

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

**B.PHARM. DEGREE EXAMINATION – JANUARY 2020
Sixth Semester**

PHARMACEUTICAL BIOTECHNOLOGY

Time : Three hours

Maximum: 75 marks

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

1. Define rDNA. Explain the basic principles of genetic engineering.
2. Explain gene transfer in microbial genetics.
3. Describe in detail about general requirements of fermentation process.

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

4. Methods of enzyme immobilization.
5. Working principle of PCR.
6. Types of immunity.
7. Write a note on transposons.
8. Storage of whole human blood.
9. Southern blotting.
10. Application of biotransformation.
11. Hypersensitivity reaction.
12. Write a note on cloning vectors.

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

13. Define enzyme.
14. Define biosensor.
15. Define protein engineering.
16. Industrial use of protease.
17. Industrial use of amylase.
18. Define vaccines.
19. Define toxoid.
20. Define bioreactor.
21. Expand ELISA.
22. Define mutant.
