

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

**B.PHARM. DEGREE EXAMINATION – JULY 2019  
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 applications

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. Function 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 prokaryotics and eukaryotic
21. Advantages of stirred tank fermenter
22. Define biological indicators

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