Plant Kingdom

Question1

Which one of the following is not found in Gymnosperms?

[NEET 2024 Re]

Options:

A.

Sieve cells

B.

Albuminous cells

C.

Tracheids

D.

Vessels

Answer: D

Solution:

Gymnosperm lack vessels in their xylem. In place of companion cells they have albuminous cells. They lack sieve tube but have sieve cells.

Question2

Which of the following is the correct match?

[NEET 2024 Re]

Options:

A.

Gymnosperms
Cedrus, Pinus, Sequoia

B.

Angiosperms
Wolffia, Eucalyptus, Sequoia

C.

Bryophytes
Polytrichum, Polysiphonia, Sphagnum

D.

Pteridophytes
Equisetum, Ginkgo, Adiantum

Answer: A

Solution:

Option (1) is correct as Cedrus, Pinus and Sequoia belongs to gymnosperms.

Option (2) is incorrect as Sequoia belongs to gymnosperms, not angiosperms.

Option (3) is incorrect as Polysiphonia belongs to rhodophyceae (algae) not bryophytes.

Option (4) is incorrect as Ginkgo belongs to gymnosperms, not pteridophytes.

Question3

Read the following statements and choose the set of correct statements:
In the members of Phaeophyceae,
A. Asexual reproduction occurs usually by biflagellate zoospores.
B. Sexual reproduction is by oogamous method only.
C. Stored food is in the form of carbohydrates which is either mannitol or laminarin.
D. The major pigments found are chlorophyll a, c and carotenoids and xanthophyll.
E. Vegetative cells have a cellulosic wall, usually covered on the outside by gelatinous coating of algin.

Choose the correct answer from the options given below:

[NEET 2024]

Options:

A.

A, B, C and D only

B.

B, C, D and E only

C.

A, C, D and E only

D.

A, B, C and E only

Answer: C

Solution:

In members of Phaeophyceae sexual reproduction is by oogamous, isogamous or anisogamous methods.

Therefore correct set of statements are A, C, D and E.

Question4

Identify the pair of heterosporous pteridophytes among the following:

[NEET 2023]

Options:

A.

Selaginella and Salvinia

B.

Psilotum and Salvinia

C.

Equisetum and Salvinia

D.

Lycopodium and Selaginella

Answer: A

Solution:

Selaginella and Salvinia are heterosporous pteridophytes. They produces two different kind of spores. Psilotum, Lycopodium and Equisetum are homosporous pteridophytes.

Question5

Given below are two statements : One labelled as Assertion A and the other labelled as Reason R:

Assertion A : The first stage of gametophyte in the life cycle of moss is protonema stage.
Reason R : Protonema develops directly from spores produced in capsule.

In the light of the above statements, choose the most appropriate answer from options given below:

[NEET 2023]

Options:

A.

Both A and R are correct but R is not the correct explanation of A

B.

A is correct but R is not correct

C.

A is not correct but R is correct

D.

Both A and R are correct and R is correct explanation of A

Answer: D

Solution:

Solution:

The predominant stage of the life cycle of a moss is the gametophyte which consists of two stages.

The first stage is the protonema stage, which develops directly from a spore. Capsule of the sporophyte contains spore which gives rise to protonema. Thus, reason correctly explains the assertion.

Question6

List-I	List-II
(A) Pteropsida	(I) Psilotum
(B) Lycopsida	(II) Equisetum
(C) Psilopsida	(III) Adiantum
(D) Sphenopsida	(IV) Selaginella

Choose the correct answer from the options given below :

[NEET 2023 mpr]

Options:

A.

(A)-(II), (B)-(III), (C)-(I), (D)-(IV)

B.

(A)-(III), (B)-(I), (C)-(IV), (D)-(II)

C.

(A)-(II), (B)-(III), (C)-(IV), (D)-(I)

D.

(A)-(III), (B)-(IV), (C)-(I), (D)-(II)

Answer: D

Solution:

Pteridophytes are a group of plants that include ferns and their allies. These plants reproduce via spores rather than seeds. The Pteridophytes are divided into various classes including Pteropsida, Lycopsida, Psilopsida, and Sphenopsida.

Here's the correct match :
Pteropsida (A) - Adiantum (III). Adiantum (maidenhair fern) is an example of a fern, which falls under the class Pteropsida.
Lycopsida (B) - Selaginella (IV). Selaginella is an example of clubmoss, which falls under the class Lycopsida.
Psilopsida (C) - Psilotum (I). Psilotum is an example of whisk ferns, which falls under the class Psilopsida.
Sphenopsida (D) - Equisetum (II). Equisetum is an example of horsetail, which falls under the class Sphenopsida.

Question7

Which classes of algae possess pigment fucoxanthin and pigment phycoerythrin, respectively?

[NEET 2023 mpr]

Options:

A.

Phaeophyceae and Chlorophyceae

B.

Phaeophyceae and Rhodophyceae

C.

Chlorophyceae and Rhodophyceae

D.

Rhodophyceae and Phaeophyceae

Answer: B

Solution:

Solution:

Phaeophyceae, commonly known as brown algae, owe their characteristic brown or olive color to the pigment fucoxanthin. This is a type of xanthophyll, a class of oxygen-containing carotenoid pigments, that masks the green color of chlorophyll.

Rhodophyceae, commonly known as red algae, are predominantly colored by the pigment r-phycoerythrin. This pigment reflects red light and absorbs blue light, which allows red algae to live at greater depths than many other types of algae because blue light penetrates water deeper than light of longer wavelengths.

These pigments, along with chlorophylls, not only give these algae their distinctive colors but also allow them to perform photosynthesis by capturing light energy at specific wavelengths.

Question8

Which of the following statements is true?

[NEET 2023 mpr]

Options:

A.

All pteridophytes exhibit haplo-diplontic pattern.

B.

Seed bearing plants follow haplontic pattern

C.

Most algal genera are diplontic

D.

Most bryophytes do not have haplo-diplontic life cycle.

Answer: A

Solution:

Solution:

(A) Statement is absolutely correct that “all pteridophytes exhibit haplo-diplontic pattern” - Yes, that's correct. In pteridophytes, which includes ferns and their allies, the haplo-diplontic life cycle is observed. There is an alternation of generations between a haploid (n) gametophyte stage and a diploid (2n) sporophyte stage. Both stages are free-living and independent.

(B) Seed-bearing plants are gymnosperms and angiosperms and both of them follow diplontic life cycle pattern. In these groups, the sporophyte generation is dominant, and the gametophyte generation is reduced and dependent on the sporophyte. The life cycle is thus said to be diplontic.

(C) Most algal genera are haplontic - This is generally true. The majority of algae, especially the green algae (Chlorophyta) and red algae (Rhodophyta), exhibit a haplontic life cycle where the dominant, photosynthetic phase is the haploid gametophyte.

(D) Most bryophytes have haplo-diplontic life cycle pattern - Bryophytes, including mosses, liverworts, and hornworts, do have a haplo-diplontic life cycle. In this cycle, there is an alternation of generations between a haploid (n) gametophyte stage and a diploid (2n) sporophyte stage. However, in bryophytes, the gametophyte stage is dominant and long-lived while the sporophyte is dependent on the gametophyte and short-lived.

Question9

The phenomenon which is influenced by auxin and also played a major role in its discovery :

[NEET 2023 mpr]

Options:

A.

Phototropism

B.

Root initiation

C.

Gravitropism

D.

Apical Dominance

Answer: A

Solution:

Solution:

The phenomenon of phototropism is the growth of organisms in response to light. Charles Darwin and his son Francis Darwin were among the early scientists to study phototropism. They found that light is perceived by the tip of the plant shoot, and this perception leads to growth further down the shoot.

Later, it was discovered that a hormone, named auxin, is responsible for this effect. Auxin accumulates on the side of the plant facing away from the light source, and causes cells on that side to elongate, thus bending the plant towards the light. This played a major role in the discovery of auxin, which is one of the main plant hormones.

While auxins do also influence other processes like root initiation, gravitropism, and apical dominance, their role in phototropism was significant to their discovery.

Question10

	List - I		List - II
(A)	Auxin	(I)	Promotes female flower formation in cucumber
(B)	Gibberellin	(II)	Overcoming apical dominance
(C)	Cytokinin	(III)	Increase in the length of grape stalks
(D)	Ethylene	(IV)	Promotes flowering in pineapple

Choose the correct answer from the options given below:

[NEET 2023 mpr]

Options:

A.

(A)-(II), (B)-(I), (C)-(IV), (D)-(III)

B.

(A)-(IV), (B)-(III), (C)-(II), (D)-(I)

C.

(A)-(I), (B)-(III), (C)-(IV), (D)-(II)

D.

(A)-(III), (B)-(II), (C)-(I), (D)-(IV)

Answer: B

Solution:

(A) Auxin - (IV) Promotes flowering in pineapple: Auxins are a class of plant hormones that influence cell growth by altering cell elongation. However, the role of promoting flowering in pineapple is actually played by Ethylene. Therefore, there's an error in this match.

(B) Gibberellin - (III) Increase in the length of grape stalks: Gibberellins are plant hormones that stimulate stem elongation, seed germination, and flowering. They are known to increase the length of grape stalks.

(C) Cytokinin - (II) Overcoming apical dominance: Cytokinins are plant hormones that promote cell division and delay leaf senescence. They also play a role in overcoming apical dominance, encouraging the growth of lateral buds.

(D) Ethylene - (I) Promotes female flower formation in cucumber: Ethylene is a gaseous plant hormone which regulates a wide range of biological processes. It is known to influence sex determination in certain plants, promoting female flower formation in cucumber.

Question11

Which of the following statements is not correct?

[NEET 2023 mpr]

Options:

A.

Phase of cell elongation of plant cells is characterized by increased vacuolation.

B.

Cells in the meristematic phase of growth exhibit abundant plasmodesmatal connections.

C.

Plant growth is generally determinate.

D.

Plant growth is measurable.

Answer: C

Solution:

Solution:

Plant growth is generally indeterminate, not determinate. This means that plants typically continue to grow as long as they live, unlike animals which have a determinate growth and stop growing after reaching a certain age or size. The meristematic tissues in plants (such as the apical meristem, lateral meristem etc.) allow for continuous growth and production of new cells. This is a key characteristic of plants. So, the statement that plant growth is generally determinate is incorrect.

Question12

List-I	List-II
(A) Pteropsida	(I) Psilotum
(B) Lycopsida	(II) Equisetum
(C) Psilopsida	(III) Adiantum
(D) Sphenopsida	(IV) Selaginella

Choose the correct answer from the options given below :

[NEET 2023 mpr]

Options:

A.

(A)-(II), (B)-(III), (C)-(I), (D)-(IV)

B.

(A)-(III), (B)-(I), (C)-(IV), (D)-(II)

C.

(A)-(II), (B)-(III), (C)-(IV), (D)-(I)

D.

(A)-(III), (B)-(IV), (C)-(I), (D)-(II)

Answer: D

Solution:

Pteridophytes are a group of plants that include ferns and their allies. These plants reproduce via spores rather than seeds. The Pteridophytes are divided into various classes including Pteropsida, Lycopsida,

Psilopsida, and Sphenopsida.

Here's the correct match :

Pteropsida (A) - Adiantum (III). Adiantum (maidenhair fern) is an example of a fern, which falls under the class Pteropsida.

Lycopsida (B) - Selaginella (IV). Selaginella is an example of clubmoss, which falls under the class Lycopsida.

Psilopsida (C) - Psilotum (I). Psilotum is an example of whisk ferns, which falls under the class Psilopsida.

Sphenopsida (D) - Equisetum (II). Equisetum is an example of horsetail, which falls under the class Sphenopsida.

Question13

List-I	List-II
(a) Chlamydomonas	(i) Moss
(b) Cycas	(ii) Pteridophyte
(c) Selaginella	(iii) Alga
(d) Sphagnum	(iv) Gymnosperm

Choose the correct answer from the options given below .
[NEET Re-2022]

Options:

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

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

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

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

Answer: C

Solution:

Chlamydomonas is an unicellular alga.

Cycas belongs to gymnosperms.

Selaginella is a pteridophyte.

Sphagnum is a moss.

Question14

Read the following statements and identify the characters related to the alga shown in the diagram

(a) It is a member of Chlorophyceae
(b) Food is stored in the from of starch
(c) It is a monoecious plant showing oogonium and antheridium
(d) Food is stored in the form of laminarin or mannitol
(e) It shows dominance of pigments Chlorophyll a, c and Fucoxanthin
Choose the correct answer from the options given below :
[NEET Re-2022]

Options:

A. (c), (d) and (e) only

B. (a) and (b) only

C. (a), (b) and (c) only

D. (a), (c) and (d) only

Answer: C

Solution:

a. Chara - is a member of chlorophyceae (green algae)

b. Food is stored in Pyrenoid bodies. Pyrenoid body majorly contains starch around a protein axis.

c. Chara is a monoecious plant. Male and female sex organs are located on the same plant body.

d. Laminarin and mannitol are storage food of Brown algae.

e. Chlorophyll a,c and fucoxanthin are predominant pigments in brown algae.

Question15

Hydrocolloid carrageen is obtained from: [NEET-2022]

Options:

A. Chlorophyceae and Phaeophyceae

B. Phaeophyceae and Rhodophyceae

C. Rhodophyceae only

D. Phaeophyceae only

Answer: C

Solution:

Hydrocolloids are water holding substances for eg. carrageen obtained from red algae(Rhodophyceae).

Question16

Which of the following is incorrectly matched? [NEET-2022]

Options:

A. Ectocarpus – Fucoxanthin

B. Ulothrix – Mannitol

C. Porphyra – Floridian Starch

D. Volvox – Starch

Answer: B

Solution:

Ulothrix is a member of Chlorophyceae (green algae), with reserve food material, starch. Mannitol is stored food material of Phaeophyceae (brown algae).

Question17

Match the plant with the kind of life cycle it exhibits:

List-I	List-II
(a) Spirogyra	(i) Dominant diploid sporophyte vascular plant, with highly reduced male or female gametophyte
(b) Fern	(ii) Dominant haploid free-living gametophyte
(c)Funaria	(iii) Dominant diploid sporophyte alternating with reduced gametophyte called prothallus
(d) Cycas	(iv) Dominant haploid leafy gametophyte alternating with partially dependent multicellular sporophyte

Choose the correct answer from the options given below : [NEET-2022]

Options:

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

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

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

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

Answer: B

Solution:

Solution:

Spirogyra is an alga. It shows haplontic life-cycle.

Fern is pteridophyte. The dominant phase of life-cycle is diploid sporophyte. Its gametophyte is called prothallus.

Funaria is a bryophyte. Its gametophyte is a leafy stage.

Cycas is a gymnosperm. The main plant body in gymnosperm is sporophyte. They have highly reduced gametophyte stage.

Question18

Gemmae are present in

[NEET 2021]

Options:

A. Mosses

B. Pteridophytes

C. Some Gymnosperms

D. Some Liverworts

Answer: D

Solution:

Solution:
• Gemmae are green, multicellular asexual buds that are produced by some liverworts like Marchantia.
• Mosses reproduce vegetatively by fragmentation and budding of protonema. • Pteridophytes and Gymnosperms normally do not reproduce asexually

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Question19

Which of the following algae contains mannitol as reserve food material?
[NEET 2021]

Options:

A. Ectocarpus

B. Gracilaria

C. Volvox

D. Ulothrix

Answer: A

Solution:

Solution:
Ectocarpus is a brown alga belongs to the class Phaeophyceae. Members of this class have mannitol and laminarin as stored food material.
Ulothrix and Volvox belong to Chlorophyceae (green algae). Members of this class have starch as reserve food material.
Gracilaria is a member of red algae (Rhodophyceae). This class is characterised by having floridean starch as stored food material.

Question20

Which of the following algae produce Carrageen? [NEET 2021]

Options:

A. Green algae

B. Brown algae

C. Red algae

D. Blue-green algae

Answer: C

Solution:

Solution:
• The cell wall of red algae is composed of agar, carrageen and funori along with cellulose.
• In brown algae cell wall contains algin while in green algae it is composed of cellulose and pectin.
• In blue green algae cell wall is composed of mucopeptides.

Question21

Which of the following pairs is of unicellular algae? (NEET 2020)

Options:

A. Gelidium and Gracilaria

B. Anabaena and Volvox

C. Chlorella and Spirulina

D. Laminaria and Sargassum

Answer: C

Solution:

Solution:
(c) Chlorella and Spirulina are unicellular algae. Gelidium, Gracilaria, Laminaria and Sargassum are multicellular. Volvox is colonial.
Chlorella is the most cultivated eukaryotic alga since it is widely used as a health food and feed supplement, as well as in the pharmaceutical and cosmetics industry. It contains proteins, carotenoids, some immuno-stimulators, polysaccharides, vitamins, and minerals.

Question22

Floridean starch has structure similar to (NEET 2020)

Options:

A. Amylopectin and glycogen

B. Mannitol and algin

C. Laminarin and cellulose

D. Starch and cellulose

Answer: A

Solution:

Floridean starch is a storage glucan found in red algae or rhodophyceae and is similar to amylopectin and glycogen.

Question23

Strobili or cones are found in (NEET 2020)

Options:

A. Pteris

B. Marchantia

C. Equisetum

D. Salvinia

Answer: C

Solution:

Solution:
(c) Strobili or cones are found in Equisetum. Strobili or cones are the dense and compact structure present on non flowering plants. They contain sporangia and perform function of protecting spores from wild animals and harsh conditions of environment.
Equisetum is the only living genus in Equisetaceae, a family of vascular plants that reproduce by spores rather than seeds.

Question24

Pinus seed cannot germinate and establish without fungal association. This is because:

(NEET 2019)

Options:

A. its embryo is immature.

B. it has obligate association with mycorrhizae.

C. it has very hard seed coat.

D. its seeds contain inhibitors that prevent germination.

Answer: B

Solution:

Solution:
(b) Fungus associated with roots of Pinus increases minerals and water absorption for the plant by increasing surface area and in turn fungus gets food from plant. Therefore, mycorrhizal association is obligatory for Pinus seed germination.

Question25

Phloem in gymnosperms lacks:
(NEET 2019)

Options:

A. Albuminous cells and sieve cells

B. Sieve tubes only

C. Companion cells only

D. Both sieve tubes and companion cells

Answer: D

Solution:

Solution:
(d) Phloem, a complex tissue, is found in highly organised plants (“higher plants”) and characterised by the possession of certain specialised cells, the sieve elements, and which functions as the major channel of rapid conduction of sugars over fairly long distances in the plant body. In addition to sieve elements, it always contains parenchyma cells, usually of more than one type, and frequently includes sclerenchyma cells.
Phloem in gymnosperms lacks both sieve tube and companion cells.

Question26

Which one is wrongly matched?
(NEET 2018)

Options:

A. Uniflagellate gametes – Polysiphonia

B. Biflagellate zoospores – Brown algae

C. Unicellular organism – Chlorella

D. Gemma cups – Marchantia

Answer: A

Solution:

Solution:
(a) Polysiphonia is a genus of red algae, where asexual spores and gametes are non-motile or non-flagellated.

Question27

After karyogamy followed by meiosis, spores are produced exogenously in
(NEET 2018)

Options:

A. Neurospora

B. Alternaria

C. Saccharomyces

D. Agaricus

Answer: D

Solution:

Solution:
(d) In Agaricus (a genus of basidiomycetes), basidiospores or meiospores are produced exogenously. Neurospora (a genus of ascomycetes) produces ascospores as meiospores but endogenously inside the ascus). Alternaria (a genus of deuteromycetes) does not produce sexual spores. Saccharomyces (Unicellular ascomycetes) produces ascospores, endogenously

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Question28

Select the wrong statement :
(NEET 2018)

Options:

A. Cell wall is present in members of Fungi and Plantae

B. Mushrooms belong to Basidiomycetes

C. Mitochondria are the powerhouse of the cell in all kingdoms except Monera

D. Pseudopodia are locomotory and feeding structures in Sporozoans

Answer: D

Solution:

(d) Pseudopodia are locomotory structures in sarcodines (amoeboid).

Question29

An example of colonial alga is
(NEET 2017)

Options:

A. Volvox

B. Ulothrix

C. Spirogyra

D. Chlorella

Answer: A

Question30

Select the mismatch
a) Cycas - Dioecious
b) Salvinia - Heterosporous
c) Equisetum - Homosporous
d) Pinus - Dioecious
(NEET 2017)

Options:

A. (a)

B. (b)

C. (c)

D. (d)

Answer: D

Solution:

(d) : Pinus is a monoecious plant, i.e., in Pinus the male and female cones or strobili are borne on the same plant.

Question31

Zygotic meiosis is characteristic of (NEET 2017)

Options:

A. Fucus

B. Funaria

C. Chlamydomonas

D. Marchantia

Answer: C

Solution:

Solution:
(c): In Chlamydomonas, zygote divides by meiosis. It exhibits haplontic type of life cycle.

Question32

Life cycles of Ectocarpus and Fucus respectively are (NEET 2017)

Options:

A. diplontic, haplodiplontic

B. haplodiplontic, diplontic

C. haplodiplontic, haplontic

D. haplontic, diplontic

Answer: B

Solution:

Solution:
(b): Ectocarpus possesses haplodiplontic whereas Fucus possesses diplontic life cycle.

Question33

Conifers are adapted to tolerate extreme environmental conditions because of
(NEET-II 2016)

Options:

A. broad hardy leaves

B. superficial stomata

C. thick cuticle

D. presence of vessels

Answer: C

Solution:

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

Question34

Which one of the following statements is wrong?
(NEET-II 2016)

Options:

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: B

Solution:

(b) : Alginic acid is obtained from brown algae whereas carrageenan is obtained from red algae.

Question35

Select the correct statement.
(NEET-I 2016)

Options:

A. Sequoia is one of the tallest trees.

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

C. Gymnosperms are both homosporous and heterosporous.

D. Salvinia, Ginkgo and Pinus all are gymnosperms.

Answer: A

Solution:

Solution:
(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.

Question36

In bryophytes and pteridophytes, transport of male gametes requires
(NEET-I 2016)

Options:

A. birds

B. water

C. wind

D. insects

Answer: B

Solution:

(b) : The sperms of bryophytes and pteridophytes are flagellated and hence require an external supply of water to reach archaegonia.

Question37

Which one of the following statements is wrong? (NEET 2016 Cancelled)

Options:

A. Chlorella and Spirulina are used as space food.

B. Mannitol is stored food in Rhodophyceae.

C. Algin and carrageenan are products of algae.

D. Agar-agar is obtained from Gelidium and Gracilaria

Answer: B

Solution:

Solution:
(b) : Laminarin and mannitol are food reserves of brown algae or Phaeophyceae. Rhodophycean algae store food in the form of floridean starch.

Question38

In which of the following, gametophyte is not independent free living? (2015 Cancelled)

Options:

A. Pteris

B. Pinus

C. Funaria

D. Marchantia

Answer: B

Solution:

(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 i.e., female gametophyte (within megasporangium) and male gametophyte (within microsporangium)

Question39

Read the following five statements (A to E) and select the option with all correct statements.
A. Mosses and lichens are the first organisms to colonise a bare rock.
B. Selaginella is a homosporous pteridophyte.
C. Coralloid roots in Cycas have VAM.
D. Main plant body in bryophytes is gametophytic, whereas in pteridophytes it is sporophytic.
E. In gymnosperms, male and female gametophytes are present within sporangia located on sporophyte.
(2015 Cancelled)

Options:

A. A, D and E

B. B, C and E

C. A, C and D

D. B, C and D

Answer: A

Solution:

Solution:
(a) : Selaginella is a heterosporous pteridophyte. Corralloid roots of Cycas harbour blue green algae like Nostoc, Anabaena and are not a type of VAM (vesicular arbuscular mycorrhiza) which is a symbiotic association with fungus.

Question40

Male gametes are flagellated in
(2015 Cancelled)

Options:

A. Ectocarpus

B. Spirogyra

C. Polysiphonia

D. Anabaena

Answer: A

Solution:

(a) : Ectocarpus produces biflagellate 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.

Question41

Which one of the following is wrong about Chara? (2014)

Options:

A. Upper oogonium and lower round antheridium

B. Globule and nucule present on the same plant

C. Upper antheridium and lower oogonium

D. Globule is male reproductive structure

Answer: C

Solution:

Solution:
(c) : All species of Chara reproduce sexually and show highly advanced oogamy. The sex organs are the most distinctive features of the Order Charales and are 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.

Question42

Which of the following is responsible for peat formation? (2014)

Options:

A. Marchantia

B. Riccia

C. Funaria

D. Sphagnum

Answer: D

Solution:

(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 anti fungal 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.

Question43

Male gametophyte with least number of cells is present in (2014)

Options:

A. Pteris

B. Funaria

C. Lilium

D. Pinus

Answer: C

Solution:

Solution:
(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 Pinus (a gymnosperm) male gametophyte is highly reduced and is 2 celled and 3 celled respectively. Thus male gametophyte with least number of cells is present in Lilium.

Question44

Select the wrong statement. (2013)

Options:

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

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

Solution:

(a) : In oomycetes, like other oogamous organisms female gamete is large and non-motile, while male gamete is small and motile.

Question45

Isogamous condition with non-flagellated gametes is found in (2013)

Options:

A. Volvox

B. Fucus

C. Chlamydomonas

D. Spirogyra

Answer: D

Solution:

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

Question46

Monoecious plant of Chara shows occurrence of (2013)

Options:

A. upper antheridium and lower oogonium on the same plant

B. upper oogonium and lower antheridium on the same plant

C. antheridiophore and archegoniophore on the same plant

D. stamen and carpel on the same plant

Answer: B

Solution:

All species of Chara reproduce sexually and show highly advanced oogamy. The sex organs are the most distinctive features of the Order Charales and are 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.

Question47

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.
(C) Sexual reproduction in Fucus, Volvox and Albugo 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?
(2013)

Options:

A. Three

B. Four

C. One

D. Two

Answer: A

Solution:

Solution:
Gametophytes of liverworts, mosses, and ferns are independent and so are free-living.
Gymnosperms and some ferns are heterosporous, meaning that they have two different types of spores.
Sexual reproduction in Fucus, Volvox and Albugo is oogamous meaning they have small flagellated male gamete and large non-flagellated female gamete.
The sporophyte of moss is more elaborate than the liverworts.
Pinus is monoecious while Marchantia is dioecious.

Question48

Syngamy can occur outside the body of the organism in
(Karnataka NEET 2013)

Options:

A. mosses

B. algae

C. ferns

D. fungi

Answer: B

Solution:

(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.

Question49

What is common in all the three, Funaria, Dryopteris and Ginkgo? (Karnataka NEET 2013)

Options:

A. Presence of archegonia

B. Well developed vascular tissues

C. Independent gametophyte

D. Independent sporophyte

Answer: A

Solution:

Solution:
(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.

Question50

Which one of the following is wrongly matched? (Karnataka NEET 2013)

Options:

A. Spirogyra - Motile gametes

B. Sargassum - Chlorophyll

C. Basidiomycetes - Puffballs

D. Nostoc - Water blooms

Answer: A

Solution:

(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. Nostoc is a colonial cyanobacterium. It enriches its habitat with nitrogen by fixing atmospheric nitrogen and also causes water bloom.

Question51

The plant body is thalloid in (Karnataka NEET 2013)

Options:

A. Sphagnum

B. Salvinia

C. Marchantia

D. Funaria.

Answer: C

Solution:

Solution:
(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 called liverworts, The plant body is a dorsoventrally flattened thallus.

Question52

Which one of the following is common to multicellular fungi, filamentous algae and protonema of mosses? (2012)

Options:

A. Diplontic life cycle

B. Members of Kingdom Plantae

C. Mode of nutrition

D. Multiplication by fragmentation

Answer: D

Solution:

(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.

Question53

Which one of the following is a correct statement? (2012)

Options:

A. Pteridophyte gametophyte has a protonemal and leafy stage.

B. In gymnosperms, female gametophyte is free-living.

C. Antheridiophores and archegoniophores are present in pteridophytes.

D. Origin of seed habit can be traced in pteridophytes.

Answer: D

Solution:

Solution:
(d) : In majority of the pteridophytes all the spores are of similar kinds; such plants are called homosporous. Genera like Selaginella and Salvinia which produce two kinds of spores, macro (large) and micro (small) spores, are known as heterosporous. The megaspores and microspores germinate and give rise to female and male gametophytes, respectively. The female gametophytes in these plants are retained on the parent sporophytes for variable periods. The development of the zygotes into young embryos take place within the female gametophytes. This event is a precursor to the seed habit considered an important step in evolution.

Question54

Cycas and Adiantum resemble each other in having (2012)

Options:

A. seeds

B. motile sperms

C. cambium

D. vessels.

Answer: B

Solution:

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

Question55

Which one of the following pairs is wrongly matched? (Mains 2012)

Options:

A. Ginkgo - Archegonia

B. Salvinia - Prothallus

C. Viroids - RNA

D. Mustard - Synergids

Answer: B

Question56

Read the following five statements A-E and answer as asked next to them.
(A) In Equisetum, the female gametophyte is retained on the parent sporophyte.
(B) In Ginkgo, male gametophyte is not independent.
(C) The sporophyte in Riccia is more developed than that in Polytrichum.
(D) Sexual reproduction in Volvox is isogamous.
(E) The spores of slime moulds lack cell walls.
How many of the above statements are correct? (Mains 2012)

Options:

A. Two

B. Three

C. Four

D. One Mains

Answer: D

Solution:

(d) : Equisetum is a pteridophyte and in pteridophytes, the main plant body is a sporophyte which is differentiated into true root, stem and leaves. Gametophytes are small or inconspicuous and free living, mostly photosynthetic thalloid called prothallus. Riccia is a liverwort and Polytrichum is a moss. The sporophyte in mosses is more elaborate than that in liverworts. Volvox shows oogamous type of sexual reproduction,i.e., fusion between one large, non motile (static) female gamete and a smaller, motile male gamete. During unfavourable conditions, the slime mould differentiates and forms fruiting bodies bearing spores at their tips. The spores possess true walls. They are extremely resistant and survive for many years, even under adverse conditions.

Question57

How many organisms in the list given below are autotrophs? Lactobacillus, Nostoc, Chara, Nitrosomonas,Nitrobacter, Streptomyces, Saccharomyces,Trypanosoma, Porphyra, Wolffia (Mains 2012)

Options:

A. Four

B. Five

C. six

D. Three

Answer: C

Solution:

Solution:
29. (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.

Question58

The gametophyte is not an independent, free living generation in (2011)

Options:

A. Polytrichum

B. Adiantum

C. Marchantia

D. Pinus

Answer: D

Solution:

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).

Question59

Compared with the gametophytes of the bryophytes, the gametophytes of vascular plants tend to be (2011)

Options:

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: D

Solution:

Solution:
(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.

Question60

Archegoniophore is present in (2011)

Options:

A. Marchantia

B. Chara

C. Adiantum

D. Funaria.

Answer: A

Solution:

Solution:
(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.

Question61

A prokaryotic autotrophic nitrogen fixing symbiont is found in (2011)

Options:

A. Alnus

B. Cycas

C. Cicer

D. Pisum

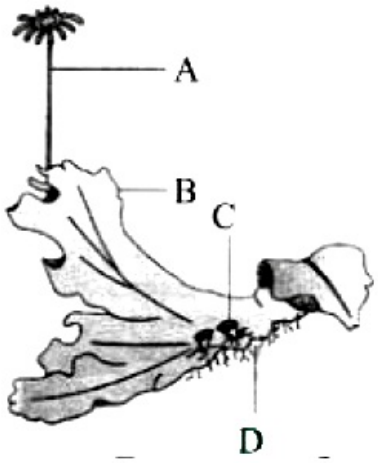
Answer: B

Solution:

Solution:
(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.

Question62

Examine the figure given below and select the correct option giving all the four parts A,b,C and D rightly identified.



	A	B	C	D
(a)	Archegoniophore	Female thallus	Gemma cup	Rhizoids
(b)	Archegoniophore	Female thallus	Bud	Foot
(c)	Seta	Sporophyte	Protonema	Rhizoids
(d)	Antheridiophore	Male thallus	Globule	Roots

(Mains 2011)

Options:

A. (a)

B. (b)

C. (c)

D. (d)

Answer: A

Solution:

Solution:
(a) : The given figure is of female thallus of Marchantia (bryophyte) in which A, B, C and D are archegoniophore, female thallus, gemma cup and rhizoids respectively.

Question63

Selaginella and Salvinia are considered to represent a significant step toward evolution of seed habit because
(Mains 2011)

Options:

A. female gametophyte is free and gets dispersed like seeds.

B. female gametophyte lacks archegonia.

C. megaspores possess endosperm and embryo surrounded by seed coat.

D. embryo develops in female gametophyte which is retained on parent sporophyte.

Answer: D

Solution:

(d) : In majority of the pteridophytes all the spores are of similar kinds; such plants are called homosporous. Genera like Selaginella and Salvinia which produce two kinds of spores, macro (large) and micro (small) spores, are known as heterosporous. The megaspores and microspores germinate and give rise to female and male gametophytes, respectively. The female gametophytes in these plants are retained on the parent sporophytes for variable periods. The development of the zygotes into young embryos take place within the female gametophytes. This event is a precursor to the seed habit considered an important step in evolution.

Question64

Consider the following four statements whether they are correct or wrong.
A. The sporophyte in liverworts is more elaborate than that in mosses.
B. Salvinia is heterosporous.
C. The life-cycle in all seed-bearing plants is diplontic.
D. In Pinus male and female cones are borne on different trees. The two wrong statements together are
(Mains 2011)

Options:

A. A and C

B. A and D

C. B and C

D. A and B

Answer: B

Solution:

Solution:
(b) : The sporophyte in mosses is more elaborate than that in liverworts. The male and female cones or strobili is borne on same tree in (Pinus). In Cycas male cones and megasporophylls are borne on different trees.

Question65

Algae have cells made up of
(2010)

Options:

A. cellulose, galactans and mannans

B. hemicellulose, pectins and proteins

C. pectins, cellulose and proteins

D. cellulose, hemicellulose and pectins.

Answer: A

Solution:

Solution:
(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, carrageenin, etc.). Cell wall of blue-green algae is made up of micro-peptides (proteins). This micro-peptide is not found in eukaryotic algae.

Question66

Male and female gametophytes are independent and free-living in (2010)

Options:

A. mustard

B. castor

C. Pinus

D. Sphagnum

Answer: D

Solution:

Solution:
(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 (angiosperms), the main plant body is sporophytic. Gametophyte is highly reduced and is completely dependent on sporophyte.

Question67

Which one of the following is monoecious? (Mains 2010)

Options:

A. Marchantia

B. Cycas

C. Pinus

D. Date palm

Answer: C

Solution:

(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.

Question68

Examine the figures A, B, C and D. In which one of the four options all the items A, B, C and D are correct?

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

(2009)

Options:

A. (a)

B. (b)

C. (c)

D. (d)

Answer: C

Solution:

A - Selaginella
B - Equisetum
C - Salvinia
D - Ginkgo

Question69

Which one of the following is a vascular cryptogam? (2009)

Options:

A. Ginkgo

B. Marchantia

C. Cedrus

D. Equisetum

Answer: D

Solution:

Solution:
(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 pteridophyte Equisetum belongs to the Class Sphenophtya. All vegetative parts of it possess vascular tissues (i.e. hadrome equivalent to xylem and leptome equivalent to phloem) organised in definite groups of steles.

Question70

Mannitol is the stored food in (2009)

Options:

A. Porphyra

B. Fucus

C. Gracillaria

D. Chara

Answer: B

Solution:

(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.

Question71

Which one of the following is considered important in the development of seed habit?
(2009)

Options:

A. Heterospory

B. Haplontic life cycle

C. Free-living gametophyte

D. Dependent sporophyte

Answer: A

Solution:

Solution:
(a) : The differentiation of spores into microspores and megaspores, and their dependence on the parent sporophyte for the nutrition, are certain features in the life cycle of Selaginella, which have been considered as the essential pre-requisties for the formation of seeds, characteristic of spermatophytes. It is generally agreed, that the seed plants arose from the heterosporous vascular plants that instead of discharging the megaspore acquired the habit of retaining it within the megasporangium.

Question72

Which one of the following has haplontic life cycle?
(2009)

Options:

A. Polytrichum

B. Ustilago

C. Wheat

D. Funaria

Answer: B

Solution:

Ustilago is a genus of approximately 200 smut fungi parasitic on grasses. In the haplontic life cycle, the haploid stage is multicellular and the diploid stage is a single cellular. The zygote undergoes meiosis to form haploid spores. Each spore germinates (divide mitotically) to form gametophyte.

Question73

Which one of the following plants is monoecious? (2009)

Options:

A. Pinus

B. Cycas

C. Papaya

D. Marchantia

Answer: A

Solution:

Solution:
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.

Question74

Select one of the following pairs of important features distinguishing Gnetum from Cycas and Pinus and showing affinities with angiosperms. (2008)

Options:

A. Perianth and two integuments

B. Embryo development and apical meristem

C. Absence of resin duct and leaf venation

D. Presence of vessel elements and absence of archegonia

Answer: D

Solution:

(d) : In gymnosperm except Order Gnetales (Gnetum) xylem consist of xylem parenchyma and tracheids with bordered pits but lacks vessels. So, Gnetales are the most advanced among gymnosperms. They lack archegonia in female gametophyte thus showing similarity with angiosperm and act as connecting link between the two.

Question75

In which one of the following male and female gametophytes do not have free living independent existence? (2008)

Options:

A. Polytrichum

B. Cedrus

C. Pieris

D. Funaria

Answer: B

Solution:

Solution:
(b) : In gymnosperm (like Cedrus) 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 with megasporangium and male gametophyte within microsporangium.

Question76

Which one of the following is heterosporous? (2008)

Options:

A. Adiantum

B. Equisetum

C. Dryopteris

D. Salvinia

Answer: D

Solution:

(d) : The sporophyte of pteridophyte produces meiospores inside sporangia, which may be homosporous (e.g., Equisetum, Adiantum, Dryopteris, etc.) or heterosporous (e.g., Salvinia, Selaginella etc.).

Question77

In gymnosperms, the pollen chamber represents (2007)

Options:

A. a cavity in the ovule in which pollen grains are stored after pollination

B. an opening in the megagametophyte through which the pollen tube approaches the egg

C. the microsporangium in which pollen grains develop

D. a cell in the pollen grain in which the sperms are formed.

Answer: A

Solution:

Solution:
In gymnosperms, the pollen chamber is cavity in the ovule in which pollen grains are stored after pollination. Within the pollen chamber, the generative cell nucleus divides to form two gametic nuclei and the tube cell elongates to form the pollen tube. The pollen tube penetrates the female gametophyte and the gametic nuclei (also known as sperm nuclei) pass through the tube. One of them unites with an oosphere (the female gamete) and forms the zygote (2n)

Question78

Spore dissemination in some liverworts is aided by (2007)

Options:

A. indusium

B. calyptra

C. peristome teeth

D. elaters.

Answer: D

Solution:

Solution:
(d) : An elater is a cell (or structure attached to a cell) that is hygroscopic, and therefore will change shape in response to changes in moisture in the environment. Elaters come in a variety of forms, but are always associated with plant spores. In plants that do not have seeds, they function in dispersing the spores to a new location. In the liverworts, elaters are cells that develop in the sporophyte alongside the spores. They are complete cells, usually with helcial thickenings at maturity that respond to moisture content. In most liverworts, the elaters are unattached, but in some leafy species (such as Frullania) a few elaters will remain attached to the inside of the sporangium (spore capsule). The elaters by hygroscopic movement help in spore dispersal.

Question79

Flagellated male gametes are present in all the three of which one of the following sets?
(2007)

Options:

A. Zygnema, Saprolegnia and Hydrilla

B. Fucus, Marsilea and Calotropis

C. Riccia, Dryopteris and Cycas

D. Anthoceros, Funaria and Spirogyra

Answer: C

Solution:

Solution:
(c) : Flagellated male gametes are mostly seen lower groups of plants like algae, bryophytes, pteridophytes. It is also seen in certain gymnosperms like Cycas. The bryophytes like Riccia have the male gametes which are biflagellate.

Question80

If you are asked to classify the various algae into distinct groups, which of the following characters you should choose?
(2007)

Options:

A. Nature of stored food materials in the cell

B. Structural organization of thallus

C. Chemical composition of the cell wall

D. Types of pigments present in the cell

Answer: D

Solution:

Solution:
(d): Algae are a group of chlorophyllous, nonvascular plants with thallose plant body. Different algae show different pigments present in the cell like chlorophyll - a, b, xanthophylls, carotenes, etc. These pigments provide the base for classification of various groups of algae into different classes. Members of Chlorophyceae possess chlorophyll a, b pigments, Bacillariophyceae contains diatomin pigment whereas that of Phaeophyceae has fucoxanthin, Rhodophyceae has r -phycocyanin and r -phycoerythrin and cyanophyceae has phycobilin pigment.

Question81

In the prothallus of a vascular cryptogam, the antherozoids and eggs mature at different times. As a result
(2007)

Options:

A. there is high degree of sterility

B. one can conclude that the plant is apomictic

C. self fertilization is prevented

D. there is no change in success rate of fertilization.

Answer: C

Solution:

Solution:
(c) : In prothallus of vascular cryptogams the antherozoids and eggs mature at different times. The spores on germination gives rise to prothallus. The antherozoids are biflagellated or multiflagellated. The egg is produced inside the venter, water is essential for fertilization and it is always crossfertilization. Self fertilization is prevented.

Question82

Peat moss is used as a packing material for sending flowers and live plants to distant places because
(2006)

Options:

A. it serves as a disinfectant

B. it is easily available

C. it is hygroscopic

D. it reduces transpiration.

Answer: C

Solution:

(c) : The partially decomposed Sphagnum mass accumulates to form compressed mass called peat, which after drying is used as coal. So it is also called peat moss. Sphagnum has the capacity to retain water for long periods and thus it is used to cover plant roots during transportation.

Question83

Conifers differ from grasses in the (2006)

Options:

A. formation of endosperm before fertilization

B. production of seeds from ovules

C. lack of xylem tracheids

D. absence of pollen tubes.

Answer: A

Solution:

Solution:
(a) : Conifers belong to gymnosperms. They are seed bearing plants in which the sporophylls are aggregated to form cones and the seeds develop in exposed state over the surface of megasporophylls. Vascular strand consists of tracheids and sieve cells. Female gametophyte forms archegonia, provides nourishment to developing embryo and later gets transformed into food-laden tissue or endosperm inside the seed. This endosperm is formed before fertilization so it is haploid in nature. It provides nourishment for growth of seedlings at the time of seed germination. Grass is an angiospermic plant and endosperm is produced after fertilization.

Question84

In a moss, the sporophyte (2006)

Options:

A. manufactures food for itself, as well as for the gametophyte

B. is partially parasitic on the gametophyte

C. produces gametes that give rise to the gametophyte

D. arises from a spore produced from the gametophyte.

Answer: B

Question85

Auxospores and hormogonia are formed, respectively, by (2005)

Options:

A. some diatoms and several cyanobacteria

B. some cyanobacteria and many diatoms

C. several cyanobacteria and several diatoms

D. several diatoms and a few cyanobacteria.

Answer: D

Solution:

Solution:
(d) : Until 1907, auxospore formation was regarded as asexual process but now it is considered as an act of sexual process. The auxospores may be autogamous, isogamous, anisogamous or oogamous. Their pattern of formation differs in pennate and centric diatoms.

Formation of hormogonia is the common method of reproduction in Nostoc which are produced by accidental breaking of trichome into several pieces. It may also be formed by death and decay of ordinary intercalary cells. Soon, the hormogonium escapes from mucilage and grows into a new filament and then into a new colony.

Question86

Ectophloic siphonostele is found in (2005)

Options:

A. Osmunda and Equisetum

B. Marsilea and Botrychium

C. Adiantum and Cucurbitaceae

D. Dicksonia and Maiden hair fern.

Answer: A

Solution:

(a) : Stele is a column containing vascular tissues which is surrounded by pericycle and separated from ground tissue by endodermis. siphonostele is medullated protostele or protostele with a central non-vascular pith. Leaf gaps are absent. siphonostele is of two types :
In Ectophloic siphonostele, central pith is surrounded successively by xylem, phloem, pericycle and endodermis. In amphiphloic siphonostele there is a central pith and xylem is surrounded on either side by phloem, pericycle and endodermis. It is found in Osmunda and Equisetum.

Question87

Match items in column I with those in column II.

Column I	Column II
(A) Peritrichous flagellation	(J) Ginkgo
(B) Living fossil	(K) Macrocystis
(C) Rhizophore	(L) Escherichia coli
(D) Smallest flowering plant	(M) Selaginella
(E) Largest perennial alga	(N) Wolffia

Select the correct answer from the following. (2005)

Options:

A. A − L; B − J ; C − M ; D − N ; E − K

B. A − K ; B − J ; C − L; D − M ; E − N

C. A − N ; B − L; C − K ; D − N ; E − J

D. A − J ; B − K ; C − N ; D − L; E − K

Answer: A

Solution:

Solution:
(a) : Flagellation is the arrangement of flagella over the body surface of a bacterial cell. Peritrichous flagellation has flagella all over the surface of a bacterial cell e.g. E. coli. Ginkgo belongs to Order Ginkgoales of gymnosperms. It is called living fossil because it is the single living genus in a big fossilized order. Macrocystis belongs to Class Phaeophyceae. It is the largest perennial alga, about 40-60 m in size. Wolffia a is the smallest flowering plant. Rhizophore is a leafless, colourless, positively geotropic elongated structure that grows down from the point of bifurcation of stem. It occurs in Selaginella.

Question88

Top-shaped multiciliate male gametes and the mature seed which bears only one embryo with two cotyledons, are characterised features of (2005)

Options:

A. cycads

B. conifers

C. polypetalous angiosperms

D. gamopetalous angiosperms

Answer: A

Solution:

Solution:
(a) : Cycas is an evergreen palm like plant. The plant body is sporophytic differentiated into root, stem and leaves, sexual reproduction is of oogamous type takes place by the fusion of distinct male and female gametes. The male and female gametes are formed by the germination of microspores and megaspores which are borne on microsporophylls and megasporophylls. These microspores germinate to form male gametophyte that produces male gametes. The male gametes of Cycas are largest 300 m in nature, visible to naked eye, oval in form and top shaped. It is spirally coiled in the anterior half with thousands of small cilia. After fertilization the ovule is connected into a seed. In the endosperm of seed lies a well developed embryo having two cotyledons, a plumule and a radicle.

Question89

Diversification in plant life appeared (2004)

Options:

A. due to long periods of evolutionary changes

B. due to abrupt mutations

C. suddenly on earth

D. by seed dispersal.

Answer: A

Solution:

(a) : Diversification in plant life appeared due to long periods of evolutionary changes. Algae and bryophytes have thalloid plant body with no differentiation into root, stem and leaves. They had no vascular tissues but later in

pteridophytes vascular tissues (xylem and phloem) developed and plant body became differentiated into root, stem and leaves. But the vascular tissues lack vessels and companion cells and they reproduce by spores. In gymnosperms seed habit developed but the seeds are not enclosed inside fruit. In angiosperms vessels and companion cells are present, flowers are present and seeds are enclosed inside fruits. Thus the path of evolution is from algae to bryophytes to pteridophytes to gymnosperms and finally to angiosperm.

Question90

Angiosperms have dominated the land flora primarily because of their (2004)

Options:

A. power of adaptability in diverse habitat

B. property of producing large number of seeds

C. nature of self pollination

D. domestication by man.

Answer: A

Solution:

Solution:
(a) : Angiosperms are highly evolved and well adapted land plants. They have both vessels and tracheids in xylem for better conduction of water. Roots are modified into taproots, adventitious roots, pneumatophores, etc. to suit the desired climate. Sex organs are highly developed, sporophylls are organized into flowers and the flowers are highly coloured or modified to attract pollinators at different times and places. Insect pollination is more prevalent because it is more efficient and leads to less wastage of pollen grains as compared to wind pollination. So the flowers are made attractive to attract a variety of insects. Seed are more protected as they are enclosed inside a fruit.
All these adaptations have made angiosperms more adaptive in diverse habitats.

Question91

Which one of the following pairs of plants are not seed producers? (2003)

Options:

A. Fern and Funaria

B. Funaria and Ficus

C. Ficus and Chlamydomonas

D. Funaria and Pinus

Answer: A

Solution:

(a): Seed producing plants belong to spermatophyta. It includes gymnosperms and angiosperms. Seed habit or seed formation originated in gymnosperms. It requires the retention of megasporangium or the only on the parent plant and non-shedding of megaspore, development of integument and in site formation of female gametophyte. All these features developed in gymnosperms and angiosperms. Thallophytes, bryophytes and pteridophytes lack these features and thus do not reproduce by producing seeds. Fern and Funaria belong to pteridophytes and bryophytes respectively so they do not reproduce by producing seeds.

Question92

Sexual reproduction in Spirogyra is an advanced feature because it shows
(2005)

Options:

A. different sizes of motile sex organs

B. same size of motile sex organs

C. morphologically different sex organs

D. physiologically differentiated sex organs.

Answer: D

Solution:

Solution:
(d) : Spirogyra is a freshwater green alga which belongs to Class Chlorophyceae. The sexual reproduction in Spirogyra is called conjugation. It involves the fusion of two morphologically identical but physiologically dissimilar non-ciliated gametes. For development of gametes, some of the cells start to act like male and female gametangia in which the cell contents become separated from the cell wall, shrink and ultimately forms gametes. The fusion of these gametes takes place by scalariform conjugation or lateral conjugation.

Question93

Plants reproducing by spores such as mosses and ferns are grouped under the general term
(2005)

Options:

A. cryptogams

B. bryophytes

C. sporophytes

D. thallophytes.

Answer: A

Solution:

Solution:
(a) : Eichler divided plant kingdom into two subkingdoms - Cryptogamae and Phanerogamae. All plants without flowers and seeds are included in the Sub-kingdom Cryptogamae whereas Phanerogamae includes plants which bear flowers and seeds. Cryptogams are further classified into three divisions. Thallophyta, Bryophyta and Pteridophyta. Spore bearing plants such as mosses and ferns belong to cryptogams because instead of reproducing by flowers and seeds they reproduce by means of spores.

Question94

Which one pair of examples will correctly represent the grouping spermatophyta according to one of the schemes of classifying plants? (2005)

Options:

A. Acacia, sugarcane

B. Pinus, Cycas

C. Rhizopus, Triticum

D. Ginkgo, Pisum

Answer: D

Solution:

Solution:
(d) : Spermatophyta includes seed bearing plants and this includes gymnosperms and angiosperms. Acacia and sugarcane both are angiosperms. Pinus and Cycas both are gymnosperms. Rhizopus belongs to Kingdom Fungi and Tritcum is an angiosperm. Ginkgo is gymnosperm and Pisum is an angiosperm. So Ginkgo and Pisum correctly represent the grouping spermatophyta.

Question95

Which of the following is without exception in angiosperms? (2002)

Options:

A. Presence of vessels

B. Double fertilisation

C. Secondary growth

D. Autotrophic nutrition

Answer: B

Solution:

Solution:
(b) : In angiosperms presence of vessels is not an universal feature as there are certain angiosperms where vessels are absent e.g., *Wintera, Trochodendron* etc.

Secondary growth is increase in the girth or diameter of axis (root and stem) of the plant by formation of secondary tissue by the activity of lateral meristem. It occurs in dicotyledons of angiosperms and gymnosperms. But in monocotyledons of angiosperms the primary plant body is complete in itself and doesn't produce any secondary tissue. Autotrophic plants are those which synthesise their organic food themselves by the process of photosynthesis. But certain angiospermic plants have heterotrophic mode of nutrition. E.g. Rafflesia, Orobanche, Striga are root parasites. But double fertilization is universal in all angiosperms. It involves fusion of one male gamete with the egg cell and another male gamete with the diploid secondary nuclei.

Question96

Which of the following plants produces seeds but not flowers? (2002)

Options:

A. Maize

B. Mint

C. Peepal

D. Pinus

Answer: D

Question97

Cycas has two cotyledons but not included in angiosperms because of (2001)

Options:

A. naked ovules

B. seems like monocot

C. circinate ptyxis

D. compound leaves.

Answer: A

Solution:

(a) : Cycas belongs to Order Cycadales of gymnosperms because it has naked seed. It is not enclosed inside a fruit. It does not have double fertilization and so the endosperm formed is haploid in nature and not triploid. So it is not included in angiosperms as they have ovules (or seeds) produced inside fruit. This is the main difference between gymnosperms and angiosperms.

Question98

A student observed an algae with chlorophyll a, b and phycoerythrin, it should belong to
(2000)

Options:

A. Phaeophyta

B. Rhodophyta

C. Chlorophyta

D. Bacillariophyta.

Answer: B

Solution:

Solution:
(b) : The algal Class Rhodophyceae contains a red pigment (r -phycocrythrin) and a blue pigment (r- phycocynin) in the chromatphores.
These pigments can utilize those wavelengths of light (blue-green region of spectrum, i.e., 480-520 nm) that are not absorbed by chlorophyll. This enables red algae to grow at greater depths than other plants (upto 300 ft below water) .
In addition to these, chl.- a, chl.d, carotenes and xanthophylls are present. In phaeophyceae chromatophores are yellowish brown in colour possessing xanthophylls in abundance.
Bacillariophyceae are called 'diatoms' due to presence of an accessory brown pigment called diatomin', other pigments are chl.- a, chl. -c (but not chl.- b), carotenes and xanthophylls. In chlorophyceae colouring pigments are just like higher plants, i.e., Chl.- a, Chl.- b, xanthophylls and carotenes.

Question99

In ferns, meiosis takes place at the time of
(2000)

Options:

A. spore formation

B. spore germination

C. gamete formation

D. antheridia and archegonia formation.

Answer: A

Solution:

Solution:
(a): A fern plant body is sporophytic ($2n$) and is differentiated into roots, stems and leaves. On the ventral surface of leaves sporangia are borne in a group called sori. Inside the sporangium are present the spores which are formed by reduction duvsion. Thus the spores produced are haploid in nature and germinate to produce a prothallus that represents the gametophytic generation. Antheridium and archegonium are borne on this prothallus. Thus meiosis takes place at the stage of spore formation.

Question100

Plant group with largest ovule, largest tree, and largest gametes is (2000)

Options:

A. gymnosperm

B. angiosperm

C. bryophyta

D. pteridophyta.

Answer: A

Solution:

Solution:
(a) : Gymnosperms are the most primitive seed plants. The plants are generally perennial, woody trees or shrubs. In general, tallest trees are in gymnosperms e.g., *Sequoia sempervirens* is 366 ft. in height. The male gametes of Cycas are largest (300 p) in size, they are visible to naked eye and are oval in form and top-shaped. The ovule of Cycas is also largest in the plant kingdom.

Question101

The antherozoids of Funaria are (1999)

Options:

A. multiciliated

B. monociliated

C. aciliated

D. biciliated.

Answer: D

Solution:

Solution:
(d) : Androcytes or antherozoid mother cell of Funaria metamorphoses into a single biflagellate spermatozoid (antherozoids). It is a spirally coiled biflagellate (biciliated) structure.

Question102

Bryophytes comprise
(1999)

Options:

A. dominant phase of gametophyte which produces spores

B. small sporophyte phase and generally parasitic on gametophyte

C. sporophyte is of longer duration

D. dominant phase of sporophyte which is parasitic.

Answer: B

Solution:

(b) : In bryophytes the main plant body is gametophytic which is independent and may be thallose (no differentiation in root, stem and leaves)e.g., *Riccia, Marchantia, Anthoceros* etc. or foliose (having leafy axis) e.g. *Sphagnum, Funaria* etc. The gametophyte bears the sex organs antheridium and archegonium. Sexual reproduction is of oogamous type. It forms zygote that gives rise to the sporophytic phase. It is differentiated into foot, seta and capsule. The capsule produces spores after meiosis that again gives rise to gametophytic phase. The sporophyte is partially or full dependent upon the gametophyte and is of shorter duration.

Question103

In which of the following would you place the plants having vascular tissue lacking seeds?
(1999)

Options:

A. Pteridophytes

B. Gymnosperms

C. Algae

D. Bryophytes

Answer: A

Solution:

(a) : Algae, bryophyte and pteridophyte are cryptogams, but out of them algae, and bryophytes are lower cryptogams and do not possess vascular tissue (xylem and phloem), whereas in pteridophytes, vascular tissue system is well developed and so these are higher cryptogams or vascular cryptogams. The term cryptogams means that these plants reproduce by means of spores and do not produce seeds.
The vascular tissue of pteridophytes is well developed. They contain both xylem and phloem. In xylem, vessels are absent and in phloem companion cells are absent.
So pteridophytes or vascular cryptogams are a group of seedless vascular plants, that have successfully invaded the land and reproduce by means of spores. Gymnosperms are naked seed bearing plants called phanerogams.

Question104

Which of the following is true about bryophytes? (1999)

Options:

A. They are thalloid.

B. They posses archegonia.

C. They contain chloroplast.

D. All of these

Answer: D

Solution:

Solution:
(d) : Bryophytes are green photosynthetic and thalloid structures where the plant body root, stem and leaves. Instead of roots, rhizoids are present for attachment and absorption purpose. They have motile sperms and so they need water for fertilization. Archegonia evolved for the first time in bryophytes in the plant kingdom. It is a flask shaped structure with swollen base called venter and upper elongated neck. The venter contains a venter canal cell and an egg cell. It is surrounded by one celled thick sterile jacket layer.

Question105

Dichotomous branching is found in (1999)

Options:

A. liverworts

B. pteridophytes

C. fern

D. Funaria.

Answer: A

Solution:

Solution:
(a) : Dichotomous branching is characteristic feature of liverworts e.g. *Riccia, Marchantia, Pellia* etc. It is a primitive form of branching. It is also called forked branching. In liverworts the thallus is flat and dorsiventral and dichotomously branched. The thallus has a notch at the anterior end. At the base of the notch, there is a growing point consisting of a single apical cell. It divides repeatedly to form two branches of the same size.

Question106

Which one of the following statements about Cycas is incorrect? (1998)

Options:

A. It has circinate vernation.

B. Its xylem is mainly composed of xylem vessel.

C. Its roots contain some blue-green algae.

D. It does not have a well organized female flower.

Answer: B

Solution:

Solution:
(b) : Cycas belongs to Order Cycadales of gymnosperms. Its leaves show circinate vernation i.e. the leaves are coiled in young stage. The coralloid roots in Cycas arise from the lateral branches of the normal roots and contain blue-green algae like Nostoc and Anabaena. A well developed flower like that of angiosperms is absent in Cycas. It has compact cones containing microsporophylls and megasporophylls. The megaspores are loosely arranged on the megasporophyll. The male cone is a compac structure. Vessels in xylem are absent and it contains only tracheids for conduction of water.

Question107

Largest sperms in the plants world are found in (1998)

Options:

A. Banyan

B. Cycas

C. Thuja

D. Pinus.

Answer: B

Solution:

Solution:
Gymnosperms are the most primitive seed plants. The plants are generally perennial, woody trees or shrubs. In general, tallest trees are in gymnosperms e.g., *Sequoia sempervirens* is 366 ft. in height. The male gametes of Cycas are largest (300 p) in size, they are visible to naked eye and are oval in form and top-shaped. The ovule of Cycas is also largest in the plant kingdom.

Question108

Ulothrix can be described as a (1998)

Options:

A. filamentous alga lacking flagellated reproductive stages

B. membranous alga producing zoospores

C. filamentous alga with flagellated reproductive stages

D. non-motile colonial alga lacking zoospores.

Answer: C

Solution:

Solution:
(c) : Ulothrix is a green filamentous alga, belonging to Class Chlorophyceae. The plant body is an unbranched filament consisting of numerous cylindrical cells joined end and end. Under favourable conditions, each cell produces zoospores except holdfast. These zoospores are of two types macrozoospores and microzoospores. The macrozoospores are larger in size and are quadriflagellate and the microzoospores are smaller zoospores which may be biflagellate or quadrifagelleate. Under unfavourable conditions, nonmotile mitospores called aplanospores are produced. Sexual reproduction in Ulothrix is of isogamous type. The isogametes fuse to form a quadriflagellate zygospore which after meiosis forms 16 aplanospores or zoospores.

Question109

Bryophytes are dependent on water, because (1998)

Options:

A. water is essential for their vegetative propagation

B. the sperms can easily reach upto egg in the archegonium

C. archegonium has to remain filled with water for fertilization

D. water is essential for fertilization for their homosporous nature.

Answer: B

Solution:

Solution:
(b) : Bryophytes are called amphibians of plant kingdom because they complete their vegetative phase on land but water is necessary for their reproductive phase. Water helps in maturation and dehiscence of sex organs in bryophytes. It also helps in the transfer of sperms to the archegonium that make water essential for completion of life cycle of bryophytes.

Question110

The walking fern is so named because (1998)

Options:

A. it propagates vegetatively by its leaf tips

B. it knows how to walk by itself

C. its spores are able to walk

D. it is dispersed through the agency of walking animals.

Answer: A

Solution:

Solution:
(a): Walking fern is named so because when its leaf tips come in contact with soil, form new plants as adventitious buds develop at leaf tips. This helps in the spread of fern over a large soil surface and thus the name 'walking fern'.

Question111

Transfusion tissue is present in the leaves of (1998)

Options:

A. Pinus

B. Dryopteris

C. Cycas

D. both (a) and (c).

Answer: D

Solution:

Solution:
(d) : Transfusion tissue is a specialized tissue present on either side of midrib in between the palisade and spongy tissues of the leaf of Cycas and also in Pinus leaf at the sides of the sclerenchymtous region. It is made of horizontally arranged tracheids. These supply water and minerals to mesophyll tissue upto margins so that the mesophyll cells can carry out photosynthesis. It is of two types primary transfusion tissue present next to the midrib bundle and secondary transfusion tissue that runs upto margins of the leaf. In Pinus it consists of tracheids and albuminous cells.

Question112

Heterospory and seed habit are often exhibited by a plant possessing (1997)

Options:

A. petiole

B. ligule

C. bract

D. spathe.

Answer: B

Solution:

Solution:
(b) : Heterospory means production of two different sizes of spores-megaspore and microspore. All bryophytes are homosporous. Heterospory originated in some pteridophytes like Selaginella. It is commonly called club moss or spike moss. Its leaves contain a flap-like outgrowth at the base on the adaxial side called ligule. The leaves are of two types - megasporophyll bearing megasporangia and microsporophylls bearing microsporangia. The megasporangia contains four large megaspores and the microsporangia contains large number of small microspores. Thus Selaginella is heterosporous. In some species of Selaginella the embryo remains attached to the sporophyte for a long time and it is the habit towards seed habit.

Question113

An alga, very rich in protein, is (1997)

Options:

A. Chlorella

B. Nostoc

C. Spirogyra

D. Ulothrix.

Answer: A

Solution:

Solution:
(a) : Chlorella is a unicellular green alga that contains high percentage of proteins, lipids and most of the known vitamins (carotene, riboflavin, vitamin B_{12}, choline etc) and grows more quickly than Porphyra, so scientists are doing research to obtain food from it. The nutritional value is comparable to the mixture of soybeans and spinach.

Question114

Ulothrix filaments produce
(1997)

Options:

A. heterogametes

B. basidiospores

C. isogametes

D. anisogametes,

Answer: C

Solution:

Solution:
(c) : Ulothrix belongs to Class Chlorophyceae of Division Thallophyta. The plant body consists of an unbranched filament, consisting of numerous cylindrical cells joined end to end. It is heterothallic and sexual reproduction is of isogamous type. Except holdfast each cell of the filament can give rise to 64 to 128 gametes. The gametes are similar in size, shape and other features. So these gametes are called isogametes. When two gametes of (+) and (−) strain come together they fuse and a quadriflagellate zygospore is formed.

Question115

Bryophytes can be separated from algae, because they
(1997)

Options:

A. possess archegonia

B. contain chloroplast

C. are thalloid forms

D. have no conducting tissue.

Answer: A

Solution:

(a) : Bryophytes and algae are both autotrophic, plant body thallus like and devoid of vascular tissues. Instead of roots, rhizoids are present for attachment and absorption purpose. Both algae and bryophytes have motile sperms and need water for fertilization. But bryophytes can be separated from algae because archegonium originated for the first time in bryophytes in plant kingdom. It is a flask shaped structure with swollen base called venter and upper elongated neck. The venter contains a venter canal cell and an egg cell. It is surrounded by one celled thick sterile jacket layer. In algae sex organs are non-jacketed and unicellular.

Question116

Multicellular branched rhizoids and leafy gametophytes are the characteristics of
(1997)

Options:

A. some bryophytes

B. pteridophytes

C. all bryophytes

D. gymnosperms.

Answer: A

Solution:

Solution:
(a) : The Division Bryophyta includes three classes Hepaticopsida, Anthocerotopsida and Bryopsida. The members of Hepaticopsida and Anthocerotopsida have a thallose plant body which is dorsiventrally differentiated and dichotomously branched. On the ventral surface unicellular or multicellular rhizoids are present. The member of Bryopsida have a main plant body that has a leafy gametophore made up of an axis having spirally arranged leaves. The rhizoids are multicellular and branched e.g. Sphagnum, Funaria, Riccia, Anthoceros. So only few member of bryophytes have leafy gametophytes.

Question117

Brown algae is characterised by the presence of

(1997)

Options:

A. fucoxanthin

B. haematochrome

C. phycocyanin

D. phycoerythrin.

Answer: A

Solution:

Solution:
(a): Brown algae are the members of the class phaeophyceae. Their chromatopores are ellipsoidal or discoid. They contain chlorophyll a, chi c, (i- and c- carotenes and xanthophyll pigments (e.g., lutein, flavoxanthin, violaxanthin). They also contain large amount of a brown pigment - fucoxanthin which masks the green colour of chlorophyll pigment. This gives characteristic brown colour to these plants, hence the name brown algae. The non-motile resting spores of Chlamydomonas contain a red pigment called hematochrome. phycocyanin and phycoerythrin are water soluble pigments found in red and blue-green algae.

Question118

The smallest plant family 'Gymnosperm' has how many species? (1996)

Options:

A. 640

B. 300

C. 1000

D. 900

Answer: D

Solution:

Solution:
(d) : Gymnosperms originated about 200 million years ago and were dominant species at that time. However most of the members have become extinct now and only few living forms are known today. There are around 900 living species of this group.

Question119

Which of the following plant kingdom is called 'amphibians'?

(1996)

Options:

A. Pteridophyta

B. Thallophyta

C. Tracheophyta

D. Bryophyta

Answer: D

Solution:

Solution:
Bryophytes are called amphibians of plant kingdom because they complete their vegetative phase on land but water is necessary for their reproductive phase. Water helps in maturation and dehiscence of sex organs in bryophytes. It also helps in the transfer of sperms to the archegonium that make water essential for completion of life cycle of bryophytes.

Question120

Elater mechanism for spore dispersal is exhibited by (1996)

Options:

A. liverworts

B. Marchantia

C. Riccia

D. Funaria.

Answer: B

Solution:

Solution:
(b) : Marchantia is a liverwort in which the sex organs are borne on disc shaped 8 -lobed receptacles borne at the tip of vertical gametophores. Sperms are attracted to opened archegonia by proteins and K^+ salts. Fertilization produces a parasitic sporophyte made of foot, seta and capsule. The capsule encloses sporocytes and elaters. These elaters show twisting movements due to spiral bands of thickenings and this leads to liberation and dispersal of spores. In Riccia elaters are absent and in Funaria peristome teeth help in spore dispersal.

Question121

A gymnospermic leaf carries 16 chromosomes. The number of

chromosomes in its endosperm will be (1996)

Options:

A. 12

B. 8

C. 16

D. 24

Answer: B

Solution:

Solution:
(b) : Gymnosperms show distinct alternation of generations. The sporophytic phase is dominant. The sporphyte is differentiated into root, stem and leaves. So the number of chromosomes in a leaf cell is diploid $(2n)$, $(2n = 16)$. Double fertilization is absent in gymnosperms. The endosperm develops before fertilization directly from the megaspore. So the number of chromosomes in endosperm will be $8(n = 8)$

Question122

The pyrenoids are made up of (1995)

Options:

A. proteinaceous centre and starchy sheath

B. core of nucleic acid surrounded by protein sheath

C. core of protein surrounded by fatty sheath

D. core of starch surrounded by sheath of protein.

Answer: A

Solution:

Solution:
(a) : Pyrenoids are found in many bryophytes and algae. They are small, spherical bodies found in the cytoplasm of a plant cell. They are rich in proteins and are surrounded by a starch sheath.

Question123

The plant body of moss (Funaria) is (1995)

Options:

A. completely sporophyte

B. predominantly gametophyte with sporophyte

C. completely gametophyte

D. predominantly sporophyte with gametophyte.

Answer: B

Solution:

Solution:
(b) : Funaria is known as common moss or green moss. The plant body is foliose that consists of stem axis which bears many leaves and instead of roots, rhizoids are present. It is gametophytic (n) and independent.
It bears antheridia and archegonia on the same plant but on different branches.
After fertilization the zygote (2n) divides to form the sporophyte which consists of foot, seta and capsule. The basal foot is embedded in the apex of female branch. It absorbs nutrients and provides support for the sporophyte. Inside the capsule haploid spores are produced as a result of meiosis. Thus again the gametophyticphase starts. So the gametophytic phase is the dominant phase of the life cycle of Funaria.

Question124

The sexual reproduction is absent in (1995)

Options:

A. Spirogyra

B. Nostoc

C. Ulothrix

D. Volvox.

Answer: B

Solution:

Solution:
(b) : Nostoc belongs to Cyanophyceae. In this entire class sexual reproduction is completely absent. It reproduces by colony formation, hormogonia, akinetes, heterocysts and endospres. However genetic recombination has been observed. It may be probably through transformation or conjugation. The other three algae- Spirogyra, Ulothrix and Volvox belong to Chlorophyceae. The members of this class show isogamous, anisogamous and oogamous type of sexual reproduction.

Question125

A well developed archegonium with neck consisting of 4 - 6 rows and neck canal cells, characterises
(1995)

Options:

A. gymnosperms and flowering plants

B. pteridophytes and gymnosperms

C. gymnosperms only

D. bryophytes and pteridophytes.

Answer: D

Solution:

Solution:
(d) : Bryophytes and pteridophytes both have alternation of generation. The gametophytic phase is dominant in bryophytes whereas in pteridophytes it is short lived. Sex organs are embedded is some members of bryophytes and pteridophytes. Sperms are flagellate and so water is required for fertilization. Sterile jacket is present around the sex organs for protection. Archegonium appeared for the first time in bryophytes in plant kingdom. It is a flask shaped structure. It has swollen basal portion called venter and upper elongated neck. The venter has egg cell and venter canal cell. There are 4 - 6 vertical rows of neck cells enclosing neck canal cells in bryophytes. The archegonia have short neck made of four rows of vertically elongated cells that encloses four neck canal cells in pteridophytes.

Question126

Many blue-green algae occur in thermal springs (hot water springs). The temperature tolerance of these algae have been attributed to their
(1994)

Options:

A. mitochondrial structure

B. importance of homopolar bonds in their proteins

C. cell wall structure

D. modern cell organization.

Answer: C

Solution:

(c) : Some algae withstand or tolerate a very high temperature and these are often called thermal algae. Such forms are known to grow upto 85°C, nearly boiling water. Their cell wall is hard and protective. A typical cell wall of algae consists of two nonliving layers. The inner layer is firm consisting of microfibrils and outer layer is gelatinous and amorphous. Various polysaccharides such as cellulose, pectin, mucilage constitute the typical cell wall. The mucilage covering of the cell is thick and dense and is called the sheath. This sheath holds the cells in colonies together, is having water absorbing and water retaining capacity. It thus protects them under dessicating conditions. Thus they are able to survive under high temperature.

Question127

In Chlorophyceae, the mode of sexual reproduction is (1994)

Options:

A. isogamy

B. anisogamy

C. oogamy

D. all of these.

Answer: D

Solution:

Solution:
Nostoc belongs to Cyanophyceae. In this entire class sexual reproduction is completely absent. It reproduces by colony formation, hormogonia, akinetes, heterocysts and endospres. However genetic recombination has been observed. It may be probably through transformation or conjugation.
The other three algae- Spirogyra, Ulothrix and Volvox belong to Chlorophyceae. The members of this class show isogamous, anisogamous and oogamous type of sexual reproduction.

Question128

In Pinus, the wings of the seed develops from (1994)

Options:

A. ovuliferous scale

B. integument

C. nucellus

D. bract.

Answer: A

Solution:

(a) : Mature ovule with embryo constitutes seed. The seed is covered with hard seed coat. The outerlayer of the seed coat is testa (from middle stony layer). Testa encloses a brown, thin membranous tegmen (from inner fleshy layer). The tegmen surrounds fleshy endosperm.

Inside endosperm is present the embryo. At maturity of seed, a thin layer of ovuliferous scale fuses with testa to form a wing (i.e., seeds are winged) which helps in the dispersal of seed.

Question129

In bryophytes
(1994)

Options:

A. both generations are independent

B. gametophytes are dependent upon sporophytes

C. sporophytes complete their life cycle

D. sporophytes are dependent upon gametophytes.

Answer: D

Question130

Which one is the most advanced from evolutionary view point?
(1993)

Options:

A. Selaginella

B. Funaria

C. Chlamydomonas

D. Pinus

Answer: D

Solution:

Solution:
(d) : Pinus is more advanced from the evolutionary point of view. It is a gymnosperms (of phanerogams) having well developed vascular conducting system and bears seeds. While others Selaginella, Funaria and Chlamydomonas do not bear seeds.

Question131

Pinus differs from mango in having (1993)

Options:

A. tree habit

B. green leaves

C. ovules not enclosed in ovary

D. wood.

Answer: C

Solution:

Solution:
(c) : Pinus is a gymnospermic plant which has a well developed conducting tissue system but seeds are naked. Whereas mango is an angiospermic plant in which seed are enclosed in the ovary and fruit ispresent

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Question132

Pyrenoids are the centres for formation of (1993)

Options:

A. Porphyra

B. enzymes

C. fat

D. starch.

Answer: D

Solution:

Solution:
(d) : Pyrenoids are the centres for formation of starch. There are present in chloroplast and are proteinaceous in nature covered by starch plate. They synthesizes and store starch in them.

Question133

Pteridophytes differ from bryophytes and thallophytes in having

(1993)

Options:

A. vascular tissues

B. motile antherozoids

C. archegonia

D. alternation of generations.

Answer: A

Solution:

Solution:
(a) : Pteridophytes differs from bryophytes and thallophytes in having well developed vascular tissue system. Vascular tissues plays an important role in conducting water and food materials to the plants. Whereas these are absent in bryophytes and thallophytes.

Question134

Chloroplast of Chlamydomonas is
(1993)

Options:

A. stellate

B. cup-shaped

C. collar-shaped

D. spiral.

Answer: B

Solution:

Solution:
(b) : Chloroplast in Chlamydomonas is cupshaped. It is one celled structure whereas stellate, spiral and collar shaped chloroplasts are present in Zygnema, Spirogyra and Ulothrix respectively.

Question135

In Ulothrix/Spirogyra, reduction division (meiosis) occurs at the time of (1993)

Options:

A. gamete formation

B. zoospore formation

C. zygospore germination

D. vegetative reproduction.

Answer: C

Solution:

(c) : In Ulothrix/Spirogyra reduction division (meiosis) occurs at the time of zygospore formation. Plant body of Ulothrix and Spirogyra, is gametophytic (haploid), they produce zoogametes (n) which fuses to form zygosporic ($2n$) diploid, which is a resting spore. Onset of favourable condition zygospore undergoes reductional division, or meiosis to produce zoo-meiospores.

Question136

Pteridophytes differ from mosses/bryophytes in possessing (1993)

Options:

A. independent gametophyte

B. well developed vascular system

C. archegonia

D. flagellate spermatozoids.

Answer: B

Solution:

Solution:
Pteridophytes differs from bryophytes and thallophytes in having well developed vascular tissue system. Vascular tissues plays an important role in conducting water and food materials to the plants. Whereas these are absent in bryophytes and thallophytes.

Question137

Protonema occurs in the life cycle of (1993,1990)

Options:

A. Riccia

B. Funaria

C. Anthoceros

D. Spirogya.

Answer: B

Solution:

Solution:
(b) : Protonema occurs in the life cycle of Funaria. The spore is the first cell of gametophytic generation and it germinates to form a filamentous branched alga like structure called protonema. If gives rise to new plant.

Question138

Resin and turpentine are obtained from (1992)

Options:

A. Cycas

B. Pinus

C. Cedrus

D. Abies.

Answer: B

Solution:

Solution:
(b) : Resins and turpentine are obtained from Pinus which is gymnospermic plant. Cycas is an ornamental plant. Paper and Canada balsam are obtained from Abies and timber is obtained from Cedrus deodara.

Question139

Turpentine is got from (1992)

Options:

A. angiospermous wood

B. bryophytes

C. gymnospermous wood

D. ferns.

Answer: C

Solution:

Solution:
Resins and turpentine are obtained from Pinus which is gymnospermic plant. Cycas is an ornamental plant. Paper and Canada balsam are obtained from Abies and timber is obtained from Cedrus deodara.

Question140

In Pinus , the pollen grain has 6 chromosomes then in its endosperm will have
(1992)

Options:

A. 12

B. 18

C. 6

D. 24

Answer: C

Solution:

Solution:
(c) : In Pinus, if the pollen grain has 6 chromosomes then in its endosperm will also have 6 chromosomes as endosperm and pollen grains are both haploid structures.

Question141

A plant having seeds but lacking flowers and fruits belongs to
(1992)

Options:

A. pteridophytes

B. mosses

C. ferns

D. gymnosperms.

Answer: D

Solution:

(d) : A plant having seed but lacking flowers and fruit belongs to gymnosperms. Gymnosperms are vascular land plants and bears seeds which are naked i.e., ovules not enclosed in the ovary. Hence, flowers are absent.

Question142

Which one of the following is not common between Funaria and Selaginella?
(1992)

Options:

A. Archegonium

B. Embryo

C. Flagellate sperms

D. Roots

Answer: D

Solution:

Solution:
(d) : Root is not common between Funaria and Selaginella. Funaria is a bryophyte and have archegonium, embryo, flagellated sperms which are also present in Selaginella. Selaginella is a pteridophyte and it has root which is absent in Funaria.

Question143

The plant group that produces spores and embryo but lacks vascular tissues and seeds is
(1992)

Options:

A. Pteridophyta

B. Rhodophyta

C. Bryophyta

D. Phaeophyta.

Answer: C

Solution:

(c) : Bryophytes are the plants which produces spores and embryos but they do not have vascular tissue system. While rhodophytes and phaeophytes are algae and produces spores (no embryos) only and pteridophytes produces spores, embryo and well developed vascular tissue system.

Question144

A plant in which sporophytic generation is represented by zygote is (1992)

Options:

A. Pinus

B. Selaginella

C. Chlamydomonas

D. Dryopteris.

Answer: C

Solution:

Solution:
(c) : A plant in which sporophytic generation is represented by zygote is Chlamydomonas. It is a type of algae that has gametophytic plant body (haploid). It reproduce sexually by gametes which are isogametes that fuses to produce diploid zygote which is the only sporophytic generation.

Question145

Bryophytes are amphibians because (1991)

Options:

A. they require a layer of water for carrying out sexual reproduction

B. they occur in damp places

C. they are mostly aquatic

D. all the above.

Answer: A

Solution:

Bryophytes are called amphibians of plant kingdom because they complete their vegetative phase on land but water is necessary for their reproductive phase. Water helps in maturation and dehiscence of sex organs in bryophytes. It also helps in the transfer of sperms to the archegonium that make water essential for completion of life cycle of bryophytes.

Question146

Which one has the largest gametophyte? (1991)

Options:

A. Cycas

B. Angiosperm

C. Selaginella

D. Moss

Answer: D

Solution:

Solution:
(d) : Moss has the largest gametophyte. Mosses are small, soft plants that are typically 1-10 cm tall, some species are much larger. They commonly grow close together in clumps or mats in damp or shady locations. They do not have flowers or seeds and their simple leaves cover the thin wiry stem.

Question147

The common mode of sexual reproduction in Chlamydomonas is (1991)

Options:

A. isogamous

B. anisogamous

C. oogamous

D. hologamous.

Answer: A

Solution:

(a) : In Chlamysomonas sexual reproduction takes place through isogamy, anisogamy, and oogamy. Isogamy i.e., the fusion of similar gametes is the common mode of sexual reproduction in it. Anisogamy is fusion of morphologically similar but physiologically different cells. Oogamy is fusion of different gametes.

Question148

The product of conjugation in Spirogyra or fertilization of Chlamydomonas is
(1991)

Options:

A. zygospore

B. zoospore

C. oospore

D. carpospore.

Answer: A

Solution:

Solution:
(a) : The product of conjugation in Spirogyra or fertilization of Chlamydomonas is zygospore. Both are the members of green algae where gametes are fused to form zygote which develops into a thick walled zygospore.

Question149

Moss peristome takes part in
(1990)

Options:

A. spore dispersal

B. photosynthesis

C. protection

D. absorption.

Answer: A

Solution:

Solution:
(a) : Moss peristome is present in capsule and takes part in spore dispersal. The hygroscopic action of peristomial teeth

help in the removal of operculum. The lengthening and shortening of peristomial teeth help in the dispersal of spores. The inner peristome acts as a sieve allowing only a few spores to escape at a time.

Question150

Apophysis in the capsule of Funaria is (1990)

Options:

A. lower part

B. upper part

C. middle part

D. fertile part.

Answer: A

Solution:

Solution:
(a) : Apophysis is basal portion of capsule in continuation with seta. The outer layer of apophysis is epidermis which has stomata for gaseous exchange. In capsule of Funaria stomata are present only in apophysis.

Question151

In Pinus/gymnosperms, the haploid structure are (1989)

Options:

A. megaspore, endosperm and embryo

B. megaspore, pollen grain and endosperm

C. megaspore, integument and root

D. pollen grain, leaf and root.

Answer: B

Solution:

Solution:
(b) : In Pinus/gymnosperms, endosperm is produced before fertilization and hence it is haploid. Megaspore and pollen grains are structures of male gametophytes and it is also haploid.

Question152

Sperms of both Funaria and Pteris were released together near the archegonia of Pteris. Only its sperms enter the archegonia as (1989)

Options:

A. Pteris archegonia repel Funaria sperms

B. Funaria sperms get killed by Pteris sperms

C. Funaria sperms are less mobile

D. Pteris archegonia release chemical to attract its sperms.

Answer: D

Solution:

Solution:
(d) : Sperms of both Funaria and Pteris were released together near the archegonia. But only the sperms of Pteris enter the archegonia, as Pteris archegonia releases a chemical malic acid to attract its sperms for fertilization.

Question153

Evolutionary important character of Selaginella is (1989)

Options:

A. heterosporous nature

B. rhizophore

C. strobili

D. ligule.

Answer: A

Solution:

Solution:
(a) : Evolutionary important character of Selaginella is heterosporous nature. Selaginella produces two types of spores microspores and megaspores. Heterospory in the life cycle of Selaginella leads to the formation of seed habit.

Question154

In Pinus/Cycas/gymnosperms, the endosperm is
(1988)

Options:

A. triploid

B. haploid

C. diploid

D. tetraploid.

Answer: B

Solution:

Solution:
(b) : In Pinus/Cycas/gymnosperms the endosperm is haploid because it is produced before fertilization.

Question155

Prothallus (gametophyte) gives rise to fern plant (sporophyte) without fertilization. It is
(1988)

Options:

A. apospory

B. apogamy

C. parthenocarpy

D. parthenogenesis.

Answer: B

Solution:

Solution:
(b) : Prothallus (gametophyte) gives rise to fern plant (sporophyte) without fertilization. This phenomenon is called apogamy. Development of sporophyte from gametophyte without forming gamete is apogamy. Such sporophyte is haploid in nature.

Question156

Sexual reproduction involving fusion of two cells in Chlamydomonas is
(1988)

Options:

A. isogamy

B. homogamy

C. somatogamy

D. hologamy.

Answer: A
