



K23P 1373

Reg. No. :

Name :

III Semester M.Sc. Degree (C.B.S.S. – Reg./Supple./Imp.)

Examination, October 2023

(2020 Admission Onwards)

BOTANY

BOT3E02 : Genetic Engineering

Time : 3 Hours

Total Marks : 60

Instruction : Draw diagrams *wherever* necessary.

SECTION – A

1. a) Highlight the importance of technological innovations in food science.

OR

b) Discuss the achievements of Agri-biotech ventures in India.

2. a) Describe the process and applications of *invitro* gene expression in plants.

OR

b) Discuss the mechanism of the direct and indirect gene transfer methods.

(2×8=16)

SECTION – B

Answer **any two**.

3. a) Highlight the difference between Ti and Ri plasmids.

b) Why is *Agrobacterium tumifaciens* referred as the nature's genetic engineer ?

c) Why was it necessary to modify the mechanism for gene transfer to monocots ?

(1+2+3)

4. a) Expose the difference between Southern and Northern blotting techniques.

b) Explain the mechanism of Southern blotting.

c) Highlight the difference between radioactive and non-radioactive labelling.

(1+2+3)

P.T.O.



5. a) What is a genomic library ?
b) Explain the essential requirements for storing the DNA in genomic libraries.
c) How is the DNA retrieved from the libraries for experimental purposes ? (1+2+3)
(2×6=12)

SECTION – C

Answer **any six**.

6. Elucidate the intention behind the development of Golden rice.
7. What are transposons ? What is transposon tagging ?
8. What is the relevance of enzyme immobilization ?
9. Highlight the difference between gene cloning and expression vectors.
10. Discuss the principle behind the development of vaccines.
11. Why is the public worried about GMO food and organisms ?
12. Explain the nomenclature of restriction enzymes.
13. How can genes be synthesized artificially ? What is the purpose of doing so ?
(6×3=18)

SECTION – D

Answer **any seven**.

14. When is an organism said to be transgenic ?
15. What is microinjection ?
16. What is Spirulina used for ?
17. What is Bio-farming ?
18. What is a glucometer ?
19. Define 'Monoclonal antibody'.
20. What are binary vectors ?
21. Why adaptors are considered better than linkers ?
22. What is the expansion of SSR and ISSR ?
23. What is blue rose ?
(7×2=14)