

**2023/TDC(CBCS)/ODD/SEM/  
BTCHCC-502T/280**

**TDC (CBCS) Odd Semester Exam., 2023**

**BIOTECHNOLOGY**

**( Honours )**

**( 5th Semester )**

**Course No. : BTCHCC-502T**

**( Recombinant DNA Technology )**

**Full Marks : 50**

**Pass Marks : 20**

**Time : 3 hours**

*The figures in the margin indicate full marks*

*for the questions:*

**SECTION—A**

**Answer ten questions, selecting any two from each**

**Unit :**

**2×10=20**

**UNIT—I**

- 1. What are properties of a plasmid?**
- 2. Write about alkaline phosphatase.**
- 3. Write down the principle of RT-PCR.**

UNIT-II

- 4. Define restriction modification system.
- 5. Write about northern hybridization.
- 6. Write a note on restriction mapping.

UNIT-III

- 7. What do you mean by DNA fingerprinting?
- 8. What are ES cells?
- 9. Write down the applications of genetic engineering in animals.

UNIT-IV

- 10. What do you mean by gene shuffling?
- 11. Define primer extension.
- 12. Write down the applications of chimeric proteins.

UNIT-V

- 13. What is T-DNA?
- 14. Write about crown gall disease.
- 15. Write a note on *Agrobacterium rhizogenes*.

SECTION-B

Answer five questions, selecting one from each Unit : 6x5=30

UNIT-I

- 16. Give an account of restriction enzymes. Add a note on ligases. 4+2=6
- 17. Write short notes on the following : 3+3=6
  - (a) PCR
  - (b) Microinjection

UNIT-II

- 18. Write down the procedure of southern blotting technique. Add a note on the applications of southern blotting. 4+2=6
- 19. Write a note on cDNA library. What is reverse transcription? 4+2=6

UNIT-III

- 20. With the help of a suitable example, describe the production of human hormone using genetic engineering. 6
- 21. Write a note on transgenic mice. How can ES cells be used for gene targeting in mice? 2+4=6

UNIT—IV

22. Write a note on PCR-based method of site directed mutagenesis. 6
23. Write short notes on the following : 3+3=6
- (a) Random mutagenesis
  - (b) Production of chimeric proteins

UNIT—V

24. Write down the methods of direct DNA transfer to plants. 6
25. Write about *Agrobacterium*-mediated gene transfer in mice. 6

UNIT—III

Write a note on transgenic mice. How can ES cells be used for gene targeting in mice?

Write a note on the production of human hormones using the production of human hormones using genetic engineering.

Write a note on the help of a suitable example describe the production of human hormones using genetic engineering.