



Chapter 8

Q1. Fill in the blanks with suitable words.

1. All fungi are **heterotrophy** because these live as saprophytes, parasites, symbionts and reducers.
2. The symbiotic relationship or association between fungi and roots of higher plants is called **Mycorrhizal association**.
3. The thallus or body of a fungus is called **Mycelium** which is composed of hyphae.
4. The example of symbiotic relationship of fungi are Mycorrhizae and **lichens**.
5. Pseudo tissues produced on mycelium that give rise to new mycelium on germination is called **sclerotia**.
6. The process which involve the union of two protoplasts, bringing two haploid nuclei close together in the same cell is known as **plasmogamy**.
7. The type of sexual reproduction in which tow fusing gametes are morphologically similar is called **isogamy**.
8. **Saprolegnia parasitica** is a member of zygomycota that causes disease in carpor salmon (fish).
9. Ascospores are produced with in the fruiting body called Ascus.

Q 1. Tick () the statement if it is true and cross () if it is false. Rewrite the false statement after correcting it.

Ans.

1. In fungi there is a specific type of nuclear mitosis, which is characteristic of all fungi. ✓
2. The processes, which involve the union of two diploid nuclei, is called plasmogamy. ✗
The process, which involves the union of two haploid nuclei, is called karyogamy. ✓
3. There is complete absence of any motile reproductive structures in ascomycota. ✓
4. asci are arranged side by side in a definite layer, known as paraphyses. ✗ (Hymenium).
5. In higher forms of ascomycota, the ascogonium's consists of a lower dilated portion called trichogyn. ✗ (oogonium) ✓
6. The type sexual reproduction in ascomycota in which two differentiated cells of the haploid mycelium fuse is called somatogamy. (✗) (Two undifferentiated cells) ✓
7. Mycelium in basidiomycota is always multicular and freely branched. ✓
8. Primary mycelium in basidiomycota consists of hypae with diaryolic cells. ✗ (with monokaryotic cells) ✓
9. Reproductive structures like antheridia and archigoina are never formed in basidiomycota. ✓
10. Puccinia causes rust in cereal crops. ✓

Q 2. Choose the correct option from each statement double encircle in it.

Ans.

1. In which one of the following aspects fungi resemble plants.
(a) Presence of centiole (b) **presence of cell wall**
(c) Presence of chitin in cell wall (d) presence of chloroplast
2. The described species of fungi are about?
(a) 60,000 (b) 70,000
(c) 80,000 (d) **90,000**
3. Which of the following phyla of fungi comprises about half to the total species of fungi?
(a) zygomycota (b) **ascomycota**
(c) Fungus and fungus fungus and root of higher plants.
4. Lichen is a syonbiotic association between
(a) Alga and alga (b) **Alga and fungus**
(c) Fungus and fungus (d) Fungus and rood of higher plants.



5. The block of mycelium which are mixed with suitable substratum for sowing of mushrooms are called
 (a) sclerotia. (b) basidiocarp
(c) spawn (d) ascogonia
6. Which of the following hyphae is characterizes of zygomycota
 (a) septate and coenocytic **(b) a septate and coenocytic**
 (c) septate and dikaryotic (d) septate and monokaryotic
7. Mushrooms belong to the fungal phylum called
 (a) zygomycota (b) ascomycota
 (c) deuteromycota **(d) basidiomycota.**
8. All of the following are diseases of cereals except.
 (a) Powdery mildew (b) smut
(c) red rot (d) rust
9. Which one of the following is a water mold
 (a) rhizopus (b) aspergillus
(c) saprolegnia (d) peronospora

Question: Match the terms in Column A with their description in column B and write correct answer in Column C.

S.No	Column A	Column B	Column C
1	Spawn	A. Relationship for mutual benefit	1---C
2	Karyogamy	B. A kind of fruiting body	2---D
3	Symbiosis	C. Used for sowing of mushroom	3---B
4	Oogamy	D. Involved fusion of two haploid nuclei	4---E
5	Trichogyne	E. Fusion of stationary and a motile gamete	5---F
		F. The neck like portion of ascogonium's.	

Question: Write short answers of the following

(1): Define symbiosis.

Ans. association of two organisms belonging to different species for mutual benefit e.g. lichen is a symbiotic association of algae and fungi while mycorrhiza a symbiotic association of fungi with roots of higher plants.

(2): define the term plasmogamy and karyogamy.

Ans. Plasmogamy is a step in the sexual reproduction which involve the union of the two protoplasts bringing the two haploid nuclei close together in the same cell.

karyogamy plasmogamy is followed by karyogamy in which fusion of two haploid nuclei occur. It is the second step in sexual reproduction which result in the formation of diploid zygote.

(3): Write the names of four phyla of fungi?

Ans. (1) Zygomycota (2) Ascomycota. (3) Basidiomycota (4) Deuteromycota

(4): What do you know about ascospore and ascocarp?

Ans. Ascospore is a haploid spore produced by meiosis within the ascus of fungi belonging to the phylum ascomycota. The number of ascospores within the are normally eight.



Ascocarp is a fruiting body formed by the mycelium enclosing the ASCI. Ascocarp is of four types.

(1) Apothecium (2) perithecium (3) Hysterothecium (4) cleistothecium.

all ascomycota do not form fruit ascocarps.

in some asci are naked without ascocarps.

(1) Apothecium's is cup shaped ascocarp (2) Perithecium is flask shaped ascocarp.

(3) hysterothecium is rounded nearly closed ascocarp (4) cleistothecium is totally closed ascocarp.

(5): How can you define primary, secondary and tertiary mycelium found in basidiomycota?

Ans. Primary Mycelium:- In basidiomycota is formed by the germination of basidiospore, which is haploid and monokaryotic i.e. uninucleate.

Secondary Mycelium: Is dikaryotic i.e. binucleate formed primary mycelium as a result of plasmogamy which bring the two haploid nuclei close together in the same cell. This binucleate cell from secondary mycelium by division.

Tertiary mycelium: it is formed from secondary mycelium as a result of plasmogamy karyogamy and development of specialized tissue called sporophores or fruiting bodies. These sporophores produced spores by meiosis.

SHORT QUESTION

Q 1. What is hyphae? What is the advantage of incomplete septa?

Ans. Hyphae are long slender, branched or un-branched tubular thread like structures which make the body of fungus called Mycelium. Septum is cross wall which prevent the flow and distribution of material between individual cells of hyphae. Incomplete septa acts as pores between two cells which help in the flow of material and cytoplasm between cells of hyphae, it help in the growth of hyphae.

Q 2. What is the composition of fungal cell wall and how is this advantageous to fungi.

Ans. Cell wall in fungi is chemically made of chitin. Chitin is the chemical found in the external skeleton of arthropods. This chemical is hard and more resistant to decay than cellulose and lignin found in the cell wall of plants. It provides protection as compared to cell wall.

Q 3. What are mycorrhizae?

Ans. Mycorrhizae are symbiotic association of fungi with roots of higher plants. In this association both partners get benefit. The fungus increases the absorbing get benefit. The fungus increases the observing surface of higher plant helping the plant to absorb nutrients from the soil. While shelter is provided to the fungus by the roots of higher plant.

Q 4. By what means individuals in imperfect fungi be classified.

Ans. Imperfect fungi are heterogeneous and polyphyletic group of fungi. Their sexual reproduction is either missing or their sexual stage is not known. They are placed in their own phylum on the basis of discovery of sexual spores. They are known to produce ascospores, they are placed in ascomycota, if basidiospores, then basidiomycota and if zygospores are produced then they are placed in zygomycota. However the individuals in imperfect fungi are classified on basis of DNA sequences, when sexual reproduction is not found.

Q 5. A single characteristic that differentiate zygomycota from basidiomycota.

Ans. Zygomycota is characterized by the formation of zygospore. Zygospore is produced by the direct union of haploid hyphae called zygote. Zygote form thick walled resistant spore called zygospore. Basidiomycota is characterized by the formation of basidiospores on basidium. Nuclear fusion or karyogams occur in basidium followed by meiosis which produce haploid basidiospores.



Q 6. Why is green mold more likely to conterminal are orange kept n refrigerator than are bacteria.

Ans. Because of wide range of temperature there in fungi than bacteria, green mold can grow in low temperature in a refrigerator to contaminate orange. More over they produce conidia in chains which are easily dispersed by air which spread the fungus rapidly.

Q 7. What is fungus?

Ans. A eukaryote heterotrophy the body of which is either multicultural threat like hyphae or is unicellular and no hyphae or thread like structure are formed. The cell wall is present and made of chitin.



Chapter 9

Kingdom Plantae

A. Fill in the blanks with suitable words.

1. Perianth is reduced to 2 or 3 scales or lodicules in members of Graminae or poaceae.
2. In pinus both male and female cones lie on the same plant. Such a plant is known as Monoecious.
3. The non vascular plants and lower vascular plants require water for fertilization but in seed plants this dependency is over come by the development of pallin tube.
4. Planation and webbing are steps involved in the evolution of megaphyllous leaves.
5. The four subphyla of rachephytes are psilopsida lycopsida, sphenpside and pterposide.
6. Liverworts, Hornworts and masses belong to a group of plant kingdome called bryophytes.
7. Tracheids are water conducting cells of tracheophytes
8. In moss plants the male and female reproductive organs are termed as antheridia and archegonia respectively.

B. writes true or false. Put “T” for true and “F” for false

1. A hetrosporous plant produces one kind of spores –R. **F**
2. Bryophytes were the 1st to onigrate towards land habital. **T**
3. Mosses reproduce sexually but do not form seed. **T**
4. The fusion of two dissimilar gametes is called isogamies. **F**
5. The gamma cups containing gemmy help in a sexual reproduction are found in the thallus of liver worts. **T**
6. lycopsida belonging to treacheophta is the 1st plant with true roots and leaves. **T**
7. The family in which the perianths are reduced to 2 or 3 lodicules is Rosaceae. **F**

C. Match the Column “A” with correct words from Column B

S.No	Column A	Column B	Column B
1	Bryophytes	a. Tracheids	1 → e. Mosses
2	Psilopsida	b. Flowering plants	2 → j. Rhynia
3	Sphenopsida	c. naked seeded plants	3 → h. horse Tail
4	Lycopsida	d. lathyrus odoratus.	4 → i. Selaginella
5	Pteropsida	e. Mosses	5 → g. Ferns
6	Angiosperms	f. Mono cotyledon	6 → b. Flowering plants
7	Gymnosperms	g. Ferns	7 → c. naked seeded plants
8	Poaceae	h. horse Tail	8 → f. Mono cotyledon
9	Fabacae	i. Selaginella	9 → d. lathyrus odoratus
		j. Rhynia	

D. Multiple Choice Double encircles the correct Answer.

1. In Bryophytes the male reproductive organ is known a
(a) Stamen (b) **Antheridium's** (c) Carpel (d) Archeigonium.
2. The plant in which the seed are enclosed in fruit
(a) Caymnosperms (b) **Angiosperms** (c) Bryophytes (d) Tracheaphte
3. The flower in which both the male and female reproductive parts are present are termed as.
(a) Staminate (b) Pistilate (c) **Hermaphrodite** (d) Heterogamete



E. Write Short Question.

Q1. Define alternation of generation and give its importance.

Ans. When a gametophytic generation give rise to a sporophytic generation and a sporophytic generation give rise to a gametophytic generation. This phenomena is called alternation of generation. Alternation of generation is responsible for genetic variation and variation is essential for adaptation or adjustment to the changing environment. There fore alternation of generation is very important for survival of plants in the changing environment.

Q 2. Define heterogamy.

Ans. Heterogamy is also called oogamy and is an advanced type of sexual reproduction in which the uniting differ both morphologically and physiologically. The male gamete is sperm or anther oziad, which is small and motile, while the female gamete is egg, ovum or oosphere, which is large and non motile. The fusion of such gametes is called heterogamy.

Q 3. What is an antheridium's and Archigonium?

Ans. Antheridium's is the male gametophyte found in bryophytes, and pteridophytes. It is a club shaped structure which produce male gametes called sperm or antherozoids. Archigonium is the female gametophyte found in bryophytes, pteridophytes and some Gymnosperm.

Q 4. Give two differences between Bryophytes and Tracheophytes.

Ans. (1) All Bryophytes are nonvascular plants while all tracheophytes are vascular plants.
(2) In the life cycle of bryophytes, gametophyte is the dominant generation and sporophte depends on gametophyte. While in tracheophytes saprophyte is gametophyte is dependant small and short.

Q 5. Give three examples of sub phylum psilopsidom.

Ans. (1) Rhynia extinet (2) Psilotum - living, (3) Psilophyton (psilopsidom). (4) Tmesipeteris.

Q 6. Give three differences between angiosperms and Gymnosperms.

Ans. (1) Both are seed bearing plants but in Gymnosperms the seed are naked while in angiosperms the seed are in fruit.
(2) Angiosperms are flowering plants and double fertilization is found in their life cycle. While gymnosperms do not produce flow nor there is double fertilization being found in their life cycle.
(3) In Gymnosperms vascular bundles are xylem and phloem which consists of tracheas and sieve tubes respectively while in angiosperm.

Q 7. What is the difference between microphyllous and megaphyllous leaf?

Ans. Microphyllous leaf is a small leaf with a single vein while megaphyllous leaf is a large leaf with many veins. The term microphyllous is used for plant which bear small leaf or microphyll which bear small leaf or microphyllous while megaphyllous is used for plants with large leaves or megaphyll.

Q 8. Define actinomorphic and zygomorphic flower.

Ans. Actinomorphic are those symmetrical flowers in which could be divided into to two equal parts from more than one plane such flowers are also called radically symmetrical while zygomorphic are those bilaterally symmetrical flowers which could be divided in to two equal parts only in one plane .

Q 9. Draw floral diagram of petunia alba?

Ans.





Q 10. What are the botanical names of potato gram and apple?

Ans. Common Name

- (1) Potato (A) Solanum tuberosum
(2) Gram (B) Cicer arietinum

A. Fill in the blanks.

- The saprophyte is a **diploid** and spore **producing** generation, while gametophyte is a haploid and **gamete producing generation.**
- The motile asexual reproductive cells are characteristics of **algae (Thallophyta)** and are called **Zoospores.**
- The sexual reproduction is said to be oogamous or heterogamous if the two fusing gametes are **different both morphologically and physiologically or are sperm which is small and motile and egg which is large and non motile.**
- In the stem of monocotyledon the vascular bundles **scattered** while in the stem of dicotyledons they are **arranged in ring.**
- The double fertilization is the characteristic feature of **angiosperm.**
- Stem, roots and leave are the **vegetative** parts and flower, fruits and seed are **reproductive** parts of plants.
- Heterospory** is the phenomenon of the production two kinds of spores in the plants.
- The naked seeded plants are included in the group gymnosperm.

B. Picked and Match the following.

S.No	Matching	
1	Fern saprophyte	→ is a diploid generation
2	The moss plant	→ is gametophytic generatic
3	The gamete	→ are haploid cells
4	The pores	
5	Vegetative reproduction	→ involves vegative part.

C. Each question has four options. Double encircle the correct answer.

- All Bryophytes (Mosses, Liverworts, and hornworts) share certain characteristics. There are
 - (a) Reproductive cells in protective chambers and waxy cuticle.**
 - (b) A waxy cuticle true leaves and reproductive cells in protective champ.
 - (c) Vascular tissues and a waxy cuticle.
 - (d) Reproductive cells in protective chambers and vascular tissue.
 - (e) Vascular tissues and a waxy cuticle.
- A heterosporous plant is one that.
 - (a) Produces a gametophyte and bear both sex organs.
 - (b) Produces microspores and megaspores in separate sporangia giving rise to separate male and female gametophyte.**
 - (c) Is a seedless vascular plant.
 - (d) Produces two kinds of spores, one asexually by mitosis and one type by meiosis.'
 - (e) Reproduces only sexually.



3. The male gametophyte of an angiosperm is the
(a) Anther (b) Embryosa (c) Microspore **(d) Germinated pollen grain** (e) Ovule.
4. Important terrestrial adaptation that evolved exclusively in seed plants include all of the following except.
(a) Pollination by wind or animals instead of fertilization by swimming sperm.
(b) Transport of water through vascular tissues.
(c) Retention of gametophyte plant with in sporophyte
(d) Dispersal of new plants by seed.

D. Write Short Question.

Q1. How are fern better adapted on land then liverworts and mosses?

Ans. Ferns are tracheophytes which are provided with vascular bundles. Since they have xylem for efficient conduction of water and phloem for conduction of food therefore they are better adapted to land condition than liverworts and mosses, which are non vascular plant. Other advance feature of ferns are **(1)** Bearing root stem and leaves in their saprophyte, which the liverwort lack.
(2) Spores are produced in sporangia and sporangia are born on sporophylls and sporophylls protect the sporangia in groups called sori singular sorus bornat the margins of sporophylls.

Q 2. Which of the following is nutritionally self supporting?

- (1)** Mature liverwort and moss gametophyte
(2) Mature liverwort and moss sporophyte.

Ans. In bryophyte gametophyte is always dominant independent and nutritionally self supporting while sporophyte depends on gametophyte for nourishment. Therefore mature gametophyte of liverwort and moss their mature sporophyte.

Q 3. The chances of survival and developments of wind blown pollen grains are much less then those of spores of adiantum comments on the statements.

Ans. A wind blown pollen grain carry male gametes, and when ever it reaches female flow, it germinate and form pollen tube which is a useful instrument for the transfer of male gamete and hence it does not need water for fertilization. In this case the pollen grain has better chances of survival and development as it can transfer its sperm with out depending on water while adiantum spore will never survive and develop into a gametophyte, unless plenty of water is available more over the mature gametophyte again depends on water for transfer of its gametes. In short on land a wind blown pollen grain has much more chances of survival and development if it reach a flower but if does not reach a flower then it is wasted on then other hand a fern spore it blown by wind reach a moist shady place will have more chance of survival and development in to a gametophytes.