

Shiksha Classes, Bhandara

Biology

Plant Kingdom

- (1.) Male gametophyte of *Cycas* differs from that of angiosperms in
- (a.) cutting of two vegetative cells called prothallial cells and a stalk cell in reproducing a pollen tube with a tube nucleus and two ciliated motile male gametes
- (b.) producing two male gametes
- (c.) starting its formation in situ
- (d.) producing a pollen tube and a tube nucleus
- (2.) A prothallus is
- (a.) a structure in pteridophytes formed before the thallus develops.
- (b.) asporophytic free living structure formed in pteridophytes.
- (c.) a gametophyte free living structure formed in pteridophytes.
- (d.) a primitive structure formed after fertilization in pteridophytes
- (3.) Protonema is
- (a.) haploid and is found in mosses.
- (b.) diploid and is found in liverworts.
- (c.) diploid and is found in pteridophytes.
- (d.) haploid and is found in pteridophytes.
- (4.) Zygotic meiosis is characteristic of
- (a.) *Marchantia*
- (b.) *Fucus*
- (c.) *Funaria*
- (d.) *Chlamydomonas*
- (5.) An example of colonial alga is
- (a.) *Chlorella*
- (b.) *Volvox*
- (c.) *Ulothrix*
- (d.) *Spirogyra*
- (6.) The giant redwood tree (*Sequoia sempervirens*) is a/an
- (a.) angiosperm
- (b.) free fern
- (c.) pteridophyte
- (d.) gymnosperm
- (7.) In bryophytes and pteridophytes, transport of male gametes requires
- (a.) insects
- (b.) birds
- (c.) water
- (d.) wind
- (8.) In *Pinus*, male cone bears a large number of
- (a.) Megasporophylls
- (b.) Microsporophylls
- (c.) Ligules
- (d.) Anthers
- (9.) In gymnosperms, the endosperm is formed by the
- (a.) Germination of microspore
- (b.) Germination of megaspore
- (c.) Fusion of one male gametes with two polar nuclei
- (d.) Fusion of male gametes with the egg

- (10.) Which of the following is responsible for peat formation
- (a.) Marchantia (b.) Riccia
(c.) Funaria (d.) Sphagnum
- (11.) An important evolutionary character of selaginella is]
- (a.) rhizophore (b.) strobili
(c.) hetrosporous nature (d.) ligule
- (12.) Life cycle of Ectocarpus and Fucus respectively are
- (a.) Haplontic, Diplontic (b.) Diplontic, Haplodiplontic
(c.) Haplodiplontic, Diplontic (d.) Haplodiplontic, Haplontic
- (13.) Smallest gymnosperm is
- (a.) Zamiapygmaea (b.) Gnetum gnemon
(c.) Cycas revoluta (d.) Pinusgerardiana
- (14.) Mesarch xylem is common in
- (a.) Dicots (b.) Monocots
(c.) Bryophytes (d.) Ferns
- (15.) The peristome found in Funaria takes part in
- (a.) Protection (b.) Absorption
(c.) Spore dispersal (d.) Photosynthesis
- (16.) Which one of the following statements is wrong?
- (a.) Algae increase the level of dissolved oxygen in the immediate environment. (b.) Algin is obtained from red algae and carrageenan from brown algae.
(c.) Agar-agar is obtained from Gelidium and Gracilaria. (d.) Laminaria and Sargassum are used as food.
- (17.) An alga which can be employed as food for human being is
- (a.) Ulothrix (b.) Chlorella
(c.) Spirogyra (d.) Polysiphonia
- (18.) Gametophytic generation in Fern is represented by
- (a.) sorus containing sporangia (b.) heart shaped prothallus
(c.) underground rhizomatous part of the plant body (d.) main plant body

- (19.) Sperms of both Funaria and Pteris were released together near the archegonia of Pteris. Only Pteris sperms, enter the archegonia as
- (a.) Pteris archegonia repel Funaria sperms (b.) Funaria sperms get killed by Pteris sperms
- (c.) Funaria sperms are less motile (d.) Pteris archegonia release chemical to attract its sperms
- (20.) The 'walking fern' is named so because
- (a.) its spores are able to walk (b.) it is dispersed through the agency of walking animals
- (c.) it propagates negatively by its leaf tips (d.) it knows how to walk by itself
- (21.) Match the items of **Column-I** with those of **Column-II**.
- | Column – I | | Column – II | |
|----------------------|--|-----------------------|--|
| (a.) Riccia fluitans | | (1) Peristome | |
| (b.) Sphagnum | | (2) Gemma cup | |
| (c.) Funaria | | (3) Aquatic bryophyte | |
| (d.) Marchantia | | (4) Bog moss | |
- Select the correct option.
- | | A | B | C | D | | A | B | C | D |
|------|---|---|---|---|------|---|---|---|---|
| (a.) | 1 | 3 | 1 | 3 | (b.) | 2 | 2 | 4 | 4 |
| (c.) | 3 | 4 | 2 | 1 | (d.) | 1 | 3 | 1 | 3 |
- (22.) Which one of the following shows isogamy with non-flagellated gametes?
- (a.) Sargassum (b.) Ectocarpus
- (c.) Ulothrix (d.) Spirogyra
- (23.) In which of the following would you place the plant having a vascular tissue and showing heterospory?
- (a.) Algae (b.) Bryophytes
- (c.) Pteridophytes (d.) Gymnosperms
- (24.) Which of the following is not true about bryophytes?
- (a.) They possess archegonia. (b.) They contain chloroplast.
- (c.) They are thalloid. (d.) They do not follow alternation of generation.
- (25.) Which one of the following is wrong about Chara?
- (a.) Upper oogonium and lower round antheridium (b.) Globule and nucleole present on the same plant
- (c.) Upper antheridium and lower oogonium (d.) Globule is male reproductive structure
- (26.) Sexual reproduction as found in Chlamydomonas involve a fusion of two cells is called
- (a.) isogamy (b.) homogamy
- (c.) somatogamy (d.) allogamy

- (27.) In which type of stele does phloem surround the xylem both externally and internally?
- (a.) Halo stele (b.) Amphiphloic siphonostele
(c.) Actinostele (d.) Ectophloic siphonostele
- (28.) Which one has the largest gametophyte?
- (a.) Selaginella (b.) Cycas
(c.) Moss (d.) Angiosperm
- (29.) Which one is amphibious in nature?
- (a.) Hydrilla (b.) Limnophila
(c.) Wolffia (d.) Polygonum
- (30.) The evolutionary important character of selaginella is
- (a.) Rhizophore (b.) Strobili
(c.) Ligule (d.) Heterosporous nature
- (31.) Which one of the following is a pteridophyte?
- (a.) Nephrolepis (b.) Ginkgo
(c.) Macrocystis (d.) Zamia
- (32.) **Assertion:** Gametophytic plant body of bryophytes dominate over sporophytic plant body.
Reason: Gametophytes produce gametes whereas sporophytes produce spores.
- (a.) Both Assertion and Reason are true and Reason is correct explanation of Assertion. (b.) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.
(c.) Assertion is true, but Reason is false. (d.) Assertion is false, but Reason is true.
- (33.) Pteridophytes differ from bryophytes in having
- (a.) Archegonia (b.) motile sperms (antherozoids)
(c.) spores (d.) presence of vascular tissues
- (34.) The product formed after conjugation in spirogyra or fertilization of chlamydomonas is
- (a.) zygospore (b.) oospore
(c.) zoospore (d.) carpospore
- (35.) A biennial plant is that which
- (a.) flowers every two years (b.) flowers every year and completes its life cycle in two years
(c.) completes its life cycle in two years (d.) completes its life cycle twice in a single year

- (36.) **Assertion:** Some thalloid forms of bryophytes are called liverworts.
Reason: The thalli of liverworts look like liver of animals.
- (a.) Both Assertion and Reason are true and Reason is correct explanation of Assertion. (b.) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.
- (c.) Assertion is true, but Reason is false. (d.) Assertion is false, but Reason is true.
- (37.) Ulothrix can be described as a
- (a.) Filamentous algae with flagellated reproductive stages. (b.) Non motile colonial algae lacking zoospores.
- (c.) Filamentous algae lacking flagellated reproductive stages. (d.) Membranous algae producing zoospores.
- (38.) An example of chlorophyllous thallophyte is
- (a.) Volvariella (b.) Nephrolepis
- (c.) Spirogyra (d.) Gnetum
- (39.) **Assertion:** Rhizoids of liverworts are unicellular.
Reason: Liverworts cannot develop multicellular rhizoids.
- (a.) Both Assertion and Reason are true and Reason is correct explanation of Assertion. (b.) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.
- (c.) Assertion is true, but Reason is false. (d.) Assertion is false, but Reason is true.
- (40.) In Pteridophytes, reduction division occurs when
- (a.) spores are formed. (b.) gametes are formed.
- (c.) prothallus is formed. (d.) sex organs are formed.
- (41.) Select the correct ones:
- (A) Phaeophyceae – Mannitol
(B) Rhodophyceae – Dictyota
(C) Chlorophyceae – non – motile gametes
(D) Rhodophyceae – r – phycoerythrin
- (a.) A, B and C (b.) B, C and D
- (c.) A and C (d.) C and D
- (e.) A and D
- (42.) **Assertion:** Sporogonia of Riccia are differentiated into foot, seta and capsule.
Reason: Sporogonia of all the bryophytes are differentiated into foot, seta and capsule. [
- (a.) Both Assertion and Reason are true and Reason is correct explanation of Assertion. (b.) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.
- (c.) Assertion is true, but Reason is false. (d.) Assertion is false, but Reason is true.

- (43.) Indusium is a characteristic feature of
- (a.) algae (b.) ferns
(c.) moss (d.) cycas
- (44.) Given below are some genus of algae. Identify the genus belonging to same class of algae.
- (a.) Chara, Fucus, Polysiphonia (b.) Volvox, Spyrogyra, Chlamydomonas
(c.) Porphyra, Ectocarpus, Ulothrix (d.) Sargassum, Laminaria, Gracilaria
- (45.) The kidney-shaped covering of sorus in Dryopteris is called
- (a.) placenta (b.) ramentum
(c.) sporophyll (d.) indusium
- (46.) **Assertion:** Bryophytes are successful land plants.
Reason: They grow successfully on land without required water.
- (a.) Both Assertion and Reason are true and Reason is correct explanation of Assertion. (b.) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.
(c.) Assertion is true, but Reason is false. (d.) Assertion is false, but Reason is true.
- (47.) Consider the following statements regarding the major pigments and stored food in the different groups of algae and select the correct options given.
- (A) In Chlorophyceae, the stored food material is starch and the major pigments are Chlorophyll-a and d.
(B) In Phaeocophyceae, laminarin is the stored food and major pigments are chlorophyll-a and b.
(C) In Rhodophyceae, floridean starch is the stored food and major pigments are chlorophyll-a, d and phycoerythrin.
- (a.) A is correct, but B and C are incorrect. (b.) A and B are correct, but C is incorrect.
(c.) A and C are correct, but B is incorrect. (d.) B is correct, but A and C are incorrect.
(e.) C is correct, but A and B are incorrect.
- (48.) **Assertion:** The leaves of Funaria are not true leaves.
Reason: The leaves of Funaria do not possess axil bud.
- (a.) Both Assertion and Reason are true and Reason is correct explanation of Assertion. (b.) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.
(c.) Assertion is true, but Reason is false. (d.) Assertion is false, but Reason is true.
- (49.) From evolutionary point of view, retention of the female gametophyte with developing young embryo on the parent sporophyte for some time, is first observed in
- (a.) mosses (b.) pteridophytes
(c.) gymnosperms (d.) liverworts
- (50.) **Assertion:** Moss protonema resembles green algae.
Reason: It develops unicellular sex organs.

- (a.) Both Assertion and Reason are true and Reason is correct explanation of Assertion.
- (b.) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.
- (c.) Assertion is true, but Reason is false.
- (d.) Assertion is false, but Reason is true.

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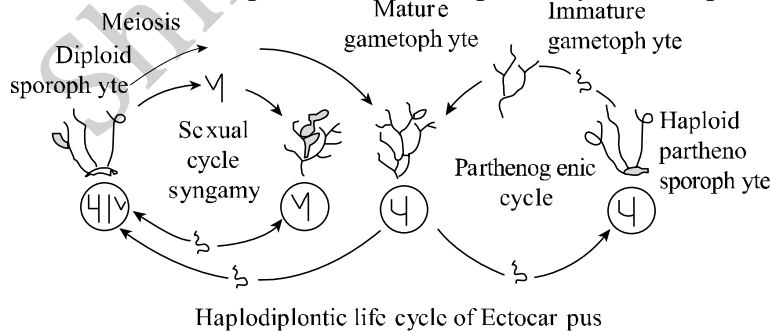
ANSWER

(1.)	a	(2.)	c	(3.)	a	(4.)	d	(5.)	b
(6.)	d	(7.)	c	(8.)	b	(9.)	b	(10.)	d
(11.)	c	(12.)	c	(13.)	a	(14.)	d	(15.)	c
(16.)	b	(17.)	b	(18.)	b	(19.)	d	(20.)	c
(21.)	d	(22.)	d	(23.)	c	(24.)	d	(25.)	c
(26.)	d	(27.)	b	(28.)	c	(29.)	b	(30.)	d
(31.)	a	(32.)	b	(33.)	d	(34.)	a	(35.)	c
(36.)	a	(37.)	a	(38.)	c	(39.)	c	(40.)	a
(41.)	c	(42.)	d	(43.)	b	(44.)	b	(45.)	d
(46.)	d	(47.)	e	(48.)	a	(49.)	b	(50.)	c

Shiksha Classes, Bhandara

EXPLANATION

- (1.) (a) Male gametophyte of cycas differs from that of angiosperms in cutting of two vegetative cells called prothallial cells and a stalk cell in reproducing a pollen tube with a tube nucleus and two ciliated motile male gametes.
- (2.) (c) Prothallus is usually a gametophytic stage in the life of a pteridophyte. Spore germinates to form a prothallium. It is a short lived inconspicuous heart shaped structure with a number of rhizoids developed beneath and sex organs, archegonium and antheridium.
- (3.) (a) The germination of haploid spores of mosses produced by sporophyte after the reduction division. These haploid spores when germinate, form the protonema. This structure later develops into an independent gametophytic plant.
- (4.) (d) Zygotic meiosis is represented in the haplontic life cycle of many algae including Chlamydomonas. In such a life cycle, all cells are haploid except zygote. This is because meiosis occurs in the zygote itself resulting in to four haploid cells that gives rise to haploid plants.
- (5.) (b) Volvox is a fresh water, green, hollow ball-like colonial alga. Its colony has a fixed number of cells (500–60000). It is called coenobium.
- (6.) (d) Sequoia sempervirens is a gymnospermic plant. It is a group of plants having thick, woody, branched stems. These plants also have some xeric adaptations which help them survive in climatic conditions. The other examples are incorrect because pteridophytes is primitive group, and no tree is included in this. Ferns are included in pteridophytes. Angiosperms are different form gymnosperms in seed habit and adaptations.
- (7.) (c) In several primitive simple plants—like algae, bryophytes and pteridophytes, water is the medium through which the male gametes are transferred to the female reproductive organ or gamete to bring about fertilization.
- (8.) (b) In Pinus, male cone bears a large number of micro-sporophylls
- (9.) (b) In gymnosperms, the endosperm is formed by the germination of megaspore. It is haploid in nature.
- (10.) (d) Peat is mainly an accumulation of partially decayed vegetation or organic matter and Sphagnum accumulations can store water, since both living and dead plants can hold large quantities of water and living matter (like meat) for long distance transport inside their cells, and hence, it is responsible for peat formation.
- (11.) (c) Heterospory; i.e., the production of two different types of spores, larger macrospores and smaller microspores is a character of evolutionary significance in pteridophytes (Selliginella), because seed habit (characteristics feature of gymnosperms and angiosperms) and differentiation of spores on the basis of sex is believed to have originated from heterosporous condition.
- (12.) (c) Ectocarpus and Fucus respectively show haplodiplontic and diplontic life cycle.



- (13.) (a) The smallest gymnosperm known so far is *Zamia pygmaea*.
- (14.) (d) Mesarch condition of xylem is common in ferns. In this condition, protoxylems are found in the middle and metaxylem on outer and inner side.

- (15.) (c) Peristome functions in the dispersal of the spores. Peristome constitutes rings of teeth like projections at the rim of the capsule of the mosses. In *Funaria*, peristome are 32 in number, arranged in two rings of 16 each, i.e., (a.) outer exosome and (b.) inner endosome.
- (16.) (b) Algin is extracted from algae named *Laminaria*. It is a hydrocolloid used in shaving creams, jellies, flameproof plastic, etc. Carrageenan is extracted from red algae like *Chondrus* and used as emulsifier and clearing agent. Thus, only option (b.) is incorrect and all other options are correct.
- (17.) (b) *Chlorella* is a good food source because it is high in protein and other essential nutrients. When dried, it contains about 45% protein, 20% fat, 20% carbohydrate, 5% fibre and 10% minerals and vitamins.
- (18.) (b) Gametophyte generations in fern is represented by heart shaped prothallus. It develops from the germination of haploid spores formed after reduction division.
- (19.) (d) In *Dryopteris* and *Pteris*, when fertilization occurs, sperms are attracted by the chemical diffusing into the water from the mucilage exuded by the open necks of archegonia of the older prothalle. Some of them make their way down the canal to the egg in the venter, and only one of these enter the egg to accomplish fertilization.
- (20.) (c) The walking fern is *Adiantum*. It is named so because its leaf tips touches the ground and sprout roots and become independent plants. So it gives impression as if it is walking.
- (21.) (d) Match the items of the Column-I with those of Column-II
- | Column – I | Column – II |
|-----------------------------|------------------------|
| (a.) <i>Riccia fluitans</i> | (c.) Aquatic bryophyte |
| (b.) <i>Sphagnum</i> | (d.) Bog moss |
| (c.) <i>Funaria</i> | (a.) Peristome |
| (d.) <i>Marchantia</i> | (b.) Gemma cup |
- (22.) (d) Isogamy it produce non flagellated spores as seen in *Spirogyra*. It can reproduce both by sexual and asexual (vegetative) means. They reproduce sexually by conjugation in which two non-flagellated, morphologically similar but physiologically different gametes (isogamous) fuse together. One filament acts as the male gamete and passes through the conjugation tube of another filament which acts as female gamete.
- (23.) (c) Pteridophytes and gymnosperms do have Vascular tissues. However, gymnosperms bear seeds while pteridophytes do not bear seeds. Algae and bryophytes do not possess vascular tissues.
- (24.) (d) Bryophytes are non-vascular cryptogams. Their main plant body is gametophytic (haploid) which is a thalloid structure. It contains chlorophyll for the process of photosynthesis. Thalloid body bears archegonia as female sex organs.
- (25.) (c) Antheridium is the male and oogonium is the female reproductive structure. They have sterile jackets on their surface. In *Chara globule* (antheridium) is present on the lower side, while the nucule (oogonium) is present on the upper side of sterile vegetative (leaf-like) structure.
- (26.) (d) In *Chlamydomonas*, hologamy involves the fusion of two young individuals directly, e.g. *C. snowiae* and isogamy involves the fusion of gametes which are similar in size, structure and physiology e.g. *C. eugamnetos*.
- (27.) (b) In amphiphloic siphonostele, the phloem rounds the xylem on both the sides, inner as well as outer. These kinds of steles are characteristics feature of primitive pteridophytes.
- (28.) (c) Of the given options, moss has the largest gametophyte. It gets reduced in the order as *Selaginella*, *cycas*, angiosperms, gametophyte begins with the haploid spore and ends with the formation of haploid gametes. Gametophyte gives rise to the sporophyte (through sexual reproduction) and sporophyte gives rise to gametophyte. As one moves from thallophyte →

bryophyte → pteridophyte → gymnosperms → angiosperms, there is development in the sporophyte and reduction in the gametophyte.

(29.) (b) Limnophylla is an algae which is amphibious in nature, i.e., it can live in water as well as on land.

(30.) (d) Heterospory is an important evolutionary character of selaginella. It means production of two types of different spores, i.e., larger macrospore and smaller microspores. The seed habit and differentiation of spores on the basis of sex is believed to have originated the heterosporous condition.

(31.) (a) Nephrolepis is a pteridophyte. Ginkgo is a gymnosperm. Microcystis is an algae. Zamia is a Gymnosperm.

(32.) (b) The gametophytic phase in bryophyte is dominant, which bears male and female reproductive structures.

(33.) (d) The Pteridophyte differ from bryophyte is having vascular or conductive tissue. It is of primitive kind. Bryophyte do not have this and absorb water from general body surface and Rhizoids.

(34.) (a) Zygospore (zygot) is the fusion of product of two gametes. It infact, represents the resting stage formed after the withdrawal of flagella and the formation of a thick wall around the freshly formed zygote. Zygospore is spherical with thick smooth or stellate wall and contains fat and a reserve food materials, other than starch. It can resist unfavourable conditions. In **Chlamydomonas**, zygospore is the resultant of isogamy, anisogamy or oogamy. Sexual reproduction occurs in spirogyra through conjugation, which may be scalariform or lateral. The resulting zygote secretes a thick wall called zygospore (having three layers thick wall diploid nucleus abundant food reserves in the form of oil and starch).

(35.) (c) A biennial plant completes its life cycle in two years, for e.g. sugarbeet, many shrubs etc.

(36.) (a) The primitive bryophytes do not have differentiated thallus. Liverworts are thalloid e.g., Riccia and marchantia, their body is liver like.

(37.) (a) Ulothrix is a green algal of class chlorophyceae. It is filamentous and produces flagellated reproduction.

(38.) (c) Spirogyra is an unbranched filamentous green thallophyte. The chloroplast is pigment containing organelle having chlorophyll-a and b. The yellow pigments are carotene and xanthophyll.

(39.) (c) The Roots are absent in bryophytes. They have root like structures. The liverworts have unicellular rhizoid.

(40.) (a) In the pteridophytic plants, the reduction division occurs at the time of spore formation. Spores germinate and form a gametophytic plant.

(41.) (c) In the members of phaeophyceae or brown algae, food is stored as complex carbohydrates, which may be in the form of Laminaria or D-mannitol. The members of Rhodophyceae are commonly called red algae because of the predominance of the red pigment r-phycoerythrin in their body.

(42.) (d) Riccia does not have differentiation of plant body, so reason is false.

(43.) (b) Indusium is found in ferns.

(44.) (b) Volvox, Spirogyra and Chlamydomonas are all green belonging to the class chlorophyceae.

(45.) (d) Indusium is a protective kidney-shaped covering of sorus present in Dryopteris.

(46.) (d) Both assertion and reason are false. Bryophytes always need water for growth and fertilization.

(47.) (e) Group Major pigment Reserve food Chlorophyceae Chlorophyll – a, b Starch
Phaeophyceae Chlorophyll – a, c Laminaria, mannitol Rhodophyceae Chlorophyll – a, d Floridean starch

(48.) (a) Both assertion and reason are true.

(49.) (b) From the evolutionary point of view pteridophytes were the first to show the retention of female gametophyte with young embryo on the parent sporophyte for some time. It also represents the origin of seed habit during the course of evolution of seed plants.

(50.) (c) Assertion is true but the reason is false because moss does not have unicellular sex organs.

Shiksha Classes, Bhandara

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