

**B.Sc Botany (H) Sem II**  
**Paper- CC-04**  
**Question Bank**  
By  
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**BRYOPHYTES**

**Objective type questions: -**

1. Father of Indian Bryology is:
  - a. S. K. Pandey
  - b. R. S. Chopra
  - c. S. R. Kashyap
  - d. K. L. Metha
  
2. The spore producing organ in Bryophytes is
  - a. Foot
  - b. Seta
  - c. Capsule
  - d. Archegonium
  
3. The production of sporophyte directly from a gametophyte without syngamy or sexual fusion is called
  - a. Apogamy
  - b. Apospory
  - c. Fertilisation
  - d. Apomixis
  
4. The sporophytic generation starts with the formation of .....and ends .....
  - a. Zygote, Spore mother cell
  - b. Zygote, Gametophyte
  - c. Adult, Spore mother cell
  - d. All of the above
  
5. Gametophytic generation is dominant in
  - a. Gymnosperms
  - b. Pteridophytes
  - c. Bryophytes
  - d. Angiosperms

6. Spore mother cells in Bryophytes are
  - a. Tetraploid
  - b. Diploid
  - c. Triploid
  - d. Haploid
  
7. Commonly Liverworts are
  - a. Red and thalloid
  - b. Yellow and thalloid
  - c. Colourless and thalloid
  - d. Green and thalloid
  
8. Gemma cup is found in
  - a. *Marchantia*
  - b. *Anthoceros*
  - c. *Sphagnum*
  - d. *Riccia*
  
9. Female sex organs in *Marchantia* are borne in
  - a. Elateropore
  - b. Sterile tissue
  - c. Antheridiophore
  - d. Archegoniophore
  
10. Male sex organs in *Marchantia* are borne on
  - a. Rhizophore
  - b. Elateropore
  - c. Antheridiophore
  - d. Archegoniophore
  
11. Formation of elaters is characteristic of
  - a. *Riccia*
  - b. *Anthoceros*
  - c. *Funaria*
  - d. *Marchantia*
  
12. *Anthoceros* is commonly known as
  - a. Bladderworts
  - b. Stoneworts
  - c. Hornworts
  - d. Liverworts

13. In *Anthoceros*, thallus contain colonies of an alga belonging to the genus
- Volvox*
  - Chlorella*
  - Oscillatoria*
  - Nostoc*
14. Pseudoelaters are characteristics of the sporophyte of
- Funaria*
  - Marchantia*
  - Anthoceros*
  - Polytrichum*
15. *Sphagnum* belongs to the order
- Sphagnales*
  - Andreales*
  - Polytrichales*
  - Marchantiales*
16. Peat moss is the common name of
- Funaria*
  - Andreaea*
  - Pogonatum*
  - Sphagnum*
17. Peristome teeth is present in
- Funaria*
  - Sphagnum*
  - Anthoceros*
  - Pellia*
18. Retort cells present in
- Porella*
  - Sphagnum*
  - Funaria*
  - Anthoceros*
19. The capsule of the hepaticopsida is devoid of
- Elater
  - Columella
  - Apophysis
  - Pseudoelater

20. *Funaria* is a bryophyte because
- It lacks vascular tissue
  - It lacks seeds
  - It has multicellular and jacketed sex organs
  - All of the above
21. Elaterophore helps in dehiscence of spores in
- Pellia*
  - Anthoceros*
  - Funaria*
  - Marchantia*
22. The number of venter canal cell in the Bryophytes are always
- 1
  - 2
  - 3
  - 4
23. In *Funaria*, the leaves are arranged on the stem
- Spirally
  - Oppositely
  - Alternately
  - None of the above
24. Sporophyte of Liverworts is
- Fully dependent on gametophyte
  - Fully independent
  - Partially dependent on gametophyte
  - Partially independent
25. Which of the following groups of plants is regarded as the amphibians of the plant kingdom?
- Algae
  - Fungi
  - Bryophyta
  - Pteridophyta

**Answers:**

- 1- c, 2- c, 3- b, 4- a, 5- c, 6- b, 7- d, 8- a, 9- d, 10- c, 11- d, 12- c, 13- d, 14- c, 15- a, 16- d,  
17- a, 18- b, 19- d, 20- d, 21- a, 22- a, 23- a, 24- a, 25- c.

**I. Write short notes on following:**

- a. Role of Bryophytes in ecological succession
- b. Role of Bryophytes in medicine
- c. Role of Bryophytes in soil conservation
- d. Role of Bryophytes as a source of food.
- e. Peat and its uses
- f. Smooth walled and tuberculated rhizoids
- g. Gemma cup
- h. Apospory
- i. Elater
- j. Pseudoelater
- k. L. S. of *Anthoceros* capsule (Only labelled diagram)
- l. Protonema
- m. Juvenile stage
- n. Pseudopodium
- o. Structure of leaf in *Sphagnum*
- p. Economic importance of *Sphagnum*
- q. Ecological significance of *Sphagnum*
- r. T. S. of moss stem
- s. V. S. of leaf of *Funaria*
- t. Peristomial teeth
- u. Mechanism of dehiscence of capsule in *Funaria*.

**II. Long Answer Questions:**

1. Give a detailed account of economic importance of Bryophytes.
2. Describe the characteristic features and classification of Liverworts.
3. Describe giving examples the vegetative reproduction and perennation found in Liverworts.
4. Describe the various methods of vegetative reproduction in Hepaticae.
5. List the distinctive features of class Hepaticopsida.
6. Describe the morphological and internal structure of gametophytic thallus of *Marchantia*.
7. With suitable diagrams, explain the structure and function of gemmae in *Marchantia*.
8. With the help of labelled diagrams, describe the life cycle of *Marchantia*.
9. With diagram, describe the life cycle of *Riccia*.
10. Describe the structure and development of sporophyte of *Anthoceros*. Mention its advanced characters.
11. With the help of labelled diagram only, draw the life cycle of *Anthoceros*.
12. Describe the structure of the gametophyte of *Sphagnum* with the help of suitable diagrams.
13. Give an illustrated account of the sporophyte of *Sphagnum* and the mechanism of dehiscence of its capsule.
14. Describe the life cycle of *Sphagnum* with suitable diagrams.
15. What is meant by alternation of generation? Explain it with the life cycle of *Funaria*.
16. What is protonema? What is the role of protonema in the life cycle of moss plant?

17. Give the structure and development of sporophyte in *Funaria*.

### **PTERIDOPHYTES**

#### **OBJECTIVE TYPE QUESTION**

1. Seed habit originated in
  - a. Algae
  - b. Fungi
  - c. Bryophytes
  - d. Pteridophyte
2. If all the spores are of same size and shape the plant is said to be as
  - a. Aposporous
  - b. Homosporous
  - c. Heterosporous
  - d. None
3. Spores of pteridophytes are
  - a. Haploid
  - b. Diploid
  - c. Triploid
  - d. Tetraploid
4. Telome theory was proposed by
  - a. Eanaes
  - b. Zimmermann
  - c. Mehta
  - d. Sahni
5. Rhynia was first discovered from
  - a. India
  - b. America
  - c. China
  - d. Holland
6. Which of the following is the fossil pteridophyte of the middle Devonian period ?
  - a. Lycopodium
  - b. Rhynia
  - c. Selaginella
  - d. Equisetum
7. Protostelic stem is present in
  - a. Selaginella
  - b. Equisetum
  - c. Pteris
  - d. Rhynia

8. A siphonstele with leaf and branch gap is called
  - a. Protostele
  - b. Haplostele
  - c. Solenostele
  - d. Actinostele
9. In selaginella the spores are
  - a. Homosporous
  - b. Heterosporous
  - c. Both a and b
  - d. None of the above
10. Spike moss is the common name of
  - a. Lycopodium
  - b. Selaginella
  - c. Equisetum
  - d. Pteris
11. Carinal canals are found in stem of
  - a. Pteris
  - b. Equisetum
  - c. Selaginella
  - d. Psilotum
12. The spores with elaters are found in
  - a. Selaginella
  - b. Pteris
  - c. Equisetum
  - d. Rhynia
13. Stellar theory was proposed by
  - a. Sachs
  - b. Van tieghem and douliot
  - c. Foster and Gifford
  - d. DD Pant
14. The sorus in pteris is
  - a. Discontinuous and circular
  - b. Discontinuous and reniform
  - c. Discontinuous and vermiform
  - d. Continuous and linear
15. In which of the following a sporangium has 48 spores in it ?
  - a. Psilotum
  - b. Selaginella
  - c. Equisetum
  - d. Pteris

16. The cap cell or opercular cell is present in the antheridium of
- Lycopodium
  - Selaginella
  - Equisetum
  - Pteris
17. Three chambered sporangium is present in
- Pteris
  - Selaginella
  - Psilotum
  - Equisetum
18. The presence of a fungus is essential for the development of prothallus in
- Psilotum
  - Selaginella
  - Lycopodium
  - Equisetum
19. Rhynia was discovered by
- Arnold
  - Kidston and lang
  - Campbell
  - Birbal sahani
20. Which of the following is a leptosporangiate character?
- Sessile sporangia
  - High spore production
  - Presence of stomium
  - Single layered sporangial jacket

**ANSWER :-**

1-d,2-b,3-b,4-b,5-d,6-b,7-d,8-c,9-b,10-b,11-b,12-c,13-b,14-d,15-d,16-d,17-c,18-a,19-b,20-d.

Write short notes on the following:

- A. Synangium in the psilotum
- B. Prothallus of psilotum
- C. Rhizophore
- D. Trabeculae and ligule
- E. Heterospory and seed habit
- F. Economic importance of selaginella
- G. Xerophytic and hydrophytic characters of equisetum
- H. Pteris prothallus
- I. Mechanism of sporangial dehiscence and spore dispersal in pteris
- J. Sori
- K. Economic importance of pteridophytes
- L. Importance of heterospory
- M. Apospory
- N. Apogamy
- O. Strobillus
- P. Siphonostele

Long answer questions:

1. Give a brief account of the salient features of psilophytales and discuss the systematic position of rhynia.
2. Describe the sporophytic plant body of rhynia
3. Describe the vegetative structure of the sporophyte of psilotum.
4. Write about the spore producing organs of selaginella.
5. Write down habit and morphology of selaginella, why xerophytic spp. Of the plant are called "resurrection plant".
6. Describe the development of the female gametophyte in the selaginella with the help of suitable diagram .
7. Describe the sporophytic plant body of equisetum .
8. with diagram describe the gametophyte stage of prothallus of equisetum.
9. Describe the internal structure of the internode of the aerial stem of equisetum.
10. Describe the structure organization of the cone of of equisetum with suitable diagram.
11. Describe the morphology of sporophyte in pteris ?
12. Describe the structure and development of the archegonium and antheridium in pteris?
13. With diagram describe the life cycle of pteris?
14. What is heterospory? Describe the development of embryo in any heterosporous pteridophyte studied by you .

15. What is apospory? Explain it giving suitable examples.
16. What is apogamy? Give its special feature and describe various factors that affect this phenomenon in pteridophytes.
17. With the help of diagrams explain the evolution of the stele in pteridophytes

## GYMNOSPERM

Objective type questions:

1. The anatomical features of Cycas leaflet indicates that Cycas is a
  - a) Xerophyte
  - b) Mesophyte
  - c) Hydrophyte
  - d) Amphibious
2. Gridling leaf traces are the characteristic feature of the stem of
  - a) Cycas
  - b) Pinus
  - c) Ephedra
  - d) Gnetum
3. What could be the best function attributable to the transaction tissue seen in Cycas leaflets?
  - a) Storage
  - b) Mechanical
  - c) Photosynthetic
  - d) Conduction
4. Which of the following is not the characteristic feature of Cycas?
  - a) Circinate vernation of foliage leaves
  - b) Presence of arm parenchyma
  - c) Presence of motile antherozoid
  - d) Absence of vessels in xylem
5. The armed parenchyma in Cycas helps in
  - a) Photosynthesis
  - b) Mechanical support
  - c) Increasing the absorptive surface of the cell
  - d) To check excess of transpiration
6. The ovuliferous scale of Pinus is a part of
  - a) Megasporophyll
  - b) Microsporophyll
  - c) Ovule
  - d) Dwarf shoot
7. The mesophyll tissue in Pinus is called
  - a) Armed parenchyma

- b) Chlorenchyma
  - c) Spongy parenchyma
  - d) Transfusion tissue
8. The wing on the seed of *Pinus* is developed from
- a) Integument
  - b) Nucellus
  - c) Carpellary scale
  - d) Ovuliferous scale
9. The anatomy of *Pinus* needle shows the feature of the
- a) Mesophyte
  - b) Xerophyte
  - c) Hydrophyte
  - d) Epiphyte
10. In *Pinus* needle , the tissue subtending the epidermis has the function
- a) Photosynthesis
  - b) Protection
  - c) Mechanical strength
  - d) Conduction
11. In *Pinus*,leaves are of two types
- a) Prophylls and cataphylls
  - b) Sheath and cataphylls
  - c) Spurs and sheaths
  - d) None of the above
12. Pollination of *Pinus* is
- a) Anemophilous
  - b) Hydrophilus
  - c) Zoophilous
  - d) Cheriopterous
13. *Cycas revoluta* is widely grown as a
- a) Medicinal plant
  - b) Ornamental plant
  - c) Oil- yielding plant
  - d) Timber yielding plant
14. Inverted omega shaped ring of vascular bundles are found in
- a) Rachis of *Cycas*
  - b) Leaflet of *Cycas*
  - c) Root of *Cycas*
  - d) Leaves of *Pinus*
15. Which of the following gymnosperm contains winged pollen grains?
- a) *Cycas*
  - b) *Pinus*
  - c) *Ephedra*

- d) Gretum
16. In gymnosperm, the archaegonia lack
- a) Neck canal cells
  - b) Venter canal cells
  - c) Egg cell
  - d) Neck cell
17. The resin duct in Pinus stem represents a
- a) Schizogenous cavity
  - b) Lysigenous cavity
  - c) Intercellular space
  - d) Large vacuole
18. In gymnosperm, endosperm is
- a) Diploid
  - b) Haploid
  - c) Triploid
  - d) Tetraploid
19. "Resin" is obtained from
- a) Pinus
  - b) Cycas
  - c) Gretum
  - d) Ginkgo
20. "Gretum" when not in flowering, can be easily mistaken for a
- a) Tree fern
  - b) Dicot plant
  - c) Monocot plant
  - d) Thalloid plant

Answers:

1-a, 2-a, 3-d, 4-b, 5-a, 6-a, 7-a, 8-d, 9-b, 10-c, 11-a, 12-a, 13-b, 14-a, 15-b, 16-a, 17-a, 18-b, 19-a, 20-b

Write short notes on the following:

- a) Microsporophyll of cycas
- b) Mature ovule of Cycas
- c) Transfusion tissue
- d) Leaflet of Cycas
- e) T.S. of coralloid root of Cycas
- f) Polyembryony
- g) Bars of Sanio
- h) Medullary rays
- i) Seeds of Pinus

- j) Xerophytic characters of Pinus
- k) Economic importance of Pinus
- l) Angiospermic characters of Gnetum

Long answer questions:

1. Describe briefly the habit, habitat and external morphology of Cycas.
2. Describe the secondary growth in Cycas stem with the help of suitable diagram.
3. Describe the post fertilization changes in the ovule of Cycas.
4. Explain giving suitable reasons why Cycas is included in gymnosperms. Why is it called a living fossil?
5. Describe the female gametophyte of Cycas with diagram.
6. Draw the internal structure of Pinus needle and point out the xerophytic features.
7. Give a comparative account of male gametophytes of Cycas and Pinus.
8. Describe the development of female gametophyte in Pinus. How does it differ from that of angiosperm?
9. Explain the structure of male cone of Pinus with the help of labeled diagram.
10. Describe with diagram development of the embryo of Pinus.
11. With the help of diagrams only bring out the structure of the following:-
  - i. Mature pollen grains of Pinus
  - ii. L.S of male strobilus of Pinus
  - iii. L.S of ovule of Pinus
  - iv. L.S. of dwarf shoot of Pinus
  - v. R.L.S and T.L.S of Pinus wood.
12. Describe the internal structure and secondary growth in the stem of Gnetum.
13. Describe with diagram morphology of Gnetum.
14. With diagram, describe the male gametophyte of Gnetum
15. Describe the structure of female Strobilus of Gnetum and give details of the development of female gametophyte.
16. Describe advanced features seen in the male flower in Gnetum.