

Model Question Paper-1 with effect from 2022-23 (CBCS Scheme)

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Sixth Semester B.E. Degree Examination**Subject Title: Immunotechnology + Lab**

Time : 3 hours

Max marks: 100

Note : Answer any FIVE full questions, choosing ONE full questions from each module

Module-1					
1	a.	What are the fundamental differences between innate and acquired immunity, and how does the process of hematopoiesis contribute to the development of immune cells?	CO1	L1	10
	b.	What are the primary cell types constituting the immune system, and what roles do they play in detecting and combating infections and diseases within the body?	CO1	L2	10
Or					
2	a.	How do chemical and biological factors influence the antigenicity and immunogenicity of molecules, and what is the role of molecular structure in determining their immune response?	CO1	L1	10
	b.	What are the various classes and subclasses of immunoglobulins, and how do they contribute to the specificity and efficacy of the immune response?	CO1	L2	10
Module-2					
3	a.	How are antibody genes involved in generating diversity within the immune system, and what mechanisms contribute to the vast array of antibody specificities?	CO2	L1	10
	b.	What are polyclonal antibodies and how are they utilized in various applications within the fields of research, diagnostics, and therapeutics?	CO2	L2	10
Or					
4	a.	What are polyclonal antibodies and how are they utilized in various biomedical applications, such as diagnostics, therapeutics, and research?	CO3	L1	10
	b.	What are the functions and roles of thymus-derived lymphocytes in the adaptive immune response and immune regulation?	CO3	L2	10
Module-3					
5	a.	What are the pathways involved in complement activation and how do they function in innate immunity, including roles in opsonization, inflammation, and cell lysis?	CO4	L2	10
	b.	What are the various types of autoimmune disorders, and how do they result from the immune system mistakenly attacking the body's own tissues?	CO4	L3	10
Or					
6	a.	How does the immune system react to infections, and what are the key mechanisms it employs to recognize and eliminate pathogens?	CO4	L2	10
	b.	What is the composition and mechanism of action of the hepatitis B surface antigen vaccine, and how does it confer	CO4	L3	10

		protection against hepatitis B virus infection?			
Module-4					
7	a.	What are the immunological factors underlying graft rejection, and how do they drive the rejection process through mechanisms such as T cell-mediated immune responses and antibody-mediated rejection?	CO5	L3	10
	b.	How do major histocompatibility complex (MHC) molecules play a pivotal role in allograft rejection by presenting donor antigens to recipient T cells, leading to the activation of immune responses against the transplanted tissue?	CO5	L4	10
Or					
8	a.	How does hematopoietic stem cell transplantation interact with immunosuppressive therapy, and what are the implications for managing immune responses in transplant recipients?	CO5	L3	10
	b.	What are the mechanisms underlying tumor immunotherapy, and how do they harness the immune system's capabilities to target and eliminate cancer cells, leading to potential advancements in cancer treatment?	CO5	L4	10
Module-5					
9	a.	How do antigen-antibody interactions lead to precipitation reactions, and what are the principles underlying this immunological technique used for detecting and quantifying antigens and antibodies in biological samples?	CO5	L3	10
	b.	What are the fundamental principles underlying ABO blood typing, including antigen-antibody interactions, and how is this system utilized in transfusion medicine and forensic investigations?	CO5	L4	10
Or					
10	a.	What are the underlying principles of Enzyme-Linked Immunosorbent Assay (ELISA) and how is this versatile technique applied in various fields such as clinical diagnostics, biomedical research, and food safety testing?	CO5	L4	10
	b.	How does Fluorescence Activated Cell Sorting (FACS) analysis function in separating and analyzing cells based on their fluorescence properties, and what are its applications in diverse fields such as immunology, oncology, and stem cell research?	CO5	L3	10