PG Even Semester Examination, May 2025

LIFE SCIENCE & BIOINFORMATICS

2nd Semester

Course No. : LS - 551

(Biotechnology)

Full Marks : 70

Pass Marks : 28

Time : 3 hours

The figures in the margin indicate full marks for the questions

(Answer all questions)

1. What are cloning vectors? Write a detail account on pBR322 and pUC vector. [2+12= 14]

OR

2. Write short notes on the following: [7x2=14]
   (a) Types of restriction endonucleases
   (b) Recombinant insulin production

3. Define HAT medium. Describe with suitable diagram how media can be modulated to procure monoclonal antibodies? [4+10= 14]

OR

4. Write short notes on the following: [7x2=14]

   (a) Primary cell culture and continuous cell line

   (b) Basic composition of animal cell culture medium

5. What are the key steps involved in developing haploid and doubled haploid plants through anther culture? What role does haploid culture play in producing genetically uniform plant populations for research and commercial uses? [10+4= 14]

OR

6. How can somaclonal variation be detected and analyzed at the cytological level? How is somaclonal variation used to introduce novel traits in crops? [8+6= 14]

7. Explain the basic concepts of environmental biotechnology and discuss its role in the context of United Nations Sustainable Development Goals? [14]

OR

8. Answer the following: [7+7=14]

   (a) Differentiate between in situ bioremediation and ex situ bioremediation.

   (b) What is phytoremediation? Write a note on phytoremediation.

9. Discuss the process of Molecular Docking. Add a note on drug likeness property. [7+7=14]

OR

10. Write short notes on the following: [3.5x4=14]

    (a) FASTA

    (b) PDB

    (c) NCBI

    (d) GenBank

★★★