

**VINAYAKA MISSION'S RESEARCH FOUNDATION  
(DEEMED TO BE UNIVERSITY), SALEM**

**B.PHARM. DEGREE EXAMINATION – July 2021  
Sixth Semester**

**PHARMACEUTICAL BIOTECHNOLOGY**

Time : Three hours

Maximum: 75 marks

I. Write essays on any **TWO** questions: (2 x 10 = 20)

1. Explain the techniques of immobilization of enzymes.
2. Biotransformation for synthesis of chiral drugs and sterols.
3. PCR and its application.

II. Write short answers on any **SEVEN** questions: (7 x 5 = 35)

4. Gene cloning strategies.
5. Hepatitis 'B' vaccine.
6. Hybridoma technology.
7. Western blotting.
8. Bioreactors of immobilized cells.
9. CDNA.
10. Functions of MHC.
11. Storage of whole Human blood.
12. Production of Insulin by rDNA technology.

III. Write short notes on: (10 x 2 = 20)

13. Define – Immobilization.
14. Types of Biosensors.
15. Restriction endonucleases.
16. DNA gyrase and DNA Ligase.
17. Down streaming process.
18. Live bacterial vaccines.
19. Steps involved in bioprocess of Glutamic acid.
20. Difference between Prokaryotic and Eukaryotic cells.
21. Advantages of stirred tank Fermenter.
22. Define Biological Indicators.

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