PG Even Semester Exam, 2024

Biotechnology

4th Semester

COURSE NO. BTYCC – 652

[Plant Biotechnology, Animal Biotechnology and Applications of Genetic Engineering]

Full Marks : 70
Pass Marks : 28

Time : 3 hours

The figures in the margin indicate full marks for the questions

Answer five questions, taking one from each Unit

UNIT-I

1. What is somaclonal variation? Discuss the factors responsible for somaclonal variation. Describe the *in-vitro* technique for developing a disease resistant plant against a toxin-producing bacterial pathogen. 2+6+6=14
2. Describe the processes involved in commercial production of metabolitics. Describe the applications and the limitations of metabolite production using *in-vitro* techniques. 6+8=14

UNIT-II

3. What is a vector? Describe the process of construction of cointegrate vector and recombinant Ti plasmid for development of transgenic plants. 2+12=14
4. Write down the methods used for development of herbicide, stress and virus resistant plants with suitable examples. 14

UNIT-III

5. What is QTL? Write down the procedure of QTL mapping with suitable diagrams. Discuss the applications of QTL mapping in plant improvement. 2+8+4=14
6. Define SNPs. Discuss the methods of SNP genotyping. Write a note on the applications of SNPs in plant and animal improvement. 2+8+4=14

UNIT-IV

7. Describe the process of pharmaceutical development. Write a note on different types of vaccines, their advantages and disadvantages. 3+11=14
8. Write short notes on: 3.5x4=14
   a. Pest-resistant transgenic plant
   b. Vegetable vaccine
   c. DNA fingerprinting and application
   d. Plantibodies.

UNIT-V

9. What is a patent? Discuss the chief requirements for the grant of a patent. Write a note on the process of patent application filing in India. 2+6+6=14
10. Write short notes on : 7x2=14
    a. Human genome project and its applications.
    b. Patenting of rice gene Xa-21

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