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NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA**(An Autonomous Institute Affiliated to AKTU, Lucknow)****B.Tech****SEM: IV - THEORY EXAMINATION (2022-2023)****Subject: Immunology & Immunotechnology****Time: 3 Hours****Max. Marks: 100****General Instructions:****IMP:** Verify that you have received the question paper with the correct course, code, branch etc.**1.** This Question paper comprises of **three Sections -A, B, & C.** It consists of Multiple Choice Questions (MCQ's) & Subjective type questions.**2.** Maximum marks for each question are indicated on right -hand side of each question.**3.** Illustrate your answers with neat sketches wherever necessary.**4.** Assume suitable data if necessary.**5.** Preferably, write the answers in sequential order.**6.** No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.**SECTION A****20****1. Attempt all parts:-**

- 1-a. An immune response when provoked by a non self particle is known as (CO1) 1
- (a) immunoglobulin
- (b) antibody
- (c) antigen
- (d) interferon
- 1-b. Which of the following is not involved in specific immunity? (CO1) 1
- (a) Neutrophil
- (b) T cell
- (c) Plasma cell
- (d) B cell
- 1-c. The specificity of an antibody is due to (CO2) 1
- (a) its valence
- (b) The heavy chains
- (c) The Fc portion of the molecule

- (d) The variable portion of the heavy and light chain
- 1-d. The antibody which is found in secretions is: (CO2) 1
- (a) IgA
 - (b) IgG
 - (c) IgE
 - (d) IgM
- 1-e. Artificially acquired passive immunity refers to immunity from: (CO3) 1
- (a) Transfer of antibodies from mother to foetus across the placenta
 - (b) Recognition of an antigen by B cells
 - (c) Injection of the antigen in a vaccination
 - (d) injection of immunoglobulins
- 1-f. In agglutination reactions, the antigen is a.....and in precipitation reactions, the antigen is a..... (CO3) 1
- (a) whole cell/soluble molecule
 - (b) Soluble molecule/whole cell
 - (c) Bacterium/virus
 - (d) Protein/carbohydrates
- 1-g. Which ONE of the following statements is FALSE about Major Histocompatibility complex (MHC) class I molecules (CO4) 1
- (a) presents peptide antigens to CD8+ T cells
 - (b) are encoded by 3 pairs of a- and b-chain genes called HLA-DP, HLA-DQ and HLA-DR
 - (c) acts as antigen presenting structures
 - (d) MHC class I molecules are expressed on nearly all nucleated cells
- 1-h. MHC diversity ultimately affects the (CO4) 1
- (a) variety of BCRs that are expressed on mature B cells
 - (b) transmembrane domain.
 - (c) variety of peptides that bind to MHC
 - (d) number of antigen presenting cells
- 1-i. HIV is a ____ (CO5) 1
- (a) Lentivirus
 - (b) Capripoxvirus
 - (c) Gallivirus

(d) Papillomavirus

- 1-j. What are the solutions prepared from weakened or dead microorganisms, viruses, or toxins that provide some immunity from diseases? (CO5) 1
- (a) Vaccines
- (b) Histamines
- (c) Drugs
- (d) Antibiotics

2. Attempt all parts:-

- 2.a. What is immunity? (CO1) 2
- 2.b. What do you understand by antigenic specificity? (CO2) 2
- 2.c. What is active immunity? (CO3) 2
- 2.d. What are plasma cells? (CO4) 2
- 2.e. What is meant by autoimmunity? (CO5) 2

SECTION B

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3. Answer any five of the following:-

- 3-a. Define inflammation and discuss about the significance of inflammation? (CO1) 6
- 3-b. Write a short note on pro-inflammatory cytokines? Give suitable examples. (CO1) 6
- 3-c. Elaborate the significance of hybridoma technology in immunology. (CO2) 6
- 3-d. Differentiate between monoclonal and polyclonal antibodies? (CO2) 6
- 3.e. Discuss the process of cross reactivity in antigen and antibody interaction? (CO3) 6
- 3.f. Discuss briefly about co-stimulatory molecules with suitable examples. (CO4) 6
- 3.g. Elaborate different types of hypersensitivity reactions? (CO5) 6

SECTION C

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4. Answer any one of the following:-

- 4-a. Differentiate between innate and adaptive immunity. How you boost the immunity? (CO1) 10
- 4-b. What are immune cells? Differentiate between B and T cells? (CO1) 10

5. Answer any one of the following:-

- 5-a. Explain the concept of hybridoma technology with suitable diagram? Also discuss its significance in immunotechnology? (CO2) 10
- 5-b. What do you mean by monoclonal antibody. Discuss the production of 10

monoclonal antibodies in detail. (CO2)

6. Answer any one of the following:-

- 6-a. Define ELISA? Discuss its different types with their applications? (CO3) 10
- 6-b. Explain the steps involved in western blotting experimentation? Write the application of western blotting. (CO3) 10

7. Answer any one of the following:-

- 7-a. Define memory cells and briefly explain the response made by memory T cells. (CO4) 10
- 7-b. What do you understand by positive and negative selection? Discuss in detail. (CO4) 10

8. Answer any one of the following:-

- 8-a. Define immunotherapy. Explain the significance of immunotherapy in disease management . (CO5) 10
- 8-b. Define immune response. Write a short note on immune response in plants and animals? (CO5) 10