(i) Printed Pages : 2 Roll No. .....

(ii) Questions : 9 Sub. Code : 0 2 5 8

Exam. Code : 0 0 0 3

B.A./B.Sc. (General) 3rd Semester

(2123)

BIO-TECHNOLOGY

Paper—BIOT-Elect-Sem.-III-T Introduction to Genetic Engineering and Immunotechnology

Time Allowed : Three Hours] [Maximum Marks : 75

Note :— Attempt *five* questions in all, including Q. No. 9 (Section-C) which is compulsory and selecting any *two* questions each from Sections A and B.

SECTION—A

1. (a) Write a note on the role and significance of Restriction Endonucleases. 9

   (b) Discuss the construction of Cosmid cloning vector. 6

2. (a) Explain the process of purification of animal DNA. 9

   (b) Discuss the applications of cDNA library. 6

3. Describe how a genomic library is prepared. Discuss its advantages and application. 15

4. (a) Discuss the methodology for PCR. 7

   (b) Describe the applications of gene cloning. 8

SECTION—B

5. (a) Discuss the structure and function of Thymus. 8

   (b) Explain the principle and applications of Immunoelectrophoresis. 7

6. (a) Differentiate between active and passive immunity. 7

   (b) Write a note on Ig Domains. 8

7. Diagrammatically explain the structure of MHC II. Discuss the antigen binding pocket of MHC II. 15

8. (a) Explain the process and significance of antigen presenting cells. 8

   (b) Discuss the role of Cytotoxic T cells. 7

SECTION—C

9. (1) Define Haptens. 2

   (2) Define transfection. 2

   (3) What are mononuclear cells ? 2

   (4) Discuss the function of topoisomerase. 2

   (5) What are adjuvants ? 2

   (6) What is acquired immunity ? 2

   (7) Discuss the need to clone a gene. 3