Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent institution of MAHE, Manipal)

VI SEMESTER B.TECH BIOTECHNOLOGY

END SEMESTER EXAMINATIONS, APRIL/MAY 2018

SUBJECT: IMMUNOTECHNOLOGY (BIO 4006)

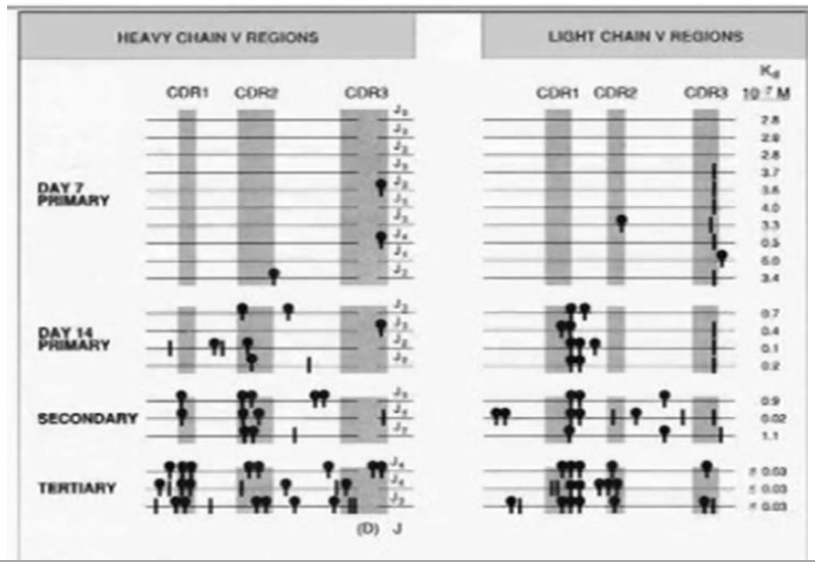
REVISED CREDIT SYSTEM

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

- Answer **ALL** the questions.
- Missing data may be suitable assumed.

1A	Thymus is the primary organ where the central tolerance for thymocytes is undertaken. How are the cells screened for the proteins even though the thymus is not the primary organ for stem cells? What do you understand by positive and negative screening?	**3**
1B	The mycobacterium infects the macrophages. In one of the reports, one student found the peptide presented by the MHC-II. Has the student reported the correct observation? Justify. Which cells of the cellular component will this MHC-II present its peptide	**3**
1C	The Strep throat has to be administered strong antibiotics as it can cause a life threatening condition. Why is this pathogen so fatal. With the help of a diagram show the difference between the binding of this peptide with the lymphocytes as compared to the normal peptide	**4**
2A	The isotype switch takes place before followed by idiotype. What stage in the central dogma do the two processes occur. Explain with the help of a diagram	**4**
2B	IgM has high avidity but low affinity. Justify this statement	**2**
2C	Dr. House encounters a case of a patient who had a recurrent bouts of allergies. The incidence of allergies started with dust which extended to pollen and food. The laboratory test revealed excess of Th2 type cells. How would these cells help worsen the allergic condition. Represent with the help of the flowchart the role of the cytokines in this action	**4**
3A	David, the bubble boy was suffering from an immunological condition called SCID and had to be kept in isolation. He was offered a bone marrow transplant which would him live a normal life but he died a few days after the surgery even though utmost care was taken during the surgery. What could be the reason for the death?	**4**

3B	The microbes in the gut form a part of the innate immunity. How do these microbes help the body to combat the attack of the pathogens?	**2**
3C	The dendritic cells have both myeloid and lymphoid origin. How would you explain this? What is the role of the two types of dendritic cells	**2**
3D	Type A and Type B blood are distinguished by the addition of a sugar moiety in the basic sugar subunit. Type A blood has an additional N-acetylgalactosamine on the end, while Type B blood has an galactose as the fifth sugar. In a patient with blood group B, blood type A was transfused. The patient raised antibodies against the transfused blood. What isotype of the antibodies are raised and why?	**2**
4A	IgA, the mucosal antibodies are the only class which can cross the membrane barrier in the body. With the help of a **diagram only** depict how this transport is made possible	**3**
4B	The diagram on the left depicts the Heavy chains and light chain V regions. What type of lymphocyte does this region belong to? With the help of a flowchart elaborate on the steps responsible for the increase in the thumbnails upon secondary and tertiary infection 	**4**
4C	List out the differences between the central tolerance undertaken by the BCR and TCR	**3**
5A	A person complained of heavy swelling in his left hand while another patient came with swollen lymph nodes. Do the two condition arise as a result of different reasons or are the underlying cause the same?	**2**
5B	i..Celiac disease (CD) is an immune-mediated disease triggered by the ingestion of wheat gliadin and related prolamins and is responsible for enteropathy in genetically susceptible individuals. In the autoimmune conditions mentioned above, elaborate on the role of adaptive component responsible for the disorder and how is it detected. b. There is a link between chronic inflammation and cancer. Justify using the glioblastoma model	**3*2**
5C	Methamphetamine is a addictive stimulant drug. It is a powder that can be made into a pill or a shiny rock (called a crystal). The powder can be eaten or snorted up the nose. What would be the immunological impact of this drug addiction on the body?	**2**