depend for their nutrition no micro-organisms which can survive only at low temperature

D. cannot compete with sun loving plants

Answer: A

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103. Botanical name of Sanjeevani is

A. Selaginella chrysocaulos

B. Selaginella bryopteris

C. Selaginella chrysorhizos

D. None of the above

Answer: B

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104. In pinus, the third tier of embryonal cells from below is known as

A. rosette tier

B. suspensor tier

C. embryonal tier

D. free-nuclear tier

Answer: A

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105. Which of the following is found in algal zone of Cycas coralloid roots ?

A. Blue green algae

B. Red algae

C. Diatoms

D. Brown algae

Answer: A

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106. Sporocarp is a reproductive structure of

A. Some algae

B. Some aquatic ferns having sori

C. Angiosperms having spores

D. Bryophytes

Answer: B

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107. Coralloid roots of Cycas is distinguished from angiosperm roots by

A. absence of pith

B. having zylem tissue

C. absence of algal zone

D. presence of algal zone

Answer: D

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108. Which of the following genera is associated with coralloid roots

A. Cycas

B. Taxus

C. Pinus

D. Sequoia

Answer: A

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109. Match the following and select the correct option

	Column-I		Column-II
A.	Pteris	(i)	Gymnosperm
B.	Cycas	(ii)	Bryophyte
C.	Sphagnum	(iii)	Algae
D.	Sargassum	(iv)	Pteridophyta

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

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

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

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

Answer: B

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110. Which of the following groups of algae produces algin ?

A. Phaeophyceae and Chlorophyceae

B. Rhodophyceae and Phaeophyceae

C. Chlorophyceae and Rhodophyceae

D. Phaeophyceae only

Answer: D

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111. In gymnosperms, the ovule is naked because

A. ovary wall is absent

B. integuments are absent

C. perianth is absent

D. nucellus is absent

Answer: A

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112. Which of the following is homosporous ?

Skeletal system ka wo part jo body ki long axis ke along hai wo axial skeleton kehlata hai and isme 80 bones hoti hai. Skull, vertebral column, sternum and ribs issi ka parta hai. Iss central part jo bones attached hoti hai wo appendicular skeleton kehlati hai jisme 126 bones hoti hai. Girdles and limbs appendicular skeleton ka part hai.

Axial Skeleton

- Skull me 8 bones cranium yani ki brain box form karti hai, 14 facial bones hoti hai, 1 hyoid bone jiske tongue bone bhi kehte hai and dono kaano me 3-3 ear ossicles hote hai.

Cranium :

- 1 frontal bone jo ki forehead and eye orbit ki roof bnati hai.
- 2 parietal bone cranium ki roof me situated hai.
- 1 occipital bone cranium ki back side me hoti hai jisme ke hole hota hai jiske hum foramen magnum kehte hai and issi hole ke through brain se spinal cord emergy hoti hai.
- Issi bone me 2 condyles hote hai jo ki vertebral colum ki first bone yani ki atlas ke sath articulate karte hai yani ki join karte hai and yahi joint aapke cranium ko aapki spinal bones se jodta hai. Human

ki occipital bone me 2 condyles hone ke karan humans ke skull ko dicondylic skull kaha jata hai.

- 2 temporal bones hoti hai right and left side ek ek. Yeah ear ke paas wali bones hai basically jiske roughly kanpatti bhi bol dete hai.

- 1 Ethmoid bone nasal cavity ki roof bnati hai and it gives rise to 2 nasal conchae jo ki nasal cavity me project karte hai.

- 1 Sphenoid bone hoti hai jo ki butterfly shaped bone hai and yeah bone basically baki sabhi cranial bones ke sath articulate karti hai. Issi me choti si cavity hoti hai jiske hum sells turcica bolte hai and issi cavity me pituitary gland situated hota hai.

Facial Bones :

- 2 Nasal bones nasal bridge form karti hai.

- 2 Infra nasal inferior nasal conchae bnati hai.

- 2 lacrymal bones eyes ki sides me hoti hai.

- 2 Palatine bones buccal cavity ki roof banti hai.

- 1 Vomer bone bhi buccal cavity ki roof me hi milti hai.

- 2 Zygomatic bones basically cheek bones kehlati hai.

- Right and left side, dono taraf 1-1 upper jaw bone yani ki maxilla hoti hai.

- 1 Mandible bone lower jaw form karti hai. Mandibe is the only movable bone of the skull.

- Hyoid bone tongue bone kehlati hai kyunki issi bone se tongue ka base attached hota hai. Yeah bone lower jaw and larynx ke beech hoti hai.

- Craniostylic jaw suspension basically aisa jaw suspension hai jisme upper jaw immovable hota hai yani ki fixed hota hai kyunki it articulates with temporal bones.

Vertebral Column

- Adults me 26 vertebrae hoti hai and children me 33.

- Yeah straight nhi hota rather S shape ke curves hote hai. Total 4 curves hote hai which corresponds to 4 different regions of the spine. Inme se 2 curves primary hote hai jo ki jab baby deliver hota hai toh formed hote hai lekin baki ke 2 curves jinko hum secondary curves bolte hai wo birth ke baad development ke sath bante hai and inhi curves ke birth par na hona hi karan hai ki chota baby shuru ke kuch mahine tak apna head stable nhi kar pata toh we have to hold him carefully supporting his head and lower spine.

- Spine ke 4 regions hai : cervical (neck area), thoracic (thoracic cavity wala), lumbar (lower spine) and pelvic region.

- Thoracic and pelvic curves primary hote hai jabki cervical and lumbar curves secondary hote hai.

- Children me 7 cervical vertebrae hoti hai, 12 thoracic vertebrae, 5 lumbar, 5 sacrum bones and 4 coccygeal bones. Toh inko hum represent karte hai by :$C_7T_{12}L_5S_5Co_4$

- Adult me development ke time sacrum ki paancho ek single bone me fuse hojati hai and charo coccygeal bone bhi fuse karke ek single coccyx bna leti hai toh adult ka vertebral formula hua : $C_7T_{12}L_5S_1Co_1$

- The vertebral column protects the spinal cord, supports the head and serves as the point of attachment for the ribs and musculature of the back.

- Har vertebrae me ek centrum yani ki body part hota hai and kuch spinal processes neural canal ko enclose karti hai. Issi neural canal ke through spinal cord (nervous tissue) travel karta hai. Centrum basically notochord se hi develop hota hai. Jo processes nikalti hai wo basically kis direction me project karti hai unke basis pe unko naam dedete hai jaise ki transverse processes, spinous processes etc. yeah apne kaam ka nahi hai.

- Har vertebrae ki upper side pe superior zygapophyses hote hai dono taraf and lower side par 2 (right and left) zygapophyses hote

hai. Ek vertebrae ka inferior zygapophyses next/neeche wali vertebrae ke superior zygapophyses ke sath articulate karta hai.

- Humans me centrum ka upper and lower part flat hota hai toh aisi vertebrae ko hum amphiplatyan vertebrae bolte hai.

- Transverse processes me vertebral arteries ke passage ke liye foramen transversarium hote hai lekin yeah 7th vertebrae me absent hota hai.

- **Cervical Vertebrae**

  → Cervical vertebrae ki jo spinous process hoti hai wo bifid hoti hai and 3rd-6th are typical vertebrae jabki 1st, 2nd and 7th are atypical. Atypical ka matlab hai ki general ya usual structure se kuch alag hota hai inme.

  → Pehli cervical vertebrae atlas ke naam se jani jati hai. Yeah ek ring shaped bone hai jisme centrum reduced hota hai and spinous process nahi hoti. Iss bone me occipital bone se 2 condyles se articulate karne ke liye 2 facets hote hai. Another unique feature is the presence of odontoid fossa jo ki 2nd vertebral bone se articulate karega. Yeah head ki YES movement ke liye responsible hai.

  → 2nd cervical vertebrae axis kehlati hai. Head ki NO movement me issi ka role hota hai jo ki basically rotatory movement hai atlas and axis joint ki. Iss vertebrae ka unique feature yeah hai ki iske centrum se odontoid process nikalti hai jo ki atlas bone me odontoid fossa ke sath articulate karti hai. Isme transverse processes hoti hai.

→ 7th vertebrae ka unique feature yeah hai ki yeah sabse largest cervical bone hai and isliye isko vertebrae prominens naam dia gya hai. Iski spinous process bifid nahi hoti rather ek tubercle me end hoti hai. Another feature is ki isme transversarium absent hote hai.

Sternum & Ribs :

- Sternum breast bone kehlati hai and yeah ek dagger shaped bone hai. Main 2 parts hai : upper manubrium/prosternum jo ki short part hai and lower elongated part is mesosternum. Issi mesosternum me ribs ke articulation ke liye facets hote hai and it ends into a xiphoid process.

- Ribs ke 12 pairs hote hai humans me and yeah thoracic cavity ko protect karte hai. Ribs are bicephalic yani ki yeah dono ends se articulate karti hai. Coastal cartilage ribs to sternum se jodta hai.

  → Ribs ko further 3 types me divide kia ja sakta hai : true ribs, false ribs and floating ribs.

  → true ribs ko hi vertebro-sternal ribs kehte hai kyunki yeah ek end se thoracic vertebrae se articulate karti hai and dusre end se sternum se. Pehle 7 pair ko true ribs mana gya hai. First rib front me manubrium se sath articulate karti hai jabki 2-6th ribs mesosternum ke sath articulate karti hai. 7th rib mesosternum and xiphoid process se articulate karti hai.

  → False ribs ko vertebr0-chondrial ribs kaha jata hai and is category me 8th-10th ribs aati hai kyunki yeah front side me 7th rib ke costal cartilage se articulate karti hai.

  → 11th and 12th rib ko floating ribs kaha jata hai kyunki inka

sternal end free hota hai and yeah keval backside se vertebral column se hi judi hui hoti hai.

Types of Vertebrae

- Amphocoelous aisi vertebrae hai jinka centrum dono ends se concave hota hai. Ex : vertebrae of cartilaginous fishes and 8th vertebrae of frog.

- Procoelous aisi vertebrae hai jinke centrum ka anterior end concave hota hai and posterior end convex. Ex : typical vertebrae of frog and vertebrae of lizard.

- Opisthocoelous aisi vertebrae hoti hai jinka centrum anterior end se convex hota hai jabki concavity posterior end me aati hai. Ex : vertebrae of urodela.

- Acoelous aisi vertebrae hoti hai jinme dono ends pe hi concavity nahi hoti kinda flat. Ex : 9th vertebrae of frog, free caudal vertebrae of pigeon.

- Amphiplatayan vertebrae me centrum dono taraf se flat hota hai. Jaise ki human ki vertebrae jo ki intervertebral cartilaginous discs se separated hoti hai.

Appendicular Skeleton :

→ Appendicular skeleton me 2 girdles and limbs aate hai.

Pectoral Girdle :

- Pectoral girdle 2 hai : ek rhs pe and dusra Lhs pe. Ek girdle me ek scapula yani ki shoulder bone hoti hai and ek clavicle yani ki collar bone hoti hai. Scapula ek triangular flat bone hai jo kamar ke upper part me located and it is superficial to the ribs. Yani ki ribs ke uper hai. Toh iski location dorsally hui between 2nd and 7th rib. Coracoid process ek bony hook shaped structure hota hai scapula pe jo project karta hai anterolaterally from the superior aspect of the scapular neck. Yeah process kafi sare ligaments and tendons ka anchor point hai. Scapula me glenoid cavity hoti hai jhaan upper arm bone yani ki humerus bone ka head articulate karta hai and this is known as glenohumeral joint or shoulder joint.

- **Clavicle** : Clavicle anterior side present hoti hai jo sternum ke manubrium se articulate karti hai at the sternoclavicular joint and scapula se articulate karti hai at the acromioclavicular joint. Iski shape S letter jaisi hai.

Upper Extremities

- Humans ke 2 forelimbs hai dono me 30-30 bones hoti hai which are 1 humerus upper arm me + 1 radius.1 ulna forearm me + 8 carpals/wrist bones wrist me + 5 metacarpals (palm bones) + 14 phalanges (pancho ungliyon ki haddiyan) hath me.

- Humerus ko hi funny bone bhi bol dete hai. Iska head golf ball jaisa hota hai jo ki scapula ki socket like glenoid cavity se articulate karke ball and socket joint bnata hai which we eill be discussing separately.

- Forearm ki radius choti wwali bone hai jo ki towards thumb located hai. Ulna bone longer hai and yeah little finger ki taraf located hai. Ulna bone ke (kohni ke taraf) olecranon process me end hoti hai. Yahi olecranon process elbow ki prominence form karti hai jiske hum touch bhi karke mehsoos bhi kar sakte hain. In contrast to the ulna, the radius is narrow at its proximal end and widens at its distal end.

- Wrist me 8 carpals hote hai jo ki 2 rows me fitted hai. Proximal row me 4 carpals and 4 carpals distal row me. Har carpal ka different name hai but we don't have to remember their names.

- Thumb yani ki pollex ko chor kar har digit me 3-3 bones hoti hai jinko phalanges kehte hai. Thumb me keval 2 bones hoti hai. **Phalangeal formula is : 2,3,3,3,3**

Pelvic Girdle

- Pelvic girdle coxa naam ki bone se bna hua hai toh we have 2 coxa bones : right side wali and left side wali. Issi coxa bone ko innominate bone bhi keh dete hai and yeah 3 bones : Ilium, Ischium & Pubis ke fusion se bnti hai.

- Side view dekhenge toh upperpart Ilium bone (largest of all three bones) se banta hai, anterior part me pubis bone hoti hai and posterior part me ischium bone hai jo ki most strongest and thickest bone hai. Coxa ya fir hip bones me pubic bone ka part, anteriorly join karta hai and form karega pubic symphysis naam ke joint ko.

- Acetabulum ek depression hai (socket like) jisme thigh bone yani ki femur bone ka head fir hokr ball and socket joint bnata hai.

- Lateral view me hi dekhenge toh acetabulum ke neeche ek hole dikhta hai jiske obturator foramen kehte hai and it is surrounded by ischium and pubis bone.

- Dono Ilium bones peeche ki taraf sacrum se join karti hai and form karengi sacroiliac joint.

Lower Extremities

- Femur longest, heaviest nad strongest bone in the body. Proximal end se yeah acetabulum me articulate karegi and distal end ki taraf se yeah tibia and patella se articulate karti hai. Yeah ek replacing bone hai jo ki cartilage ko bone se replace karne ke baad banti hai. Other such bones in Human body are : humerus, radius, ulna, tibia, fibula and carpels.

- Patella bone ko kneecap bhi bola jata hai. Yeah ek sesamoid bone hai jo tendon ke ossification se banti hai. It develops from tendon

of quadriceps femoris muscle. Patella bone ka ligament patellar ligament kehlata hai and wo patella ko tibial tuberosity se join karwata hai.

- Tibia shin bone kehlati hai jo ki leg ki medial, larger weight bearing bone hai.

- Fibula is parallel and lateral to the tibia, but it is smaller and it does not articulate with femur bone. Ankle joint ko stablize karne me help karti hai.

- Ankle me 7 bones hoti hai jinko tarsals bola jata hai. Inn 7 tarsals me se talus, the most superior tarsal bone, is the only bone of the foot that articulates with the fibula and tibia.

- Calcaneum (yeah bhi tarsal bone hi hai) is the heel bone.

- Foot ki sole me 5 metatarsals hoti hai.

- Phalanges basically great toe/hallux me 2 bones hoti hai jabki baki toes me 3-3 bones hoti hai.

A. Selaginella

B. Salvinia

C. Cycas

D. Lycopodium

Answer: D

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113. Consider the following statements regarding the major pigments and stored food in the different groups of algae and select the correct options given

(A) In chlorophyceae the stored food material is starch and the major pigments are chlorophyll-a and d

(B) In phaeopphyceae, laminarin is the stored food and major pigments are chlorophyll-a and b

(C) In rhodophyceae, floridean starch is the stored food and the major pigments are chlorophyll-a, d and phycoeythrin.

A. (i) is correct, but (ii) and (iii) are incorrect

B. (i) and (ii) are correct, but (iii) is incorrect

C. (i) and (iii) are correct, but (ii) is incorrect

D. (iii) is correct, but (i) and (ii) are incorrect

Answer: D

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114. Assertion: Mosses are evolved from algae.

Reason: Protonema of mosses is similar to some green algae.

A. If both assertion and reason are true and the reason is a correct explanation of the assertion

B. If both assertion and reason are true but reason is not a correct explanation of the assertion

C. If the assertion is true but reason is false

D. If both the assertion and reason are false

Answer: A

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115. Assertion: Red algae contribute in producing coral reef. ltbr. Reason: Some red algae secrete and deposit calcium carbonate our their walls.

A. If both assertion and reason are true and the reason is a correct explanation of the assertion

B. If both assertion and reason are true but reason is not a correct explanation of the assertion

C. If the assertion is true but reason is false

D. If both the assertion and reason are false

Answer: A

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116. Assertion : Coconut tree is distributed in coastal areas over a large part of the world

Reason : Coconut fruit can float and get dispersed over thousands of kilometers before losing viability.

A. If both assertion and reason are true and the reason is a correct explanation of the assertion

B. If both assertion and reason are true but reason is not a correct explanation of the assertion

C. If the assertion is true but reason is false

D. If both the assertion and reason are false

Answer: A

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117. Assertion : Algae and fungi are classified as thallophytes.

Reason : They both are autotrophs.

A. If both assertion and reason are true and the reason is a correct explanation of the assertion

B. If both assertion and reason are true but reason is not a correct explanation of the assertion

C. If the assertion is true but reason is false

D. If both the assertion and reason are false

Answer: C

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118. Assertion : Conifer trees produce a large quantity of wind-borne pollen grains

Reason : The pollen grains have wings.

A. If both assertion and reason are true and the reason is a correct explanation of the assertion

B. If both assertion and reason are true but reason is not a correct explanation of the assertion

C. If the assertion is true but reason is false

D. If both the assertion and reason are false

Answer: A

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119. Assertion: Red algae contribute in producing coral reef. ltbr. Reason: Some red algae secrete and deposit calcium carbonate our their walls.

A. If both assertion and reason are true and the reason is a correct explanation of the assertion

B. If both assertion and reason are true but reason is not a correct explanation of the assertion

C. If the assertion is true but reason is false

D. If both the assertion and reason are false

Answer: A

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120. Assertion: The peristome is a fringe of teeth-like projections found at the mouth of the capsule.

Reason: It may be of two types nematodontous and orthodontus.

A. If both assertion and reason are true and the reason is a correct explanation of the assertion

B. If both assertion and reason are true but reason is not a correct explanation of the assertion

C. If the assertion is true but reason is false

D. If both the assertion and reason are false

Answer: B

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121. Assertion Sphagnum is slowly carbonised, compressed and fossilised over thousands of years to produce a dark spongy mass called peat

Reason. Peat helps to keep soil porous and it also improves water holding capacity of soil

A. If both assertion and reason are true and the reason is a correct explanation of the assertion

B. If both assertion and reason are true but reason is not a correct explanation of the assertion

C. If the assertion is true but reason is false

D. If both the assertion and reason are false

Answer: B

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