

Roll No.

(12/19-II)

5202

B. Sc. EXAMINATION

(Third Semester)

BIOTECHNOLOGY

Paper VI

Immunology

Time : Three Hours

Maximum Marks : 40

Note : Q. No. 1 is compulsory. Attempt *two* questions each from Section I and II. All questions carry equal marks.

1. Define the following in brief :

- (a) Paratope
- (b) Immunogen
- (c) Cytokines
- (d) Antigen
- (e) Passive Immunity

- (f) Memory cells
- (g) Hypersensitivity
- (h) Autoimmunity
- (i) Immunoassay
- (j) Adjuvant
- (k) Attenuation
- (l) Allergy
- (m) Immunotolerance
- (n) Phagocytosis
- (o) MHC restriction
- (p) Cellular Immunity. $\frac{1}{2} \times 16 = 8$

Section I

2. (a) What are major classes of immunoglobulins ? Describe their roles in immune response. 4
- (b) Explain the structure of IgA with suitable diagram. 4

3. (a) Define antigen and describe the properties of an ideal antigen. 4
- (b) Write basic principle of ELISA with one example of its application. 4
4. (a) Write a short note on types of defense mechanism of body against pathogens. 4
- (b) Describe cell mediated immune response. 4

Section II

5. (a) Define vaccination and explain the different types of vaccines with suitable examples. 5
- (b) Write a brief note on types of hypersensitivity. 3
6. (a) What are the different complement pathways? Describe components and mechanism of action of complement system. 5
- (b) Write a short note on autoimmunity. 3

7. (a) How MHC I and MHC II determine the type of immune response ? 5
- (b) Write a short note on inactivated vaccines. 3