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# Manipal Institute of Technology, Manipal

(A Constituent Institute of Manipal University)



## VI SEMESTER B.TECH (BIOTECHNOLOGY)

END SEMESTER EXAMINATIONS, May 2016

### SUBJECT: IMMUNOTECHNOLOGY

[BIO 320]

Time: 3 Hours

MAX. MARKS: 50

#### Instructions to Candidates:

- ❖ Answer **ANY FIVE FULL** the questions.
- ❖ Missing data may be suitable assumed.

<b>1A.</b>	A student visited his relative, with pets, which sparked allergic wheezing in him but he recovered soon. The health conditions got worsened for his brother and mother with respite coming only with the bronchodilators. The immunologists diagnosing the case suggested the role of T-cells. What subset of the T-cells has provoked the situation? <b>Diagrammatically</b> detail the events orchestrated by these T cells towards the allergen induced symptoms.	<b>3</b>
<b>1B.</b>	The posterior tibial artery of the lower limb carries blood to the posterior compartment of the leg and plantar surface of the foot. At one of the positions, there was a leakage in the arterial wall.  i) What would be the implications on the lymphatic system ii) What will happen to that localized tissue  <b>List</b> one molecule involved in the condition	<b>4</b>
<b>1C.</b>	There is a H1N1 Influenza endemic outbreak and one of the labs has started the Immunofluorescence to check for the infection. The clinicians however were not happy as the serotype of the virus cannot be judged. Give the principle of the	<b>3</b>

	technique. Additionally elaborate the disadvantages of the techniques to detect the serotypes based on the principle.	
<b>2A.</b>	The components of the myeloid origin forming our innate immunity do not evolve with infection while the adaptive evolves upon each incident of the attack. Justify.	<b>3</b>
<b>2B.</b>	Sjorgens's Syndrome, is one of the autoimmune disease where the tear glands of the eye and the salivary ducts of the mouth are affected. With the help of a flowchart draw the genetic and epigenetic disposition of the disorder.	<b>3</b>
<b>2C.</b> <b>1</b> <b>2</b>	Give reasons why The autoimmune hepatitis is said to be more prone in age related defects of B cells. Ankylosing Spondiolitis, is said to be a result of molecular mimicry.	<b>4</b>
<b>3A.</b>	A group of students after playing football in a hot humid weather returned to their hostels heavily sweating. Immediately some of them reverted to drinking cold water while the others preferred warm water. The students who took this cold water complained of sore throat the next day. Analyze with the immunological aspects involved.	<b>3</b>
<b>3B.</b>	Zika virus has been responsible for the large outbreak in Brazil where the fetus of the infected pregnant mothers were affected. Hypothesize why the virus affects the fetus and how is it transmitted from the mother. Devise at least one site which can be used to contain the spread of Zika virus in the body.	<b>3</b>
<b>3C.</b>	The processing and presentation of exogenous antigen and endogenous antigen are different. Give illustrations of these differences elaborating the cells and the process involved.	<b>4</b>
<b>4A.</b>	A person X gets a sore throat or cold as soon as he starts with his regime of heavy breathing exercises. The problem has been worsened with age. What is the probable cause and a remedy for this situation?	<b>3</b>

<b>4B.</b>	In the process of forming the mature B cells, how do the B cells deviate and start recognizing self-antigens. In this mature B cells how many types of MHC-1 and 2 are expressed.	<b>3</b>
	The developmental process of the T-cells begins in bone marrow and culminates in the thymus. Depict the process <b>diagrammatically</b> .	<b>4</b>
<b>5A.</b>	An individual has polysaccharides as antigen in his body. What kind of adaptive immunity cells would come to his rescue? Will these cells have a memory? Justify	<b>3</b>
<b>5B.</b>	<b>Diagrammatically</b> mark the differences between Idiotypic, Allotypic and Isotypic	<b>3</b>
<b>5C.</b>	A patient F experimented with different drugs during his/her college wherein some of the intravenous substances were also used. In one such incident he/she had shared a needle with another friend. The patient decides to get tested for HIV. The clinician suggested ELISA to be undertaken for this patient. Two options of Direct and Indirect were presented which confused the patient. Diagrammatically depict the differences in the two types of ELISA. Which of the two would be more effective for this patient? Justify your choice.	<b>4</b>
<b>6A.</b>	In the VDJ recombination undertaken by the TCR and the BCR during their development, how does the joints result in the creation of variability? <b>(diagrammatically only)</b>	<b>3</b>
<b>6B.</b>	Chemotherapy initiated during the course of cancer therapy does not only deplete the cancerous cells but also affects the normal immunity of the body. Chart out how the immune cells get affected in the process. The cancer cells undergo regrowth after some duration. Why does the normal somatic cells take a longer time for their resumption?	<b>3</b>
<b>6C.</b>	Lymphatic system works without a pump. With the help of a flowchart explain the movement in this system.	<b>2</b>
<b>6D.</b>	In an immunohistochemistry slide of a macrophage, how would you ascertain whether it is an active or a passive cell?	<b>2</b>