

B.Sc. (CBCS Pattern) Semester-IV  
**011B - Biotechnology Paper-II - Immunology and Biostatistics**

P. Pages : 2

Time : Three Hours



**GUG/S/25/11995**

Max. Marks : 50

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1. Discuss in detail about different classes of Immunoglobulins. 10

**OR**

a) Write a note on primary lymphoid organ. 2½

b) Discuss the role of lymphocytes in brief. 2½

c) Write a note on concept of immunity. 2½

d) Discuss the role of granulocytes in brief. 2½

2. What is Hypersensitivity? Discuss type – Hypersensitivity in detail. 10

**OR**

a) Write a note on innate immunity. 2½

b) Write the significance of vaccination. 2½

c) Write a note on Autoimmunity. 2½

d) Discuss humoral immunity in brief. 2½

3. What are monoclonal antibodies? Discuss hybridoma technology in detail. 10

**OR**

a) Write in brief about agglutination. 2½

b) Write a note on complement fixation. 2½

c) Write the principle of widal test. 2½

d) Write a note on ELISA. 2½

4. Discuss different methods for presentation of statistical data in detail. 10

**OR**

a) Discuss standard deviation in brief. 2½

b) Write a note on Chi-square test. 2½

c) Write about methods of sampling in brief. 2½

d) Write a note on mean deviation. 2½

**5. Solve any ten.**

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| a) Write the types of T-lymphocytes.                 | 1 |
| b) Write the names of two secondary lymphoid organs. | 1 |
| c) Which antibody is most abundant in human body.    | 1 |
| d) What is Alergent.                                 | 1 |
| e) Wha is ADCC.                                      | 1 |
| f) What is full form of MHC.                         | 1 |
| g) What is toxin.                                    | 1 |
| h) Which diagnostic test is used for syphilis.       | 1 |
| i) What is RIA.                                      | 1 |
| j) What is mean.                                     | 1 |
| k) Define standard error.                            | 1 |
| l) What is median.                                   | 1 |

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