

**NTK/KW/15-5879**

**Fourth Semester B. Sc. Examination**

**BIOTECHNOLOGY**

**Paper – I**

**(Immunology)**

Time : Three Hours ]

[ Max. Marks : 50

N. B. : All questions are compulsory and carry equal marks.

1. Describe various cells of immune system.

**OR**

Define innate immunity and discuss its mechanism.

10

2. What are various classes of immunoglobulins ? Describe in detail the structure of IgG.

**OR**

Explain T cell mediated immune response. 10

3. (a) Describe delayed hypersensitivity. 5  
(b) Describe anaphylaxis. 5

**OR**

- (c) Give an account on historical development of vaccination. 5  
(d) Compare live and killed vaccines. 5

NTK/KW/15-5879

Contd.

4. (a) Explain radial immunodiffusion.  $2\frac{1}{2}$   
(b) Explain haemagglutination.  $2\frac{1}{2}$   
(c) Describe ELISA test for diagnosis of AIDS.  $2\frac{1}{2}$   
(d) Give salient features of complement fixation test.  $2\frac{1}{2}$

**OR**

(e) Describe in-direct Coomb's test.  $2\frac{1}{2}$   
(f) Write a note on hybridoma technology.  $2\frac{1}{2}$   
(g) Give applications of monoclonal antibodies.  $2\frac{1}{2}$   
(h) Explain any one precipitation reaction with example.  $2\frac{1}{2}$

5. (i) Define antigenicity. 1  
(ii) What is hapten ? 1  
(iii) What is MALT ? 1  
(iv) What are cytokines ? 1  
(v) What is ADCC ? 1  
(vi) Give significance of NK cell. 1  
(vii) What is allergen ? 1  
(viii) Define autoantigen. 1  
(ix) What is combined vaccine ? 1  
(x) What is Sandwich ELISA ? 1  
(xi) What is titre ? 1  
(xii) Give application of Widal test. 1