

**PHARMACEUTICAL BIOTECHNOLOGY**

Time: 3 hours

Max. Marks: 70

**PART – A**

(Compulsory Question)

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- 1 Answer the following: (10 X 02 = 20 Marks)
- Explain about types of fermentations.
  - Give an account on operation of bio reactor.
  - Name the micro organism to produce tetracycline and cyanocobalamin .
  - Write about humoral immunity.
  - Write the significance of restriction endonuclease in DNA technology.
  - Write in brief about antitoxins.
  - What are the applications of hypersensitivity?.
  - Mention the advantages of immobilization of enzymes.
  - Explain the role of bioinformatics in personal medicine.
  - Write the applications of bio informatics.

**PART – B**

(Answer all five units, 5 X 10 = 50 Marks)

**UNIT – I**

- 2 Give an account on principal and procedure involving in downstream processing and effluent treatment.

**OR**

- 3 Write in detail about the working of fermenter with a neat diagram. Add note on secondary metabolites.

**UNIT – II**

- 4 Describe the method of manufacture of hepatitis B vaccine by recombinant- DNA technology.

**OR**

- 5 What are monoclonal antibodies? Describe their production and its applications.

**UNIT – III**

- 6 List out the properties of antigens and antibodies. Describe any three antigen and antibody reactions in detail.

**OR**

- 7 Write an account on :  
(a) Active and passive immunizations vaccine preparations.  
(b) Standardization of BCG.

**UNIT – IV**

- 8 Outline the various steps involved in isolation and purification of enzymes.

**OR**

- 9 Describe various methods of immobilization of plant and bacterial cells.

**UNIT – V**

- 10 Discuss applications of bioinformatics in different fields of science.

**OR**

- 11 Give a brief account on various techniques involved in gene therapy. Write limitations of proteomics.

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