

## FOURTH SEMESTER M.Sc. DEGREE EXAMINATION, APRIL 2022

(Regular/Improvement/Supplementary)

## BOTANY

## FBOT4E04 - MOLECULAR BIOLOGY AND PHYTOCHEMISTRY

Time: 3 Hours

Maximum Weightage: 30

**Part A: Answer any *four* questions. Each carries *two* weightage.**

1. What is meant by repetitive DNA? Give examples.
2. Briefly mention the features of chloroplast DNA.
3. Elaborate on Absorption Spectra.
4. Define self incompatibility in plants.
5. Write a note on molecular aspects of pollen recognition.
6. What are neutraceuticals? Give examples.
7. Explain density gradient centrifugation and its uses.

**(4 × 2 = 8 weightage)****Part B: Answer any *four* questions. Each carries *three* weightage.**

8. Give a brief overview of nuclear genome organization in plants. Add a note on organization of single copy genes.
9. Describe briefly the application of Beer-Lambert law in a Colorimeter.
10. Explain the principle and working of HPLC.
11. How subcellular fractionation is achieved using centrifugation techniques?
12. Write a short essay on the nuclear control of photosynthesis.
13. Discuss about the genetic control of totipotency and tissue differentiation.
14. Explain the principle and applications of spectroscopy.

**(4 × 3 = 12 weightage)****Part C: Answer any *two* questions. Each carries *five* weightage.**

15. What is gene silencing? Explain the expression regulation mechanisms in plants.
16. What are secondary metabolites? Give a detailed account of plant secondary metabolites with examples.
17. Give a detailed account of the techniques employed for the extraction of phytochemicals.
18. What are transposons? Explain their molecular nature and behaviour. Add a note on their role in genome evolution.

**(2 × 5 = 10 weightage)**