

(3 Hours)

Marks : 80

NB : (1) All questions are **Compulsory**.

(2) Draw neat labelled diagrams wherever necessary

- Q.1 a Write few applications of recombinant microbes in pharma industry 2  
 b Define restriction endonucleases. Explain with example. 2  
 c Draw structure of plasmid. 2  
 d Write in brief about factors affecting pathogenicity and infection 2  
 e Explain the principal of complement fixation test 2  
 f Comment on Cell mediated immunity. 2  
 g What is biotransformation. Give its applications in biotechnology. 2  
 h Draw neat labelled diagram of fermenter. 2  
 I Define Vaccine. Give its classification. 2  
 J What are biosensors. Explain its applications. 2
- Q.2 a Define r-DNA technology. Explain the steps involved with a flowsheet 4  
 b Explain the types of immunodeficiencies in detail 4  
 c Classification of enzyme immobilization and explain crosslinking in detail. 4
- Q.3 a Elaborate on production of amylase by fermentation technology. 4  
 b Explain production and purification of Penicillin 4  
 c Define subunit vaccine.Explain Q.C. aspects of any one vaccine production 4
- Or**
- Write a note on Hepatitis B Vaccine production.
- Q.4 a Explain clonal selection theory 4  
 b Explain RIA in detail 4  
 c Write short note on Autoimmunity 4
- Or**
- Write short note on Type I Hypersensitivity
- Q.5 a Define DNA sequencing. Enlist the methods and explain any one in detail. 4  
 b Write short note on c-DNA library 4  
 c Write short note on RFLP and its applications 4
- Or**
- Explain mechanisms involved in Gene therapy
- Q.6 a What is animal cell culture. Enlist the components of animal media composition 4  
 b Write short note on SDS page 4
- Or**
- Write short note on Northern blotting and its applications  
 c Write short note on Bioinformatics 4
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