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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 (2021 - 2022)

Subject: Immunology &amp; Immunotechnology

Time: 3 Hours

Max. Marks: 100

## General Instructions:

1. The question paper comprises three sections, A, B, and C. You are expected to answer them as directed.
2. Section A - Question No- 1 is 1 marker & Question No- 2 carries 2 mark each.
3. Section B - Question No-3 is based on external choice carrying 6 marks each.
4. Section C - Questions No. 4-8 are within unit choice questions carrying 10 marks each.
5. No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.

## SECTION A

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## 1. Attempt all parts:-

- 1-a. Which of the following is not involved in first line defence? (CO1) 1
- (a) Mucus membranes
  - (b) Saliva
  - (c) Tears
  - (d) Antibodies
- 1-b. \_\_\_\_\_ strand breaks accumulate in long term Hematopoietic stem cells during aging. (CO1) 1
- (a) DNA
  - (b) RNA
  - (c) Collagen
  - (d) Peptide
- 1-c. Which of the following immunoglobulin is the most abundant immunoglobulin in newborns? (CO2) 1
- (a) IgA
  - (b) IgG
  - (c) IgE
  - (d) IgM
- 1-d. Which is not a function of IgA? (CO2) 1
- (a) Protect mucosal surfaces
  - (b) Fix complement
  - (c) Protect eyes
  - (d) Agglutinate antigen
- 1-e. How many types of antibodies are there? (CO3) 1
- (a) 5
  - (b) 3
  - (c) 2
  - (d) 4
- 1-f. Which of the following cells of the immune system do not perform phagocytosis? (CO3) 1
- (a) Macrophage
  - (b) Neutrophil
  - (c) Basophil

	(d) Eosinophil	
1-g.	Which ONE of the following statements is FALSE? (CO4)	1
	(a) TCR expressed on T cells can not be secreted.	
	(b) Plasma cells produce antibodies.	
	(c) T cells include 2 main classes, CD4+ and CD8+ T cells.	
	(d) Only one signal involving the TCR recognising its ligand (MHCI/peptide complex) is required for naïve CD8+ T cell activation.	
1-h.	Which of the following are NOT involved in the endogenous antigen processing pathway? (CO4)	1
	(a) Ubiquitin	
	(b) Calreticulin	
	(c) CLIP	
	(d) Proteosome	
1-i.	Which of the following immune cells would have an especially low count in a patient with advanced AIDS? (CO5)	1
	(a) Killer T lymphocytes	
	(b) Helper T lymphocyte	
	(c) B lymphocytes	
	(d) None of these	
1-j.	Auto-immunity develops due to: (CO5)	1
	(a) Loss of T cells	
	(b) Loss of plasma cells	
	(c) Loss of complement	
	(d) Loss of immunological tolerance	
2. Attempt all parts:-		
2.a.	What is inflammation? (CO1)	2
2.b.	Which antibody is pentameric in nature? (CO2)	2
2.c.	Write the full form of ELISA? (CO3)	2
2.d.	Write the name of different surface proteins that are only expressed in the memory cells? (CO4)	2
2.e.	What are phytoanticipins? (CO5)	2
SECTION B		30
3. Answer any <u>five</u> of the following:-		
3-a.	Discuss about the primary and secondary lymphoid organs in detail? (CO1)	6
3-b.	Discuss the mechanism of inflammation after getting tissue injury? (CO1)	6
3-c.	Why antibodies are necessary for the human body? Discuss? (CO2)	6
3-d.	Write a short note on IgG and IgM antibodies? (CO2)	6
3.e.	What is meant by vaccination? What are the different types of vaccines? (CO3)	6
3.f.	Discuss in detail about PD1/PDL1 immune checkpoint? (CO4)	6
3.g.	How HIV is transmitted? What are the different symptoms of HIV infection? (CO5)	6
SECTION C		50
4. Answer any <u>one</u> of the following:-		
4-a.	What are the different components of blood? Discuss each one of them in detail? (CO1)	10
4-b.	Give a brief overview of the anatomy of the immunes system? (CO1)	10
5. Answer any <u>one</u> of the following:-		
5-a.	Illustrate the process of polyclonal antibodies production? (CO2)	10

- 5-b. Explain in detail the commercial preparation of monoclonal antibodies? (CO2) 10
6. Answer any one of the following:-
- 6-a. Differentiate between active and passive immunization? (CO3) 10
- 6-b. Explain in detail about the use of antibodies in diagnostics? Also explain the different types of vaccines available in the market? (CO3) 10
7. Answer any one of the following:-
- 7-a. What are the four kinds of Tcells in the body? Discuss them in detail? (CO4) 10
- 7-b. Illustrate the process of BCR signaling? (CO4) 10
8. Answer any one of the following:-
- 8-a. What do you understand by transplantation? How body reacts when transplantation is done? (CO5) 10
- 8-b. What do you understand by AIDS? What are its symptoms? How can you prevent it? (CO5) 10