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Avinashilingam Institute for Home Science and Higher Education for Women

Deemed to be University Estd. u/s 3 of UGC Act 1956, Category A by MHRD (now MoE)
Re-accredited with A++ Grade by NAAC. CGPA 3.65/4, Category I by UGC
Coimbatore-641043, Tamil Nadu, India

Bachelor's Degree Examination - May 2025
II Semester

Class : I UG **Time : 3 Hours**
Major : Biochemistry and Biotechnology **Max. Marks : 100**

23BBCC02 Immunology

Course Outcomes:

CO1: Gain an insight in to the various cells and organs involved in the immune system.
CO2: Understand the components of the immune system and the molecular mechanisms involved in their teractions.
CO3: Gain knowledge on the various disorders and diseases affecting the immune system.
CO4: Comprehend the immunization procedures and defense mechanisms.
CO5: Learn practical aspects of various immunological techniques

Part A **10 x 1 = 10**
Choose the Correct Answer

1. Which of the following is a primary lymphoid organ? CO1K1
   a. Spleen b. Lymph nodes
   c. Thymus d. Tonsils

2. Which antibody is the first to respond during a primary immune response? CO1K1
   a. IgA b. IgM
   c. IgG d. IgE

3. What is the primary characteristic of an antigen? CO2K1
   a. It destroys pathogens
   b. It binds to antibodies and triggers an immune response
   c. It is produced by B cells
   d. It is a type of antibody

4. Which MHC class is present on all nucleated cells? CO2K1
   a. MHC I b. MHC II
   c. MHC III d. MHC IV

5. Which type of hypersensitivity reaction is associated with anaphylaxis? CO3K1
   a. Type II b. Type IV
   c. Type I d. Type III

6. Immunodeficiency disorders occur due to: CO3K1
   a. Overactive immune response
   b. Excessive production of antibodies
   c. Overproduction of white blood cells
   d. Defective or weakened immune system

7. Which type of vaccine contains weakened but live pathogens? CO4K1
   a. Live attenuated vaccine b. Inactivated vaccine
   c. Subunit vaccine d. Toxoid vaccine

8. Which type of immunity is developed after receiving a vaccine? CO4K1
   a. Passive immunity b. Natural immunity
   c. Innate immunity d. Active immunity

9. Which of the following is a gel-based technique used for the detection of antigen-antibody interactions? CO5K1
   a. Flow cytometry b. Immunodiffusion
   c. PCR d. ELISA

10. Which immunotechnique uses fluorescent-labeled antibodies for detecting specific molecules? CO5K1
   a. Immunoprecipitation b. Western blotting
   c. Immunofluorescence d. ELISA

Part B — 5 x 6 = 30

Answer ALL questions

Each answer should not exceed 400 words or two pages

11.a.	Classify organs and cells of the immune system and cite their role in immune function.	CO1K2
	(or)	
11.b.	Illustrate the process of phagocytosis.	CO1K3
12.a.	Discuss on types of antigens, their features and requirements for antigenicity.	CO2K2
	(or)	
12.b.	Write a note on the classical and alternative pathways of complement activation system.	CO2K3
13.a.	Describe about hypersensitivity reactions and autoimmune disorders and extend on its types.	CO3K2
	(or)	
13.b.	Elaborate on immunodeficiency diseases with examples.	CO3K3
14.a.	Differentiate between active and passive immunization, providing examples of each.	CO4K2
	(or)	
14.b.	Compare live-attenuated and inactivated vaccines with suitable examples.	CO4K4
15.a.	Describe how the lymphocytes are separated from blood and give its importance.	CO5K2
	(or)	
15.b.	Discuss the principle mechanism behind blood grouping and haemagglutination.	CO5K3

Part C — 5 x 12 = 60

Answer ALL questions

Each answer should not exceed 800 words or four pages

16.a.	Explain the differentiation and maturation process of B-cells and T-cells.	CO1K3
	(or)	
16.b.	Distinguish between innate and acquired immunity, humoral and cell mediated immunity, primary and secondary immune response in detail.	CO1K4
17.a.	Write a note on the pathways of antigen processing and presentation via MHC-I & MHC-II.	CO2K3
	(or)	
17.b.	Explain the general structure of immunoglobin, classes of immunoglobulins, their properties and functions.	CO2K4
18.a.	Explain the causes, immune mechanism and symptoms of organ specific and systemic autoimmune diseases with reference to Hashimoto's thyroiditis or Systemic Lupus Erythematosus (SLE).	CO3K3
	(or)	
18.b.	Write in detail on the antibodies involved mechanism, and clinical manifestations of hypersensitivity reactions I, II, III & IV.	CO3K4
19.a.	Elaborate on the general principles involved in the production of monoclonal and polyclonal antibodies.	CO4K3
	(or)	
19.b.	Describe the different types of vaccines based on their composition, mode of action, and advantages with examples for each type.	CO4K4
20.a.	Explain the principle behind immuno-precipitation assays and its application in immunological assays.	CO5K3
	(or)	
20.b.	Give an account on the types, steps involved, advantages, limitations and applications of various ELISA technique.	CO5K4

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