

**Note:**

1. Attempt **all** questions.
2. **All** questions carry **equal** marks.
3. Draw **neat labelled diagrams** wherever necessary.
4. For **Q 2, Q 3 and Q 4** attempt A and B **OR** C and D.

**Q.1 Do as directed: (Any fifteen)****15**

1. Name one biotechnology company of Indian origin.
2. Name one rDNA product meant for human therapeutic use.
3. State true or false. : Alexander Fleming discovered penicillin.
4. Explain the term Biotechnology.
5. Name any one Centre of Excellence in Biotechnology, established by the Government of India.
6. What is Green Biotechnology?
7. Name any one traditional fermented product.
8. What is meant by 'GM food'?
9. Name a bacterium used for plant transgenesis.
10. State true or false: Cry protein disrupts the digestive process in insects.
11. Name a company involved in producing 'Bt crops'.
12. Name a virus used for transfer of transgene to plants
13. State the significance of GM tomato.
14. Give significance of molecular Pharming.
15. What is food rheology?
16. Which is the starter culture used in production of ethanol
17. Give an example of a fungus used in fermentation technology
18. Write any one Stage of vinegar production
19. Name any one method of food processing
20. What is fermentation technology?

- Q 2 A** Discuss the policy initiatives taken by the Government of India to boost the growth of Biotechnology in the country. **08**
- Q 2 B** Discuss Scope of Biotechnology. **07**
- OR**
- Q 2 C** Explain what is traditional Biotechnology with respect to modern Biotechnology **08**
- Q 2 D** Illustrate the interdisciplinary nature of Biotechnology with the help of a diagram. **07**
- Q 3 A** Discuss: edible vaccines and plantibodies. **08**
- Q 3 B** Elaborate on 'Intellectual Property Rights'. **07**
- OR**
- Q 3 C** Discuss: Bt cotton. **08**
- Q 3 D** Elaborate on transgenic plant genetically engineered to synthesize of beta carotene. **07**
- Q 4 A** Using Fermentation technology, Schematically describe production of citric acid **08**
- Q 4 B** Discuss applications of Biotechnology in improvement of food quality. **07**
- OR**
- Q 4 C** Using Fermentation technology, Schematically describe production of any one enzyme studied by you **08**
- Q 4 D** Discuss the role of microorganisms in food production. **07**
- Q.5 Write Short notes on: (Any Three) 15**
- Plant Biotechnology.
  - Public perception of Biotechnology.
  - GM papaya.
  - Ethical issues associated with GM technology.
  - Causes of Food Deterioration.