



QP CODE: 26019202



26019202

Reg No :

Name :

M.Sc DEGREE (CSS) EXAMINATION, MARCH 2026

Fourth Semester

M Sc BOTANY

**ELECTIVE - BY800402 - GENETIC ENGINEERING, GENOME EDITING AND
IMMUNOLOGY**

2019 Admission Onwards

02583B89

Time: 3 Hours

Weightage: 30

Part A (Short Answer Questions)

*Answer any **eight** questions.*

Weight 1 each.

1. Define ligases. Mention its application in rDNA technology.
2. What are the requirements of transformation reaction?
3. What is a genomic library?
4. Which approach of genome editing is suitable for creating additions and deletions in a specified gene?
5. What is ZFN?
6. What is liposome and what is its use in gene therapy?
7. What are the major industrial applications of biosensors?
8. Write a note on Antigen Presenting Cells.
9. Write a brief account of Effector T cells.
10. Mention the risks associated with attenuated or killed whole organism vaccines.

(8×1=8 weightage)

Part B (Short Essay/Problems)

*Answer any **six** questions.*

Weight 2 each.

11. Comment on site-specific recombinases in genetic engineering.
12. Give a comparative account of λ and M13 Phage vector.





13. How does insertional inactivation of an enzyme used as a selectable marker to differentiate recombinants from non-recombinants?
14. Explain how site specific recombination can be used in gene silencing with the help of an example.
15. Briefly discuss the different strategies used in developing herbicide tolerance in crops. Add a note on its environmental impact.
16. Comment on the features of gene augmentation therapy.
17. Compare innate immunity and acquired Immunity.
18. Explain the important functions of the Complement system.

(6×2=12 weightage)

Part C (Essay Type Questions)

*Answer any **two** questions.*

Weight 5 each.

19. Illustrate and explain the techniques for locating and isolating a gene from a library by *in situ* hybridization.
20. Explain different types of gene silencing technologies and their applications.
21. Discuss the role of GM microbes in the field of food, agriculture and medicine.
22. Write an essay on the applications of protein engineering.

(2×5=10 weightage)

