An example of colonial alga is

(A) Volvox
(B) Ulothrix
(C) Spirogyra
(D) Chlorella

Volvox is a colonial alga. Forms coenobium colony.

answer

Ans [A]

Volvox

quiz

Zygotic meiosis is characteristic of

(A) Fucus (B) Funaria

(C) Chlamydomonas (D) Marchantia

answer

Ans [C]

In Chlamydomonas, zygote divides by meiosis. It exhibits haplontic type of life cycle.

Zygotic meiosis is a characteristic of green algae

quiz

Life cycles of Ectocarpus and Fucus respectively are

(A) Diplontic, haplodiplontic

(B) Haplodiplontic, diplontic

(C) Haplodiplontic, haplontic

(D) Haplontic, diplontic

both haploid & diploid phases

Fucus is diploid (2n)

answer

Ans [B]

Ectocarpus possesses haplodiplontic whereas Fucus possesses diplontic life cycle.

quiz

Conifers are adapted to tolerate extreme environmental conditions because of

(A) Broad hardy leaves

(B) Superficial stomata

(C) Thick cuticle

(D) Presence of vessels

↳ xerophytic adaptation

answer

Ans [C]

Needle like leaves with thick cuticle and sunken stomata are xerophytic adaptations of conifers for tolerating extreme environmental conditions.

quiz

Which one of the following statements is wrong?

(A) Algae increase the level of dissolved oxygen in the immediate environment

(B) Algin is obtained from red algae, and carrageenan from brown algae

(C) Agar-agar is obtained from Gelidium and Gracilaria

(D) Laminaria and Sargassum are used as food

answer

Ans [B]

Alginic acid is obtained from brown algae whereas carrageenan is obtained from red algae.

quiz

Select the correct statement.

(A) Sequoia is one of the tallest trees → tallest gymnosperm

(B) The leaves of gymnosperms are not well adapted to extremes of climate

(C) Gymnosperms are both homosporous and heterosporous — they are heterosporous

(D) Salvinia, Ginkgo and Finns all are gymnosperms

Ferns → pteridophyte

answer

Ans [A]

Sequoia sempervirens is the tallest gymnosperm, The leaves of gymnosperms are well adapted to extremes of climate. This is the reason for gymnosperm to flourish in cold areas where instead of rain, snow is the source of water. Gymnosperms are heterosporous i.e., produce two different kinds of spores-microspores and megaspores. Salvinia is an aquatic pteridophyte.

quiz

In bryophytes and pteridophytes, transport of male gametes requires

(A) Birds

(B) Water

(C) Wind

(D) Insects

motile ♂ gametes are swim in water

answer

Ans [B]

The sperms of bryophytes and pteridophytes are flagellated and hence require an external supply of water to reach archegonia.

quiz

Which one of the following statements is wrong?

(A) Chlorella and Spirulina are used as space food

(B) Mannitol is stored food in Rhodophyceae (Floridean starch)

(C) Algin and carrageenan are products of algae

(D) Agar-agar is obtained from Gelidium and Gracilaria

Brown algae → Reserve food is Laminarin & mannitol

answer

Ans [B]

Laminarin and mannitol are food reserves of brown algae or Phaeophycea.

Rhodophyceaen algae store food in the form of floridean starch.

quiz

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

(A) Pteris → Pteridophyte

(B) Pinus → Gymnosperm

(C) Funaria → Moss

(D) Marchantia → independent gametophyte

Sporophyte →

answer

Ans [B]

In gymnosperms (like Pinus), the male and female gametophyte do not have an independent free living existence. They remain within the sporangia retained on the sporophytes female gametophyte (within mega sporangium) and male gametophyte (within microsporangium)

quiz

Male gametes are flagellated in

(A) Ectocarpus (B) Spirogyra

(C) Polysiphonia (D) Anabaena

answer

Ans [A]

Ectocarpus produces biflagellatc gametes. Anabaena is a cyanobacteria and does not reproduce sexually. Spirogyra produces non-flagellated male gamete during conjugation, where entire cell content functions as gamete. Polysiphonia also produces nonflagellated spermatia.

quiz

Which of the following is responsible for peat formation?

(A) Marchantia

(B) Riccia

(C) Funaria

(D) Sphagnum

↳ Peat moss

Sphagnum form bogs in water bodies

Bogs $\xrightarrow[\text{sheets}]{\text{dry}}$ Peat $\xrightarrow{\text{dried}}$ used as fuel

answer

Ans [D]

Among the bryophytes Sphagnum accounts by far the most important place economically. It is popularly called bog moss or peat moss. It is perennial and its growth continues year after year. Older portions undergo death but do not decompose due to secretion of acid that accounts for the antibacterial and antifungal actions. The increasing mass of dead remains accumulate year after year and form a compact dark coloured mass rich in carbon which is called peat. Peat is used as fuels. Paraffin, acetic acid, peat tar and ammonia are formed as by-products of peat obtained for industrial uses.

quiz

Male gametophyte with least number of cells is present in

(A) Pteris

(B) Funaria

(C) Lilium

(D) Pinus

2 celled male gametophyte

answer

Ans [C]

Pteris has a multicellular gametophytic prothallus which has both antheridia and archegonia. Funaria has a bisexual leafy gametophyte which is the dominant phase of life. In both Lilium (an angiosperm) and Finns (a gymnosperm) male gametophyte is highly reduced and is 2 celled and 3 celled respectively. Thus male gametophyte with least number or cells is present in Lilium.

quiz

Isogamous condition with non-flagellated gametes is found in

(A) Volvox

(B) Fucus

(C) Chlamydomonas

(D) Spirogyra

→ Isogamy & non flagellated gametes

answer

Ans [D]

Chlamydomonas has flagellated gametes which are similar or dissimilar in size. In Volvox and Fucus, noil-motile female gametes and motile male gametes are produced (oogamy). Spirogyra has gametes that are similar in size (isogamous) and are non-flagellated.

quiz

Monoecious plant of Chara shows occurrence of

(A) Upper antheridium and lower oogonium on the same plant

(B) Upper oogonium and lower antheridium on the same plant

(C) Anthcridiophore and archegoniophore on the same plant

(D) Stamen and carpel on the same plant

Male - globule
female - nucule
↓
on same plant

answer

Ans [B]

All species of Chara reproduce sexually and show highly advanced oogamy. The sex organs are the most distinctive features of the Order Charales and arc the most complicated among the thallophytes. Male and female gametangia are called antheridia and oogonia respectively. Male fructification (cluster of antheridia) is called globule and the female is nucule. They are borne at the nodes of short branches, globule towards lower side and nucule (female structure) towards upper side.

quiz

Read the following statements (A - E) and answer the question which follows them.

(A) In liverworts, mosses and ferns gametophytes are free-living

(B) Gymnosperms and some ferns are heterosporous correct

(C) Sexual reproduction in Fucus, Volvox and Albugo is oogamous correct

(D) The sporophyte in liverworts is more elaborate than that in mosses.

(E) Both, Pinus and Marchantia are dioecious. correct

How many of the above statements are correct?

(A) Three

(B) Four

(C) One

(D) Two

answer

Ans [A]

Three

quiz

Syngamy → Fusion of gametes can occur outside the body of the organism in

(A) Mosses

(B) Algae ✓

(C) Ferns

(D) Fungi

answer

Ans [B]

Syngamy is the complete and permanent fusion of male and female gametes to form the zygote. When fertilization occurs outside the body of the organism, this type of gametic fusion is called external fertilization or external syngamy. In majority of algae, external fertilization occurs.

quiz

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

(A) Presence of archegonia → female sex organ

(B) Well developed vascular tissues Funaria lacks vascular tissues

(C) Independent gametophyte Gymnosperm (Ginkgo) do not) have independent gametophyte

(D) Independent sporophyte → Funaria - Sporophyte is dependent on gametophyte

answer

Ans [A]

In Funaria (Bryophyta), Dryopteris (Pteridophyta) and Ginkgo (Gymnosperm) female sex organ archaegonium is formed. Funaria lacks independent sporophyte and vascular tissues while independent gametophyte Is absent in Ginkgo.

quiz

Which one of the following is wrongly matched?

(A) Spirogyra - Motile gametes

(B) Sargassum - Chlorophyll

(C) Basidiomycetes - Puffballs

(D) Nostoc - Water blooms

answer

Ans [A]

In Spirogyra, gametes are non-motile and sexual reproduction takes place by conjugation. Sargassum belongs to Phaeophyceae group of algae. They are commonly called as ‘brown algae’ and contain photosynthetic pigments chlorophyll a and c. Puffballs are Basidomycetes with a stalked rounded structure that sends out puffs of spores, e.g., Lycoperdon oblongisporum. Nos toe is a colonial cyanobacterium. It enriches its habitat with nitrogen by fixing atmospheric nitrogen and also causes water bloom.

quiz

The plant body is thalloid in

(A) Sphagnum

(B) Salvinid

(C) Marchantia

(D) Funaria

→ is a liverwort having thalloid body

answer

Ans [C]

Sphagnum and Funaria belong to Class Bryopsida of Division Bryophyta, They are typically mosses. The plant body has radial symmetry and is essentially leafy Salvinia belongs to division Pteridophyta. It has a sporophyte plant body with true leaves, stem and roots. Marchantia belongs to Class Hepaticopsida of Division Bryophyta, They are also culled liverworts. The plant body is a dorsoventrally flattened thallus.

quiz

Which one of the following is common to multicellular fungi, filamentous algae and protonema of mosses?

(A) Diplontic life cycle

(B) Members of Kingdom Plantae

(C) Mode of nutrition

(D) Multiplication by fragmentation

→ All fungi, mosses are not diplontic

Fungi is a separate Kingdom

saprophytic + photos, nutrition

answer

Ans [D]

Algae and moss are included in plant kingdom while fungi constitute a separate kingdom. Among them, mosses invariably show diplontic life cycle while others may or may not. Algae and moss are autotrophic while fungi are heterotrophs, But they all show multiplication by fragmentation.

quiz

Cycas and Adiantum resemble each other in having

(A) Seeds

(B) Motile sperms

(C) Cambium

(D) Vessels

answer

Ans [B]

Cycas is a gymnosperm and Adiantum is a pteridophyte, Cambium and seeds are absent in pteridophytes, while vessels arc absent in both of these two groups. Both Cycas and Adiantum resemble each other in having multi-ciliated sperms.

quiz

How many organisms in the list given below are autotrophs?

Lactobacillus, Nostoc, Chara, Nitrosomonas, Nitrobacter, Streptomyces, Saccharomyces, Trypanosoma, Porphyra, Wolffia

(A) Four

(B) Five

(C) Six

(D) Three

answer

Ans [C]

Autotrophic nutrition involves manufacture of organic materials from inorganic raw materials with the help of energy obtained from outside sources. It is of two types - chemosynthesis and photosynthesis. The organisms which are able to manufacture their organic food from inorganic raw materials with the help of energy derived from exergonic chemical reactions are called chemoautotrophs. Nitrosomonas and Nitrobacter are chemoautotrophic nitrifying bacteria.

Those organisms who can manufacture organic compounds from inorganic raw materials with the help of solar energy in the presence of photosynthetic pigments are called photoautotrophs. E.g., Nostoc, Chara, Porphyra and Wolffia.

quiz

The gametophyte is living ~~generation~~ in

(A) Polytrichum

(B) Adiantum

(C) Marchantia

(D) Pinus

answer

Ans [D]

In gymnosperms (like Pinus), the male and female gametophyte do not have an independent free living existence. They remain within the sporangia retained on the sporophytes i.e., female gametophyte (within megasporangium) and male gametophyte (within microsporangium).

quiz

Compared with the gametophytes of the bryophytes, the gametophytes of vascular plants tend to be

(A) smaller but to have larger sex organs

(B) Larger but to have smaller sex organs

(C) Larger and to have larger sex organs

(D) Smaller and to have smaller sex organs

answer

Ans [D]

In bryophytes, the dominant phase of life cycle is gametophytic plant body. In contrast, vascular plants have sporophytic plant body in most of their life cycle and reduced, smaller gametophyte which have smaller sex organs.

quiz

Archegoniophore is present in

(A) Marchantia Dioecious

(B) Chara

(C) Adiantum

(D) Funaria

answer

Ans [A]

Marchantia is a dioecious plant, Male plants bear antheridiophores and female plants bear archegoniophores. Antheridiophores consists of a stalk and a disc like portion called receptacle, Archegoniophore is composed of a stalk and disc like receptacle at its distal end.

quiz

A prokaryotic autotrophic nitrogen fixing symbiont is found in

(A) Alnus

(B) Cycas

(C) Cicer

(D) Pisum

– BGA found in coralloid roots of cycas

answer

Ans [B]

Cycas forms facultative symbiotic association with autotrophic nitrogen fixing cyanobacteria. Cycas provides fix carbon and a stable environment to the cyanobacteria in exchange for fixed nitrogen. These cyanobacteria are endosymbionts and live within the roots of Cycas. In addition to normal roots, Cycas develops specialised symbiotic organs at a young age called pre-coralloid roots which transform into coralloid roots upon successful colonisation by cyanobacteria.

quiz

Algae have cells made up of

(A) Cellulose, galactans and mannans

(B) Hemicellulosc, pectins and proteins

(C) Pectins, cellulose and proteins

(D) Cellulose, hemicellulose and pectins

answer

Ans [A]

Majority of algae (eukaryotes) possess a definite cell wall containing cellulose and other carbohydrates. In algal cell wall, different chemical components are present which vary widely among different groups (e.g., xylan, mannan, galactan, alginic acid, silica, agar, pectin, carrageen in, etc.). Cell wall of blue-green algae is made up of micro-peptides (proteins). This micro-peptide is not found in eukaryotic algae,

quiz

Male and female gametophytes are independent and free-living in

(A) Mustard

(B) Castor

(C) Finns

(D) Sphagnum – Moss, Bryophyte

answer

Ans [D]

Sphagnum is a bryophyte in which dominant phase or plant body is independent and free living gametophyte. The sporophyte is parasitic over gametophyte. In Pinus (a gymnosperm), mustard and castor (angiosperm s), the main plant body is sporophytic, Gametophyte is highly reduced and is completely dependent on sporophyte.

quiz

Which one of the following is monoecious?

(A) Marchantia

(B) Cycas

(C) Pinus

(D) Date palm

answer

Ans [C]

Monoecious plants have separate male and female flowers on the same plant, Pinus have both the male and female cones or strobili on the same tree.

quiz

Which one of the following is a vascular cryptogam?

(A) Ginkgo

(B) Marchantia

(C) Cedrus

(D) Equisetum – pteriophyte

answer

Ans [D]

Pteridophytes are known as vascular cryptogams (Gk kryptos = hidden + gamos = wedded). They reproduce by spores rather than seeds. They are the first vascular land plant. The pterldophyte Equisetunt belongs to the Class Sphenophtya. All vegetative parts of it possess vascular tissues (i.e. hadrome equivalent toxylem and leptome equivalent to phloem) organised in definite groups of steles.

quiz

Mannitol is the stored food in

(A) Porphyra

(B) Fucus – Brown Algae

(C) Gracillaria

(D) Chara

answer

Ans [B]

Fucus is a brown algae i.e. belongs to Class Phaeophyta. In this alga the accumulation product of photosynthesis is D-mannitol (a sugar alcohol) and the reserve food material is laminarin.