

1127

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-III) which is compulsory and selecting two questions each from Unit I - II.

x-x-x

UNIT - I

- I. a) Discuss the function of
i) DNA modifying enzymes
ii) Restriction Endonucleases
b) Explain the purification of DNA from bacterial cells. (8+7)
- II. a) Explain two cloning vectors each for *E. coli*, yeast, bacteriophage.
b) Describe the process of gene cloning. (9,6)
- III. a) Write a note on PCR and its applications.
b) Explain the preparation of genomic libraries. (9,6)
- IV. a) How is gene library selected for clones?
b) Describe the process of electroporation for transformation. (8,7)

UNIT - II

- V. a) Write a note on the cells and tissues of immune system.
b) Differentiate between innate and acquired immunity. (8,7)
- VI. Describe the antibody structure and effector functions. (15)
- VII. a) Explain MHC restriction and regulation in cell mediated immune system.
b) Describe the antigen processing in MHC class I. (8+7)
- VIII. a) Write a note on ADCC.
b) What is the role of cytotoxic T cells and helper T cells in cell mediated Immunity? (5,10)

P.T.O.

(2)

UNIT - III

IX. Answer briefly:-

- a) Mode of action of Alkaline phosphatase
- b) Cosmids
- c) Transfection
- d) Nested PCR
- e) Immunodiffusion
- f) Transformation of bacterial cells
- g) Cross reactivity of antigen antibody
- h) Passive immunization
- i) Adjuvants
- j) Function of Topoisomerase

(10x1½)

x-x-x