

Please check whether you have got the right question paper.

- N.B:
1. All Questions are compulsory.
 2. Figures to the right indicate full marks.
 3. Draw neat labeled diagrams wherever necessary.

Q.1 Attempt any two:

- a) Describe the internal structure of *Marchantia* thallus. Add a note on its systematic position.
- b) With the help of neat labeled diagram explain sporophyte of *Marchantia*.
- c) Discuss in detail the evolution of sporophyte in Bryophytes.
- d) Explain the structure of antheridiophore of *Marchantia*.

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Q.2 Attempt any two:

- a) With the help of neat labeled diagram explain T.S. of stem of *Equisetum*.
- b) Discuss evolution of sori in Pteridophytes.
- c) Describe external morphology of *Marsilea*. Add a note on its systematic position.
- d) Explain in detail general characters of Calamophyta.

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Q.3 Attempt any two:

- a) What is genomic library? Describe the construction of a genomic DNA library.
- b) Explain the steps involved in construction of c-DNA library.
- c) Describe restriction mapping and its construction with suitable examples.
- d) Discuss in detail the process of southern hybridization.

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Q.4 Attempt any two:

- a) Explain the Maxam and Gilbert's method of DNA sequencing.
- b) Describe the present status of DNA barcoding in plants.
- c) Discuss the technique of Polymerase chain reaction of amplification of DNA.
- d) Give a brief account of *rbcl* gene sequence in barcoding. Add a note on advantages of DNA barcoding.

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Q.5 Attempt any three:

- a) Gemma cup
- b) L.S. of *Equisetum* cone
- c) *Calamites* leaf
- d) Probes
- e) Applications of DNA sequencing
- f) Importance of *matK* gene sequence in barcoding

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