Q.P. Code :01699

[Time: Two & Half Hours] **[Marks:75]**

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: 15

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*.

Q.2 Attempt any two: 15

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.

Q.3 Attempt any two: 15

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.

Q.4 Attempt any two: 15

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 *rbc*L gene sequence in barcoding. Add a note on advantages of DNA barcoding.

Q.5 Attempt any three: 15

a) Gemma cup

b) L.S. of *Equisetum* cone

c) *Calamites* leaf

d) Probes

e) Applications of DNA sequencing

f) Importance of *mat*K gene sequence in barcoding