

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT  
TEST -1 EXAMINATION- 2023  
B.Tech-V Semester (BT)

Course Code (Credits): 18B11BT513 (4)

Max. Marks: 15

Course Name: Immunology

Course Instructors: Dr. Abhishek

Max. Time: 1 Hour

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*Note: (a) All questions are compulsory.*

*(b) Marks are indicated against each question in square brackets.*

*(c) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems*

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1. Hematopoiesis is the lifelong process of continuous formation and turnover of blood cells to meet everyday demands as well as respond to increased demand. Describe in detail about the different type of progenitor cells, committed cell and various immune cell developed in Hematopoiesis with neat and clean diagram. Also comment on the significance of apoptosis and necrosis in Hematopoiesis. Due to think necrosis is important for successful Hematopoiesis instead of apoptosis. [5]. [CO-1]
2. Cells undergoing programmed cell death often exhibit distinctive morphologic changes. These changes include a pronounced decrease in cell volume, modification of the cytoskeleton that results in membrane blebbing, a condensation of the chromatin, and degradation of the DNA into smaller fragments. The expression of several genes accompanies programmed cell death in leukocytes and other cell types. Proteins specified by these genes induce programmed cell death, others are critical during programmed cell death, and still others inhibit programmed cell death. Explain the role of following gene in the regulation of programmed cell death. [3] [CO-2]  
*(a) bcl-2 and bax (b) bcl-XL (bcl-Long) and bcl-XS (bcl-Short) (c) caspase and fas*
3. NK cells were subsequently shown to play an important role in host defense both against tumor cells and against cells infected with some, though not all, viruses. These cells, which constitute 5%–10% of lymphocytes in human peripheral blood, do not express the membrane molecules and receptors that distinguish T- and B-cell lineages. Although NK cells do not have T-cell receptors or immunoglobulin incorporated in their plasma membranes, they can recognize and kill potential target cells. How? Explain. [3] [CO-2]
4. A number of morphologically and functionally diverse organs and tissues have various functions in the development of immune responses; thymus gland and bursa of Fabricius are such type of important lymphoid organ. Answer the following [4] [CO-2]
  - a) What effect does thymectomy have on a neonatal mouse? On an adult mouse? Explain why these effects differ.
  - b) What effect would removal of the bursa of Fabricius (bursectomy) have on chickens?