

**Rajiv Gandhi University of Health Sciences, Karnataka**  
**Sixth Semester B. Pharm Degree Examination – 15-Nov-2023**

**Time: Three Hours**

**Max. Marks: 75 Marks**

**PHARMACEUTICAL BIOTECHNOLOGY**  
**Q.P. CODE: 5027**

Your answers should be specific to the questions asked.  
Draw neat labeled diagrams wherever necessary.  
All the Questions are compulsory.

**LONG ESSAYS**

**2 x 10 = 20 Marks**

1. Explain different methods of enzyme immobilisation with their advantages and disadvantages.  
**OR**  
Describe the production of Hepatitis B vaccine. Write a note on plasmid vectors.
2. Describe the production of Penicillin by fermentation technology with a neat labelled flow chart.

**SHORT ESSAYS**

**7 x 5 = 35 Marks**

3. Describe the production and uses of lipase.  
**OR**  
Explain Polymerase chain reaction with applications.
4. Outline the production of interferons by rDNA technology.  
**OR**  
What is biotransformation? List out the applications of microbial biotransformation.
5. Describe the applications and method for production of monoclonal antibodies.
6. Outline the general method for the preparation of antitoxin.
7. Describe the structure of Immunoglobulin.
8. Describe ELISA with its applications.
9. Explain different types of mutations.

**SHORT ANSWERS**

**10 x 2 = 20 Marks**

10. List out any four applications of biotechnology in medicine.
11. Write any four synthetic polymers used for Immobilisation of enzymes
12. What is humoral immunity?
13. List any four factors that affect fermentation process.
14. Write the functions of MHC.
15. Write any four properties of Immunoglobulin A.
16. Write the difference between vaccines and sera.
17. Write the difference between Transposons and Episomes.
18. Write any four applications of Southern blot test.
19. Define plasmids with examples.

*19. Write the use of vitamin B12*

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