**Printed Page:-04** Subject Code:- ABT0402 Roll. No: NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA (An Autonomous Institute Affiliated to AKTU, Lucknow) **B.Tech** SEM: IV - THEORY EXAMINATION (2024 - 2025) Subject: Immunology & Immunotechology **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. Presence of \_\_\_\_\_ can be used to separate helper T cells from cytotoxic T 1 cells. (CO1,K1) Class II MHC (a) CD-2 (b) CD-3 (c) CD-4 (d) 1-b. Which of the following does not protect body surfaces: (CO1,K2) 1 (a) Skin (b) Mucus Gastric acid (c) Salivary amylase (d) 1-c. Which of the following statement is true about IgM of human? (CO2, K2) 1 (a) IgM can cross the placenta (b) IgM is produced by high affinity plasma cells IgM is primarily restricted in the circulation (c) (d) IgM can protect mucosal surface 1-d. The stimulation of antigen specific T cells by appropriately presented antigen 1 alone results in \_\_\_\_\_ (CO2, K2) Cytotoxicity (a)

Cytotoxicity

- (b) Allergy
- (c) Cell division
- (d) Production of IL-3
- 1-e. Naturally acquired active immunity would be most likely acquired through which 1 of the following processes? (CO3, K2)
  - (a) vaccination
  - (b) drinking colostrum
  - (c) natural birth

1-f.

- (d) infection with disease-causing organism followed by recovery.
- Artificially acquired passive immunity refers to immunity from: (CO3,K1)

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- (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-g. Major Histocompatibility Complex is a tight cluster of linked (CO4, 1 K2)

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- (a) Carbohydrates
- (b) Proteins
- (c) Genes
- (d) Lipid molecules
- 1-h. What is the name of MHC in humans? (CO4, K2)
  - (a) HLA
  - (b) H2
  - (c) Adjuvants
  - (d) Haplotype
- 1-i. Which of the following statement is true regarding central tolerance? (CO5, K2) 1
  - (a) The positive selection occurs in the cortex before maturing and entering the circulation.
  - (b) The negative selection occurs in the medulla.
  - (c) The negative selection removes cells that have high affinities for self-antigen
  - (d) All of the above
- 1-j. After exiting the thymus, mature T cells are subjected to the secondary selection 1 where the majority of self-reactive T cells are deleted or rendered anergic. (CO5,K3)

The process is known as

- (a) Central Anergy
- (b) Peripheral Anergy
- (c) Clonal Anergy
- (d) All of the above

2. Atte	mpt all parts:-	
2.a.	Define immunity? (CO1,K1)	2
2.b.	Define antigens? (CO2, K1)	2
2.c.	What is passive immunity? (CO3, K1)	2
2.d.	What does MHC class I do? (CO4, K1)	2
2.e.	Define autoimmunity? (CO5,K1)	2
<b>SECT</b>	<u>ION-B</u>	30
3. Ans	wer any <u>five</u> of the following:-	
3-a.	Discuss about the different types of secondary lymphoid organs in detail? (CO1,K1)	6
3-b.	What are cytokines? Discuss their structure and function? (CO1, K2)	6
3-с.	Discuss about the characteristics of good antigen? (CO2, K2)	6
3-d.	Discuss about epitopes and paratopes in detail? (CO2, K1)	6
3.e.	Discuss the process of cross reactivity in antigen and antibody interaction? (CO3,K2)	6
3.f.	Differentiate between MHC I and MHC II molecules? (CO4, K2)	6
3.g.	Discuss in detail about immunity without infection? (CO5, K1)	6
SECT	ION-C wer any one of the following:-	50
4-a.	Differentiate between innate and adaptive immunity. How you boost the immunity? (CO1,K4)	10
4-b.	Write an essay on how the food and diet can help in boosting the immunity? (CO1,K2)	10
5. Ans	wer any <u>one</u> of the following:-	
5-a.	Draw the basic structure of an Immunoglobulins and discuss its structural properties? (CO2,K2)	10
5-b.	Hybridoma technology is used to produce monoclonal antibodies. Discuss?(CO2, K2)	10
6. Ans	wer any <u>one</u> of the following:-	
6-a.	Explain in detail about the different types of immunologic reactions occurs due to antigen -antibody interaction? (CO3, K2)	10
6-b.	Explain in detail about the precipitation reactions occurs due to antigen-antibody interaction? (CO3,K2)	10
7. Ans	wer any <u>one</u> of the following:-	
7-a.	Explain in detail about the role of antigen presenting cells? (CO4, K2)	10
7-b.	Explain in detail the exogenous and endogenous pathways of antigen processing and presentation? (CO4,K2)	10
8. Ans	wer any <u>one</u> of the following:-	

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- 8-a. What is an autoimmune disease? Give some examples? What are the causes of 10 autoimmune disease? What are its symptoms? (CO5,K3)
- 8-b. What do you understand by the term immune response? Explain in detail about the 10 immune response in plants. (CO5, K2)

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