

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI  
(END SEMESTER EXAMINATION)

CLASS: BE  
BRANCH: BIOTECH

SEMESTER : IV  
SESSION : SP/19

SUBJECT: BT4025 IMMUNOLOGY

TIME: 3 Hours

FULL MARKS: 60

**INSTRUCTIONS:**

1. The question paper contains 7 questions each of 12 marks and total 84 marks.
  2. Candidates may attempt any 5 questions maximum of 60 marks.
  3. The missing data, if any, may be assumed suitably.
  4. Before attempting the question paper, be sure that you have got the correct question paper.
  5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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- Q.1(a) Define the term immunity. [2]  
Q.1(b) Write short notes on components of immune system. [4]  
Q.1(c) Discuss the mechanism of humoral and cell mediated immune response with proper illustration. [6]
- Q.2(a) Draw a neat labelled sketch of antibody. [2]  
Q.2(b) What are polyclonal antibodies and catalytic antibodies? [4]  
Q.2(c) What are monoclonal antibodies? Describe the method for its production. [6]
- Q.3(a) What is the difference between the terms antigens, immunogens and haptens? [2]  
Q.3(b) Discuss the structure and properties of antigens. [4]  
Q.3(c) What is Ag-Ab interaction? Discuss the different types of Ag-Ab complex formation. [6]
- Q.4(a) What does ELISA and RAST stands for? [2]  
Q.4(b) What is Immunofluorescence? Explain and highlight its significance. [4]  
Q.4(c) What is meant by immunoelectrophoresis? Elaborate the technique of rocket immunoelectrophoresis and its significance. [6]
- Q.5(a) What is meant by the term hypersensitivity? [2]  
Q.5(b) How is Type I hypersensitivity attained? [4]  
Q.5(c) Discuss the mechanism of action and clinical manifestation involved in case of Type II hypersensitivity with suitable examples. [6]
- Q.6(a) What are MHCs? [2]  
Q.6(b) Draw a neat labeled sketch of MHC I and MHC II proteins. [4]  
Q.6(c) Write a detailed note on DNA vaccines. [6]
- Q.7(a) What is meant by the term auto-antibodies? [2]  
Q.7(b) What are different types of immunological disorders? Explain briefly each. [4]  
Q.7(c) Write a short account on SCID and AIDS. [6]

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