JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 MSc EXAMINATION- Feb-2025

Course Code (Credits): 20MS1BT212 (3) Max. Marks: 15

Course Name: Immunology

Course Instructors: Dr.Abhishek Max. Time: 1 Hour

Note: *All questions are compulsory. Marks are indicated against each question in square brackets.*

Q.N	Question	Marks
Q1	The earliest conception of the *selective theory* dates to Paul Ehrlich in 1900, in an attempt to explain the origin of serum antibody. In the 1930s and 1940s, the selective theory was challenged by various instructional theories and *in* 1950s, selective theories resurfaced as a result of new experimental data and, through the insights of Niels Jerne, David Talmadge, and F. Macfarlane Burnet, were refined into a theory that came to be known as the **clonal selection theory.** The clonal selection theory become a widely accepted model for how the immune system responds to infection and how certain types of B and T lymphocytes are selected for destruction of specific antigens invading the body. What do you think? a. Why Selective theory of Paul Ehrlich and Instructional theory were not accepted? [2] b. Why clonal selection theory is most accepted theory? [1] c. Illustrate the Maturation and clonal selection of B lymphocytes and Antigen-dependent proliferation and differentiation of Mature B Lymphocyte into plasma and memory cells with neat and clean schematic diagram [2]	5
Q2	Hematopoiesis is a continuous process that generally maintains a steady state and regulated by complex mechanisms that affect all of the individual cell types. These regulatory mechanisms ensure steady-state levels of the various blood cells including immune cells, yet they have enough built-in flexibility so that production of blood cells can rapidly increase tenfold to twentyfold in response to hemorrhage or infection. Steady-state regulation of hematopoiesis is accomplished in various ways, which including Programmed Cell Death which is an Essential Homeostatic Mechanism. Find out the role of following gene to maintain the Hematopoietic Homeostasis. [4] *(a)Fas (b) caspase (c) bcl-XL (bcl-Long) (d) bcl-2*	4
Q3	A number of morphologically and functionally diverse organs and tissues have various functions in the development of immune responses, answer the following question using the concept of primary and secondary lymphoid organ. a. What effect does thymectomy have on a neonatal mouse? On an adult mouse? Explain why these effects differ. [2] b. What do nude mice and humans with DiGeorge's syndrome have in common [1] c. What effect would removal of the bursa of Fabricius (bursectomy) have on chickens? [1] d. What does PALS stand for? Signify the importance of PALS [2]	6