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| **Neha Malhotra**  **R.L. Institute M: 9416974837**  **Class : XI**  **“PLANT KINGDOM”** |

**Level – 1**

**(Based on Algae Division)**

1. Artificial system of classification classifies plants on the basis of :

|  |  |
| --- | --- |
| a) One or two characters | b) Phylogenetic trends |
| c) Many naturally existing characters | d) None of the above |

1. Phylogeny refers to :

|  |  |
| --- | --- |
| a) Natural classification | b) Evolutionary classification |
| c) Evolutionary history | d) Origin of algae |

1. Evolutionary classification is called :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Artificial system | b) Natural system | c) Phylogenetic system | d) None of these |

1. Select the incorrect pair.
2. Numerical taxonomy – Observable characters
3. Cytotaxonomy – Cytological information
4. Chemotaxonomy – Chromosome number and structure
5. Cladistic taxonomy – Origin from a common ancestor
6. A student was asked to classify various algae into distinct groups. Which of the following characters , student should select to classify the algae?

|  |  |
| --- | --- |
| a) Nature of stored food materials in the cell | b) Types of pigments present in the cell |
| c) Chemical composition of cell wall | d) Structural organization of thallus. |

1. Artificial system of classification was first used by :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Linnaeus | b) De Candolle | c) Pliny the Elder | d) Bentham and Hooker |

1. Agar-Agar is obtained from :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Porphyra | b) Gelidium | c) Gracilaria | d) both (b) and (c) |

1. Most of the members of algae have one or more storage bodies called pyrenoids located in the :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Mitochondria | b) Chloroplast | c) ER | d) Nucleus |

1. Hydrocolloids (water holding substances) produced by certain marine brown and red algae are :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Agar-agar | b) Algin | c) Carrageen | d) Both (b) and (c) |

1. Red sea is caused by :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Anabaena | b) Nostoc | c) Gloeocapsa | d) Trichodesmiun |

PLANT KINGDOM Page No. 1

1. Select the correct match of classes of algae with the number and position of insertion of flagella.

|  |  |
| --- | --- |
| a) Chlorophyceae : 2-8, equal, apical | b) Phaeophyceae : Absent |
| c) Rhodophyceae : 2, unequal, lateral | d) None of these |

1. Phycoerythrin is found in :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Laminaria | b) Porphyra | c) Gracilaria | d) Both (b) and (c) |

1. In which of the following , all listed genera belong to the same class of algae:

|  |  |
| --- | --- |
| a) Chara , Fucus , Polysiphonia | b) Volvax , Spirogyra , Chlamydomonas |
| c) Porphyra , Ectocarpus , Ulothrix | d) Sargassum , Laminaria , Gracilaria |

1. Which one is a parasitic algae?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Vaucheria | b) Polysiphonia | c) Cephaleurous | d) Batrachospermum |

1. Which one is an incorrect character of brown algae?

|  |  |
| --- | --- |
| a) Presence of chlorophyll a and b | b) It remain attached to substratum |
| c) Presence of chlorophyll a and c | d) Presence of Fucoxanthine |

1. In oogamy, fertilization involves :
2. A large non-motile female gamete and a small non-motile male gamete.
3. A large motile female gamete and a small non-motile male gamete
4. A small non-motile female gamete and a large motile male gamete
5. A large non-motile female gamete and a small motile male gamete
6. Pyrenoids in green algae cells are related to :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Starch storage | b) Protein storage | c) General metabolism | d) Enzyme secretion |

1. Which type of sexual reproduction is found in spirogyra?

|  |  |  |  |
| --- | --- | --- | --- |
| a) conjugation | b) Binary fission | c) Fragmentation | d) Spore formation |

1. In Ulothrix, meiosis occurs in :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Gamete | b) Zygospore | c) Zoospore | d) Thallus |

1. An algae rich in protein is :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Spirogyra | b) Ulothrix | c) Oscillatoria | d) Chlorella |

1. Ulothrix can be described as a :
2. Non-motile colonial alga lacking zoospores
3. Filamentous alga lacking flagellated reproductive stages.
4. Membranous alga producing zoospores.
5. Filamentous alga with flagellated reproductive stages.
6. Brown algae is characteristic by the presence of :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Phycocyanin | b) Phycoerythrin | c) Fucoxanthine | d) Carrageen |

1. Floridean starch is found in \_\_\_\_\_\_\_\_\_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a) Chlorophyceae | b) Rhodophyceae | c) Myxophyceae | d) Cyanophyceae |

1. A research student collected certain algae and found that its cells contained both chlorophyll ‘a’ and chlorophyll ‘d’ as well as Phycoerythrin. On the basis of above features the algae belongs to :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Rhodophyceae | b) Bacillariophyceae | c) Chlorophyceae | d) Phaeophyceae |

PLANT KINGDOM Page No. 2

1. Laminaria (kelp) and Fucus (rock weed) are the examples of :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Red algae | b) brown algae | c) Green algae | d) Golden Brown algae |

1. Choose the correct order of colours with respect of pigments-chlorophyll, Phycoerythrin and Fucoxanthine.

|  |  |  |  |
| --- | --- | --- | --- |
| a) Green , red & brown | b) Brown , green & red | c) Red , green & Brown | d) Green , Brown & red |

1. Which of the following is considered as the best evidence to show that two species of algae are closely related?

|  |  |
| --- | --- |
| a) They both respire and release CO2 | b) They both are found in the same habitat |
| c) They both reproduce asexually | d) They both have same type of pigments |

1. The pyrenoids are made up of :
2. Proteinaceous center and starchy sheath
3. Core of protein surrounded by fatty sheath.
4. Core of starch surrounded by sheath of protein
5. Core of nucleic acid surrounded by protein sheath.
6. Edible fresh water algae would include :

|  |  |
| --- | --- |
| a) Porphyra and Chlorella | b) Spirulina and Laminaria |
| c) Chlorella and Spirulina | d) Microcystis and Chondrus |

1. The pigment that given Rhodophyceae its distinctive red colour is :

|  |  |
| --- | --- |
| a) Chlorophyll – a , b & Phycoerythrin | b) Chlorophyll – a , c & Fucoxanthine |
| c) Chlorophyll – a , d & Phycoerythrin | d) Chlorophyll – a , b & Phycocyanin |

1. *Ectocarpus , Dictyota , Laminaria, Sargassum and Fucus* belong to class :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Rhodophyceae | b) Phaeophyceae | c) Cyanophyceae | d) Chlorophyceae |

1. Asexual reproduction in brown algae happens by the formation of :
2. Multiflagellated zoospores which are sickle-shaped.
3. Biflagellated zoospores (pear shaped and have two unequal flagella)
4. Aplanospores (non-motile)
5. Endospores
6. The plant body constituting a holdfast, stipe and frond is seen in :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Volvax | b) Chara | c) Laminaria | d) Chlamydomonas |

1. A gelatinous covering outside the cellulosic cell wall is observed in the members belonging to brown algae. This gelatinous coating is called as :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Algin | b) Polyalginate | c) Gylcoalgin | d) Mannitol |

1. The members of brown algae are found primarily :

|  |  |  |  |
| --- | --- | --- | --- |
| a) on moist rock | b) in marine habitat | c) in fresh water habitat | d) in terrestrial habitat |

1. A rigid cell wall is usually seen in members of Chlorophyceae. This cell wall is of :
2. Cellulose (outer layer) and Algin (inner layer)
3. Chitin (outer layer) and Pectose (inner layer)
4. Cellulose (inner layer) and Pectose (outer layer)
5. Pectose (inner layer) and Peptidoglycan (outer layer)

PLANT KINGDOM Page No. 3

1. In the life cycle of which group, flagellated cells are not formed?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Chlorophyceae | b) Phaeophyceae | c) Rhodophyceae | d) Both (b) and (c) |

1. The most common type of spore produced during asexual reproduction of algae is :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Aplanospores | b) Endospore | c) Zoospore | d) Oospore |

1. The flagellated and motile spore in algae is known as :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Akinete | b) Endospore | c) Zoospore | d) Aplanospores |

1. The type of chloroplasts observed in class Chlorophyceae is :

|  |  |
| --- | --- |
| a) Discoid and plate like | b) Spiral and ribbon shaped |
| c) Reticulate and cup shaped | d) All of the above |

1. Which of the following is incorrectly matched?
2. Chlorophyceae – Major pigments are chl ‘a’ and chl ‘b’
3. Phaeophyceae – Cell wall is made up of cellulose and Algin
4. Rhodophyceae – Stored food is mannitol
5. Chlorophyceae – Cell wall is made up of cellulose
6. Which of the following statements with respect to algae are correct?
7. Fusion between one large , non-motile female gamete and a smaller, motile male gamete is termed as oogamous.
8. Fusion of two gametes dissimilar in size are termed as oogamous.
9. Fusion of two gametes similar in size is called ansiogamous.
10. In Chlorophyceae, the major pigments are chlorophyll a and b, and the food is stored in starch.
11. In Rhodophyceae, the major pigments are chlorophyll c and d, and the food is stored in mannitol.

|  |  |  |  |
| --- | --- | --- | --- |
| a) (i) and (v) | b) (iii) and (v) | c) (i) and (ii) | d) (i) and (iv) |

1. The following statements are associated with one class of algae. Identify the class of algae.
2. One or more storage bodies called pyrenoids located in the chloroplasts are present in the members of this class.
3. They have a rigid cell wall made up of an inner layer of cellulose and an outer layer of Pectose.
4. Asexual reproduction is by flagellated zoospores produced in zoosporangia.
5. *Chlamydomonas , Volvax , Ulothrix , Spirogyra and Chara* are common examples of these algae.

|  |  |  |  |
| --- | --- | --- | --- |
| a) Chlorophyceae | b) Rhodophyceae | c) Phaeophyceae | d) None of these |

1. Which of the following statements is/are correct?
2. Green algae are the members of Chlorophyceae.
3. Brown algae are found primarily in marine habitat.
4. Some red algae are found in fresh water, mostly occur in salt water, some are found in brackish water.
5. The food in red algae is stored as Floridean starch.
6. Red alga may occur in both well-lighted regions close to water-surface and also at depth in oceans where light penetration in low.

|  |  |  |  |
| --- | --- | --- | --- |
| a) (i) and (v) | b) (ii) , (iii) and (iv) | c) (i) , (iii) and (v) | d) all of these |

PLANT KINGDOM Page No. 4

1. Which one of the following about algae is incorrect?

|  |  |
| --- | --- |
| a) Most algae are photosynthetic | b) Algae can be classified according to their pigments |
| c) All algae are filamentous | d) Spirogyra does not produce zoospores |

1. Which of the following statements about algae is/are correct?
2. Algae are chlorophyll-bearing simple, thalloid, heterotrophic and aquatic (both fresh and marine) organism.
3. Algae reproduce by vegetative means only.
4. Fusion of two gametes dissimilar in size is termed as oogamous.
5. A few of the massive forms of algae such as kelp, form massive plant bodies.

|  |  |  |  |
| --- | --- | --- | --- |
| a) (i) | b) (i) and (iii) | c) (iv) | d) all of these |

1. Which of the following statement about plants are correct?
2. Kingdom Plantae includes eukaryotic, autotrophic , chlorophyll containing organisms.
3. It includes bryophytes, pteridophytes, gymnosperms , angiosperms but not algae.
4. Plants shows alternation of generation [between haploid gametophyte (n) phase and diploid sporophytic (2n) phase].

|  |  |  |  |
| --- | --- | --- | --- |
| a) (i) and (ii) | b) (i) and (iii) | c) (ii) and (iii) | d) (i) , (ii) and (iii) |

1. Match column I and column II

|  |  |  |
| --- | --- | --- |
| Column I | Column II | |
| A. Ectocarpus | I. Plant body with frond, stipe and holdfast | |
| B. Volvax | II. Filamentous | | |
| C. Laminaria | III. Colonial | |
| D. Polysiphonia | IV. Floridean starch | |
|  | V. Mannitol | |
| a) A – II ; B – I ; C – IV ; D – III | | | b) A – II ; B – III ; C – I ; D – IV | | |
| c) A – V ; B – III ; C – I ; D – IV | | | d) A – IV ; B – III ; C – I ; D – V | | |

1. The following statements are associated with one class of algae. Identify the class of algae.
2. They reproduce sexually by non-motile gametes and asexually by non-motile spores.
3. This class displays sexual reproduction which is oogamous and is accompanied by complex development post-fertilization.
4. *Polysiphonia , Porphyra , Gracilaria and Gelidium* are common members of this class.

|  |  |  |  |
| --- | --- | --- | --- |
| a) Phaeophyceae | b) Chlorophyceae | c) Xanthophyceae | d) Rhodophyceae |

1. Consider the following statements and choose the correct statements.
2. The commercial product, Agar obtained from *Gracilaria* and  is used in ice-cream and jelly preparations as well as to grow microbes.
3. *Chlamydomonas* and *Chlorella* are used in sewage disposal ponds.
4. Some species of marine algae like *Porphyra, Laminaria* and *Sargassum* are used as food.

|  |  |  |  |
| --- | --- | --- | --- |
| a) (ii) and (iii) | b) (i) and (ii) | c) (i) and (iii) | d) all of these |

PLANT KINGDOM Page No. 5

1. Which of the following statements is incorrect for Chlorophyceae?

|  |  |
| --- | --- |
| a) The stored food material is starch | b) Major pigments are chlorophyll a and b. |
| c) Spirogyra belongs to this class | d) These are generally brown alage. |

1. Consider the following statements about green algae and select the correct statements.
2. Presence of localized pigments of chl a and b in the chloroplast gives green algae its distinct green colour.
3. Food is stored in the form of starch in algae, in special structures called pyrenoids which are located in the chloroplast. Food may also be stored in form of oil and droplets.
4. Vegetative reproduction occurs through cell division, fragmentation.

|  |  |  |  |
| --- | --- | --- | --- |
| a) (ii) and (iii) | b) (i) and (ii) | c) (i) and (iii) | d) all of these |

1. Consider the following statements about brown algae and select the correct statements.
2. *Nereocystis* and *Macrocystis* are the largest kelps.
3. Algin is the gelatinous coating outside the cellulosic cell wall in brown algae.
4. ‘Kombu’ is the name given to the food obtained from a mixture of diverse *Laminaria* species

|  |  |  |  |
| --- | --- | --- | --- |
| a) (ii) and (iii) | b) (i) and (ii) | c) (i) and (iii) | d) all of these |

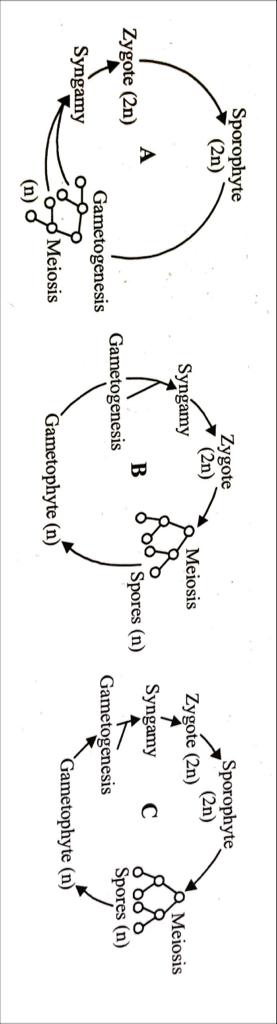
1. Consider the following statements about algae and select the correct statements.
2. Mainly aquatic
3. Reproduction take place by vegetative , asexual and sexual.
4. The plant body is thalloid.
5. Volvax and Ulothrix are the colonial form of algae

|  |  |  |  |
| --- | --- | --- | --- |
| a) (i) , (ii) and (iii) | b) (ii) , (iii) and (iv) | c) (i) , (iii) and (iv) | d) all of these |

1. Consider the following statements about red algae and select the correct statements.
2. Fragmentation is the process of vegetative reproduction in red algae.
3. Food is stored as Floridean starch in red algae, whose structure is similar to that of Amylopectin and Glycogen.
4. Cell wall of red algae is made up of chitin.

|  |  |  |  |
| --- | --- | --- | --- |
| a) (ii) and (iii) | b) (i) and (ii) | c) (i) and (iii) | d) all of these |

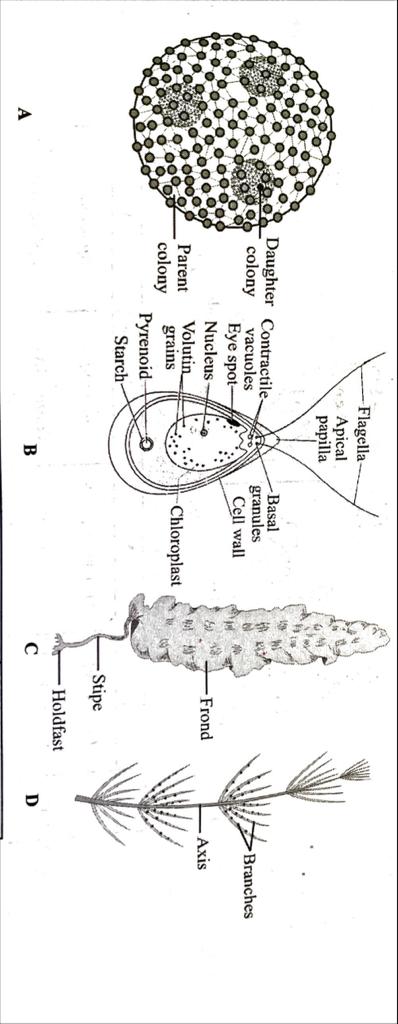
1. Which one of the following option correctly represents the type of life cycle patterns?



|  |  |
| --- | --- |
| a) A – Diplontic , B – Haplodiplontic , C – Haplontic | b) A – Haplodiplontic , B – Haplontic , C – Diplontic |
| c) A – Haplontic , B – Diplontic , C – Haplodiplontic | d) A – Diplontic , B – Haplontic , C – Haplodiplontic |

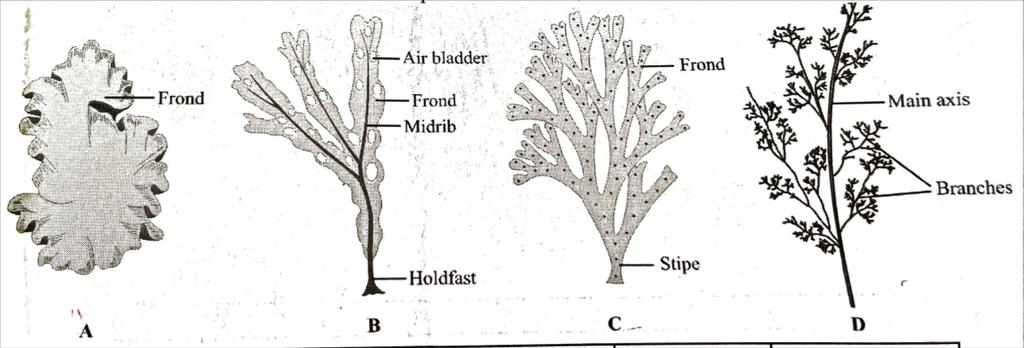
PLANT KINGDOM Page No. 6

1. Identify the figure and choose the right option :



|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | A | B | C | D |
| (a) | *Volvax* | *Chlamydomonas* | *Laminaria* | *Chara* |
| (b) | *Chara* | *Laminaria* | *Volvax* | *Chlamydomonas* |
| (c) | *Laminaria* | *Volvax* | *Chlamydomonas* | *Chara* |
| (d) | *Chlamydomonas* | *Chara* | *Laminaria* | *Volvax* |

1. Identify the figure and choose the right option :



|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | A | B | C | D |
| (a) | *Porphyra* | *Dictyota* | *Dictyota* | *Polysiphonia* |
| (b) | *Polysiphonia* | *Porphyra* | *Dictyota* | *Fucus* |
| (c) | *Fucus* | *Dictyota* | *Porphyra* | *Polysiphonia* |
| (d) | *Porphyra* | *Polysiphonia* | *Fucus* | *Dictyota* |

PLANT KINGDOM Page No. 7

**Answers**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 1. a | 1. c | 1. c | 1. c | 1. b | 1. a | 1. d | 1. b |
| 1. d | 1. d | 1. a | 1. d | 1. b | 1. c | 1. a | 1. d |
| 1. a | 1. a | 1. b | 1. d | 1. d | 1. c | 1. b | 1. a |
| 1. b | 1. a | 1. d | 1. a | 1. c | 1. c | 1. b | 1. b |
| 1. c | 1. a | 1. b | 1. c | 1. c | 1. c | 1. c | 1. d |
| 1. c | 1. d | 1. a | 1. d | 1. c | 1. c | 1. b | 1. b |
| 1. d | 1. d | 1. d | 1. d | 1. d | 1. a | 1. b | 1. d |
| 1. a | 1. a |  |  |  |  |  |  |

PLANT KINGDOM Page No. 8

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**Level – 2**

**(Based on Bryophytes Division)**

1. Bryophytes includes :

|  |  |
| --- | --- |
| a) Liverworts and ferns | b) Mosses and ferns |
| c) Mosses and Liverworts | d) None of these |

1. Which plant group is known as ‘Amphibians of plant kingdom’?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Pteridophyta | b) Bryophyta | c) algae | d) Fungi |

1. A bryophyte differs from pteridophytes in :

|  |  |
| --- | --- |
| a) Archaegonia | b) lack of vascular tissues |
| c) Swimming antherozoids | d) Independent gametophytes |

1. The unique feature of bryophytes compared to other plant group is that :
2. They produce spore
3. They lack vascular tissues
4. They lack roots
5. Their sporophyte is attached to the gametophyte.
6. Bryophytes grow in moist and shady environment because :

|  |  |
| --- | --- |
| a) They cannot grow on land | b) their gametes fuse in water |
| c) They lack vascular tissue | d) They lack roots an stomata |

1. Sporophyte is dependent on gametophyte in :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Bryophytes | b) Gymnosperms | c) Angiosperms | d) Pteridophytes |

1. Among the following which one are non-vascular plants?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Pteridophytes | b) Bryophytes | c) Angiosperms | d) Gymnosperms |

1. *Funaria* may be differentiated from Pinus by which of the following characters.

|  |  |
| --- | --- |
| a) No fruits are produced | b) No seeds are produced |
| c) Presence of antheridia and archaegonia | d) Both (a) and (b) |

1. Female reproductive part of bryophytes is :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Antheridium | b) Oogonium | c) Archaegonium | d) Sporangium |

1. Protonema stage is found in :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Ferns | b) Mosses | c) Liverworts | d) Fungi |

PLANT KINGDOM Page No. 9

1. Which of the following stage of *Funaria* is haploid?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Gametophyte | b) Sporophyte | c) Both (a) and (b) | d) None of these |

1. Which one of the following have elaters with mature spores in the capsule?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Polytrichum | b) Marchantia | c) Funaria | d) Sphagnum |

1. Bryophytes are dependent on water because :
2. Water is essential for fertilization for their homosporous nature.
3. Water is essential for their vegetative propagation
4. The sperms can easily reach upto egg in the archaegonium
5. Archaegonium has to remain filled with water for fertilization.
6. Bryophytes can be separated from algae because they :
7. Are thalloid forms
8. Have no conducting tissue.
9. Possess archegonia with outer layer of sterile cells.
10. Contain chloroplasts in their cells.
11. Sex organs in Funaria develops :

|  |  |
| --- | --- |
| a) in Protonema | b) outside capsule |
| c) in the axil of leaf | d) at the tip of gametophore |

1. Which is not the characteristic feature of Bryophyta?

|  |  |
| --- | --- |
| a) Motile sperms | b) Presence of archaegonium |
| c) Water is essential for fertilization | d) Independent autotrophic sporophyte |

1. Which of the following is of considerable economic importance?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Riccia | b) Funaria | c) Marchantia | d) Sphagnum |

1. Bryophytes resemble algae in which of the following aspects :
2. Filamentous body, presence of vascular tissues and autotrophic nutrition.
3. Differentiation of plant body into root, stem and leaves and autotrophic nutrition.
4. Thallus-like plant body, presence of root and autotrophic nutrition.
5. Thallus-like plant body, lack of vascular tissues and autotrophic nutrition
6. A bryophyte suddenly starts reproducing parthenogentically. The number of chromosomes of the second generation compared to the parent plant will be :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Same | b) One-half | c) Double | d) Triple |

1. A bryophyte plant has chromosome number 9. Chromosome number in spores and Protonema will be :

|  |  |  |  |
| --- | --- | --- | --- |
| a) 9 & 9 | b) 18 & 18 | c) 27 & 18 | d) 9 & 18 |

1. A moss plant with mature antheridia and archaegonia is exposed to dry and hot air. The egg cell will :

|  |  |
| --- | --- |
| a) Be fertilized normally | b) Not be fertilized |
| c) be burned | d) Come out of the archaegonium |

1. When moss spores germinate, they form :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Leafy gametophyte | b) Capsule | c) Protonema | d) Rhizoids |

PLANT KINGDOM Page No. 10

1. In some of the liverworts, there are special elongated cells called elaters that possess a helical thickening of the cell wall. As elaters lose water, they shrink longitudinally and compress the helical thickening like a spring. When the stress reaches a critical point, the compressed ‘spring’ snaps back to its resting position, liberating hundreds of \_\_\_\_\_\_\_\_\_\_\_ in all directions.

|  |  |  |  |
| --- | --- | --- | --- |
| a) moisture particles | b) spores | c) sperm | d) ova |

1. Gemma cups are small receptacles that give rise to gemmae (asexual bud). These gemma cups are found in :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Sphagnum | b) Marchantia | c) Funaria | d) Fern |

1. Which is incorrect with respect to bryophytes?

|  |  |
| --- | --- |
| a) Water is essential for sexual reproduction. | b) Presence of ciliated sperms |
| c) Presence of antheridium | d) Presence of autotrophic independent sporophyte |

1. The moss plant is :
2. Sometimes sporophyte and sometimes gametophyte
3. Predominantly gametophyte with sporophyte attached to it.
4. Only sporophyte.
5. Predominantly sporophyte with gametophyte attached to it.
6. In mosses, vegetative reproduction takes place by :

|  |  |
| --- | --- |
| a) Fragmentation and Budding | b) Gemmae and Tubers formation |
| c) Protonema and endospore | d) Gemmae formation |

1. The characteristics trait of the plant of bryophytes is :

|  |  |
| --- | --- |
| a) It is more differentiate than that of algae | b) It is equally differentiate to that of algae |
| c) It is less differentiate than that of algae | d) It is not differentiate at all |

1. The haploid and thallus like plant body of bryophytes have :

|  |  |
| --- | --- |
| a) vascular tissues | b) root, leaf and stem like structures |
| c) complex tissues | d) True root, stem and leaves which bear vascular tissue |

1. Mosses are indicators of :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Air pollution | b) Water pollution | c) radiation pollution | d) Soil pollution |

1. Which of the following statement(s) is/are correct about mosses?
2. The predominant stage of its life cycle is the gametophyte which consists of two stages – Protonema and leafy stages.
3. Leafy stages is attached to the soil through multicellular and branched rhizoids
4. Sex organs – Antheridia and archaegonia are produced at the apex of the leafy shoots.
5. All of the above.
6. Which of the following statements is/are correct about gemmae?
7. These are specialized structures by which asexual reproduction takes place in liverworts.
8. They are green , multicellular and asexual buds.
9. They develop in small receptacles called gemma cups.
10. They detached from parent body and germinate to form new individuals.

|  |  |  |  |
| --- | --- | --- | --- |
| a) (i) and (ii) | b) (ii) and (iii) | c) (i) , (ii) and (iii) | d) all of these |

PLANT KINGDOM Page No. 11

1. Refer to the following statements identify the group :
2. They include various mosses and liverworts that are found commonly growing in moist shades areas in the hills.
3. They lack true roots, stem or leaves
4. The main plant body is haploid.
5. They produce a multicellular body sporophyte which is not free living but attached to the photosynthetic and derives nourishment from it.

|  |  |  |  |
| --- | --- | --- | --- |
| a) Algae | b) Fungi | c) Bryophytes | d) Pteridophytes |

1. Choose the correct statement about liverworts :
2. In liverworts, the antheridium and archaegonium produce the antherozoids and the egg respectively which fuse during sexual reproduction.
3. Both male and female sex organs may be present on same thalli or different thalli.
4. A sporophyte is formed from the zygote which is differentiated into foot, seta and capsule.
5. Meiosis occur in some cells of the capsule giving rise to haploid spores.

|  |  |  |  |
| --- | --- | --- | --- |
| a) (i) and (iii) | b) (i) , (ii) and (iii) | c) (iii) and (iv) | d) all of these |

1. Read the following statements and choose the correct statements :
2. Funaria possess unicellular and unbranched rhizoids.
3. Mosses along with lichens are the first organisms to colonise rocks.
4. Gemmae are asexual buds, which originate from small receptacles called gemma cup.
5. Sphagnum plants have magnification property of retaining water.

|  |  |  |  |
| --- | --- | --- | --- |
| a) All of these | b) (i) , (iii) and (iv) | c) (ii) , (iii) and (iv) | d) (i) , (ii) and (iii) |

1. Identify the figure and choose the right option :

|  |
| --- |
|  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | A | B | C | D |
| (a) | *Gemma cup* | *Archegoniophore* | *Sporophyte* | *Sphagnum* |
| (b) | *Archegoniophore* | *Gemma cup* | *Gametophyte* | *Sphagnum* |
| (c) | *Archegonia* | *Antheridia* | *Gemma cup* | *Sphagnum* |
| (d) | *Antheridia* | *Archegonia* | *Gemma cup* | *Sphagnum* |

PLANT KINGDOM Page No. 12

1. Choose the incorrect statements :
2. The fusion of antherozoids and egg produced in antheridia and archaegonia borne at the tip of the leafy shoots leads to sexual reproduction.
3. The sporophyte in mosses is more elaborate than that in liverworts.
4. Seta and capsule bear spores, which give rise to gametophyte after meiosis.
5. Sporophyte is differentiated into foot, seta and capsule.
6. The characteristics features of Bryophytes are the following. Select the correct statements :
7. Requirement of water for fertilization
8. Main plant body is sporophytic
9. Main plant body is gametophytic

|  |  |  |  |
| --- | --- | --- | --- |
| a) (ii) and (iii) | b) (i) , (ii) and (iii) | c) (i) and (ii) | d) (i) and (iii) |

**Level – 3**

**(Based on Pteridophytes Division)**

1. Seed habitat firstly originated in :

|  |  |
| --- | --- |
| a) certain pteridophytes | b) certain pines |
| c) certain monocots | d) certain dicots |

1. Fern plant is a :

|  |  |
| --- | --- |
| a) Haploid gametophyte | b) Diploid gametophyte |
| c) Diploid sporophyte | d) Haploid sporophyte |

1. In pteridophytes, a spore germinates to produce :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Prothallus | b) sporophyte | c) sporophyll | d) Sporangium |

1. Prothallus means immature :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Gametophyte | b) sporophyte | c) Archaegonium | d) None of these |

1. Which of the following is not a pteridophyte?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Ginkgo | b) Selaginella | c) Polypodium | d) Azolla |

1. The gametophyte of fern bears :

|  |  |  |  |
| --- | --- | --- | --- |
| a) True roots | b) Antheridia | c) Archegonia | d) Both (b) and (c) |

1. Sporangia and spore bearing leaf in fern is called as :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Ramentum | b) Sorus | c) Indusium | d) sporophyll/frond |

1. Which of the following is known as ‘resurrection plant’?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Selaginella | b) Welwitschia | c) Rafflesia | d) Chlorella |

1. Which of the following pteridophytes is Heterosporous in nature?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Psilotum | b) Adiantum | c) Equisetum | d) Salvinia |

PLANT KINGDOM Page No. 13

1. The heterosporous pteridophyte belonging to the class lycopsida is :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Selaginella | b) Psilotum | c) equisetum | d) Pteris |

1. New leaf of fern is called \_\_\_\_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a) Sporophyll | b) Frond | c) leaf petiole | d) Leaf node |

1. The main plant body in pteridophytes is :
2. Sporophyte (2n) which is differentiated into root, stem and leaf.
3. Gametophyte (n) which is differentiated into root, stem and leaf
4. Sporophyte having no root, stem and leaf.
5. Gametophyte having no root but only stem and leaf
6. In pteridophytes, spores germinate to give rise to :

|  |  |
| --- | --- |
| a) thalloid, gametophytes called prothallus | b) thalloid, photosynthesis sporophyte |
| c) thalloid sporocarp | d) thalloid sporophytes called prothallus |

1. The term ‘frond’ in a fern is used for :

|  |  |
| --- | --- |
| a) Rachis | b) whole plant |
| c) Spore bearing leaf | d) Sexually reproducing structures |

1. Which one of the following is the major differences between mosses and ferns?
2. Ferns lack alternation of generation while mosses show the same.
3. Mosses are facultative aerobes while ferns are obligate aerobes.
4. Vascular bundles of ferns show xylem vessels while those of mosses lack it.
5. Sporophytes of ferns live much longer as compared to the sporophytes of mosses.
6. Match column I and column II

|  |  |  |
| --- | --- | --- |
| Column I | Column II | |
| A. Phaeophyceae | I. Have an elaborate mechanism of spore dispersal | |
| B. Rhodophyceae | II. First terrestrial plant with vascular tissue-phloem and xylem | |
| C. Mosses | III. Asexual reproduction by biflagellate zoospores | |
| D. Pteridophytes | IV. Polysiphonia, Porphyra , Gracilaria | |
| a) A – III ; B – IV ; C – I ; D – II | | | b) A – IV ; B – III ; C – I ; D – II | |
| c) A – IV ; B – III ; C – II ; D – I | | | d) A – IV ; B – I ; C – III ; D – II | |

1. Which of the following statement is/are correct?
2. Agar, one of the commercial products obtained from Laminaria and Sargassum is used to grow microbes and in preparation of ice-creams and jellies.
3. In Phaeophyceae, major pigments are chl a, d and Phycoerythrin
4. Pteridophytes are classified into 4 classes : Psilopsida , Lycopsida , Sphenopsida and Pteropsida
5. Gemmae are green, multicellular , asexual buds., which develop into small receptacles called gemma cups located on the thalli.

|  |  |  |  |
| --- | --- | --- | --- |
| a) (i) and (ii) | b) (ii) and (iv) | c) (iii) and (iv) | d) all of these |

PLANT KINGDOM Page No. 14

1. Which of the following statements is/are correct about pteridophytes:
2. The main plant body is a sporophyte which is differentiated into true roots and leaves.
3. The leaves are small (microphylls) as in fern or large (macrophylls) as in Selaginella.
4. Genera like Selaginella and Salvinia which produce two kinds of spores – Macro and micro spores, known as heterosporous.
5. Common examples are : Funaria , Polytrichum and Sphagnum.

|  |  |  |  |
| --- | --- | --- | --- |
| a) (i) and (ii) | b) (ii) and (iii) | c) (i) and (iii) | d) all of these |

1. Which of the following statements is incorrect about Selaginella?
2. It bears large leaves.
3. It produces two kinds of spores, macro and micro spores
4. Its sporophyll may form distinct compact structures called strobili or cones.
5. Both (b) and (c)
6. Read the following statements about Pteridophytes and select the correct statements.
7. They are used for medical purpose
8. They are frequent grow on ornaments.
9. They are called vascular cryptogamous.
10. They produce spores rather than seeds.
11. They are used as soil builders.

|  |  |  |  |
| --- | --- | --- | --- |
| a) (iv) | b) (i) and (ii) | c) (i) , (ii) and (iv) | d) all of these |

1. Identify the figure and choose the right option :

|  |
| --- |
|  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | A | B | C | D |
| (a) | *Equisetum* | *Ginkgo* | *Selaginella* | *Lycopodium* |
| (b) | *Selaginella* | *Equisetum* | *Salvinia* | *Gingko* |
| (c) | *Funaria* | *Adiantum* | *Salvinia* | *Riccia* |
| (d) | *Chara* | *Marchantia* | *Fucus* | *Pinus* |

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1. Match column I and column II

|  |  |  |
| --- | --- | --- |
| Column I | Column II | |
| A. Equisetum | I. Microphylls | |
| B. Dictyota | II. Strobilus | | |
| C. Pteris | III. Algin | |
| D. Selaginella | IV. Macrophylls | |
| a) A – II ; B – III ; C – IV ; D – I | | | b) A – II ; B – III ; C – I ; D – IV | | |
| c) A – IV ; B – III ; C – I ; D – II | | | d) A – I ; B – III ; C – IV ; D – II | | |

**Answers**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 1. c | 1. b | 1. b | 1. d | 1. b | 1. a | 1. b | 1. b |
| 1. c | 1. b | 1. a | 1. b | 1. c | 1. c | 1. d | 1. d |
| 1. d | 1. d | 1. a | 1. a | 1. b | 1. c | 1. b | 1. c |
| 1. d | 1. b | 1. a | 1. a | 1. b | 1. a | 1. d | 1. d |
| 1. c | 1. d | 1. c | 1. b | 1. c | 1. c | 1. a | 1. c |
| 1. a | 1. a | 1. a | 1. d | 1. d | 1. a | 1. d | 1. a |
| 1. b | 1. a | 1. a | 1. c | 1. d | 1. a | 1. c | 1. c |
| 1. a | 1. d | 1. b | 1. a |  |  |  |  |

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|  |
| --- |
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**Level – 4**

**(Based on Gymnosperm & Angiosperm Division)**

1. Phloem element of gymnosperm lacks :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Sieve element | b) Companion cell | c) Parenchyma | d) Sclerenchyma |

1. In gymnosperms, endosperm is formed :
2. By fusion between a male gamete and 2 polar nuclei
3. By fusion between a male gamete and a polar nuclei
4. By fusion between egg and male gamete
5. During germination of megaspore.
6. Fruits are not formed in gymnosperms because of :

|  |  |
| --- | --- |
| a) Absence of pollination | b) Absence of seed |
| c) Absence of fertilization | d) Absence of ovary |

1. Xylem element of gymnosperm lacks :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Vessels | b) Tracheids | c) parenchyma | d) Sclerenchyma |

1. The endosperm of gymnosperm is :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Haploid | b) Diploid | c) Triploid | d) Tetraploid |

1. In which of the following, Fertilization is possible without water?

|  |  |  |  |
| --- | --- | --- | --- |
| a) algae | b) Bryophytes | c) Pteridophytes | d) Gymnosperm |

1. In gymnosperms, the seeds are naked because they lack:

|  |  |  |  |
| --- | --- | --- | --- |
| a) Integuments | b) Pericarp | c) Nucellus | d) Perianth |

1. Cones and flowers are similar because :

|  |  |
| --- | --- |
| a) Both are bright and showy | b) Both are reproductive organs |
| c) Both do not contain endosperm | d) Both do not contain starch |

1. Which of the following is living fossil?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Pinus | b) Ginkgo | c) Thuja | d) Deodar |

1. Which of the following structures in Pinus are haploid?

|  |  |
| --- | --- |
| a) Megaspore , integument , root | b) Endosperm , megaspore , Pollen grain |
| c) Pollen grain , leaf , root | d) Megaspore , endosperm , embryo |

1. In Pinus, male and female reproductive structures occur :

|  |  |
| --- | --- |
| a) On different branches of the same plant | b) On different plants |
| c) On same branch | d) None of the above |

1. Coralloid root of Cycas are useful in :

|  |  |
| --- | --- |
| a) N2-fixation | b) Absorption of water |
| c) Transpiration | d) all of these |

1. ‘Chilgoza’ a gymnosperm seed, that is eaten as a ‘dry fruit’ is produced by :

|  |  |
| --- | --- |
| a) *Pinus roxburghii* | b) *Pinus gerardiana* |
| c) *Ginkgo biloba* | d) *Cedrus deodara* |

1. Gymnosperms lack fruit because they lack:

|  |  |  |  |
| --- | --- | --- | --- |
| a) Ovule | b) Ovary | c) Embryo | d) seed |

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

|  |  |  |  |
| --- | --- | --- | --- |
| a) Blue green algae | b) Red algae | c) Green algae | d) Brown algae |

1. Which of the following is absent in the primary and secondary structure of stem of Pinus?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Sieve tube | b) Mucilage duct | c) Companion cells | d) parenchyma |

1. The nature of megasporophyll of Cycas is similar to :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Stamen | b) Carpel | c) Sepal | d) Petal |

1. What is the similarity between gymnosperms and angiosperms?

|  |  |
| --- | --- |
| a) Phloem of both have companion cells | b) Endosperm is formed before fertilization in both |
| c) Origin of ovule and seed is similar in both | d) Both have leaves , stem and roots. |

1. A typical gymnosperms plant has 8 chromosomes in leaf cells. What will be number of chromosomes in the cells of its gametophyte?

|  |  |  |  |
| --- | --- | --- | --- |
| a) 16 | b) 8 | c) 4 | d) 24 |

1. Deep in the tropical rain forest, a botanist discovered an unusual plant with vascular tissues, stomata , cuticle, flagellated sperm , cone like reproductive structure bearing seeds and an alternation of generation. He was very excited about this discovery because it would be rather unusual for a plant to have both.

|  |  |
| --- | --- |
| a) A cuticle and flagellated sperm | b) Vascular tissues and alternation of generations |
| c) Seeds and flagellated sperm | d) Alternation of generations |

1. Canada balsam is obtained from :

|  |  |
| --- | --- |
| a) *Pinus wallichiana* | b) *Abies balsamea* |
| c) *Gnetum gnemon* | d) *Ephedra vulgaris* |

1. How many generations are replaced in a pine seed?
2. One : The new sporophyte generation.
3. Two : Seed coat and food supply from female gametophyte and sporophyte embryo
4. Two : seed coat from integuments of parent sporophyte and a new sporophyte embryo
5. Three : seed coat from parent sporophyte, food supply from gametophyte and sporophyte embryo.
6. Presence of winged seeds and winged pollen grains is the character of :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Cycas | b) Pinus | c) Selaginella | d) Ephedra |

1. The embryo sac in an angiosperms is a :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Megasporangium | b) Megaspore mother cell | c) Megagametophyte | d) Megaspore |

1. In angiosperms, a mature male gametophyte is derived form a pollen mother cell by :

|  |  |
| --- | --- |
| a) Three mitotic divisions | b) One meiotic and two mitotic divisions |
| c) Two meiotic divisions | d) A single meiotic division |

1. Perisperm is remaining part of :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Endosperm | b) Ovule | c) Nucellus | d) Integument |

1. The role of double fertilization in angiosperms is to produce :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Endosperm | b) Integument | c) Cotyledons | d) endocarp |

1. Vessels and companion cells are characteristics of :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Angiosperms | b) Gymnosperms | c) Pteridophytes | d) Bryophytes |

1. Angiosperms and gymnosperms resemble in having :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Vessels in wood | b) Mode of fertilization | c) Siphnogamy | d) nature of endosperm |

1. Seeds are found in :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Angiosperm | b) Bryophyte | c) Pteridophytes | d) Algae |

1. Which of the following contain xylem vessel?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Bryophyte | b) Pteridophyte | c) Both (a) and (b) | d) angiosperm |

1. Which of the following is/are grouped under phanerogamous?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Angiosperm | b) Gymnosperm | c) Pteridophytes | d) Both (a) and (b) |

1. Which of the following is considered as more evolved?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Dicot plant | b) Monocot plant | c) Data are incomplete | d) Both (a) and (b) |

1. Haplontic life cycle is exhibited by :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Volvax | b) Spirogyra | c) Fucus | d) both (a) and (b) |

1. A dominant, independent , photosynthetic , thalloid or erect, haploid gametophytic phase alternates with the short-lived multicellular sporophyte totally or partially dependent on the gametophyte for its anchorage and nutrition. Such pattern of life cycle is represented by :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Algae | b) Gymnosperms | c) Pteridophytes | d) Bryophytes |

1. Select the correct match :

|  |  |
| --- | --- |
| a) Fucus – Diplontic life cycle | b) Kelps – haplodiplontic life cycle |
| c) Gymnosperms – Haplontic life cycle | d) Both (a) and (b) |

1. Bryophytes includes :

|  |  |
| --- | --- |
| a) | b) |
| c) | d) |

1. Which plant group is known as ‘Amphibians of plant kingdom’?

|  |  |  |  |
| --- | --- | --- | --- |
| a) | b) | c) | d) |