

1128

B.A./B.Sc. (General) Third Semester

Bio-Technology

BIOT-Elect-Sem-III-T: Introduction to Genetic Engineering and Immunotechnology

Time allowed: 3 Hours

Max. Marks: 75

*NOTE: Attempt five questions in all, including Question No. IX (Unit-V) which is compulsory and selecting one question each from Unit I - IV.*

x-x-x

**UNIT - I**

- I. a) Discuss the steps in the purification of DNA from a animal cell.  
b) Describe the applications of gene cloning. (9,6)
- II. a) Explain the action of restriction exonucleases and ligases,  
b) Discuss the function and applications of bacteriophages as vectors. (8,7)

**UNIT - II**

- III. Describe how a genomic library is prepared. Discuss its advantages and application. (15)
- IV. a) Discuss the method of electroporation for transfection.  
b) Describe the technique of PCR. (7,8)

**UNIT - III**

- V. a) Discuss the structure and function of thymus.  
b) Describe the antigen antibody agglutination reaction. (8,7)
- VI. a) Describe how active immunity is activated.  
b) Discuss the structure of IgM. (8,7)

**UNIT - IV**

- VII. Discuss different types of antigen presenting cells and their function. (15)
- VIII. a) Describe the structure and function of MHC II.  
b) Discuss the role of natural killer cells in immunity. (8,7)

P.T.O.

(2)

**UNIT - V**

IX. Attempt the following:-

- a) Define cosmids.
- b) Define expression vectors.
- c) What is transfection?
- d) Define adjuvants.
- e) What is an immunogen?
- f) What is antigen processing?
- g) What is the principle of immunoelectrophoresis?

(6x2)

(3)