



MANIPAL INSTITUTE OF TECHNOLOGY
MANIPAL
(A constituent unit of MAHE, Manipal)

SEMESTER B.TECH. END SEMESTER EXAMINATION 2024

SUBJECT: IMMUNOLOGY

[BIO 2225]

Date of Exam: 11.05.24

Time of Exam: 2:30-5:30

Max. Marks: 50

Q. No.	Questions	Marks	CO	BLT
1A	The innate component of the immune system responds to bacterial infections. What are the oxygen-dependent and oxygen-independent processes utilized in the eradication of these infections?	4	2	2
1B	i) Using a microscope, how would you distinguish between a dormant macrophage and an active macrophage? ii) Explain the difference between an anergic B cell and an ignorant B cell.	3	2,3	2
1C	The lymphatic circulation works without a pump. With the help of a diagram depict the path of circulation.	3	1	3
2A	Anand underwent adenoid removal during childhood. Would this minor surgical procedure affect his overall immune health? Provide your insights.	4	2	3
2B	The lymph nodes aid in antigen filtration. Illustrate the entry and exit of antigens, as well as the various cells within the lymph node involved in this process.	3	1	3
2C	The innate immune system serves as the initial defense mechanism, crucial for promptly identifying and eradicating leptospires, the causative agents of rat fever or leptospirosis. In a particular case study, the individual's complement system was compromised. Would this individual be susceptible or resistant to this pathogen? Provide justification for your answer.	3	2	4
3A	The VDJ Recombination is an important part of the B cell maturation. With the help of a diagram depict the different enzymes and the events involved in it.	4	3	3
3B	Why should the neutrophils undergo diapedesis? What are the hallmarks for the initiation, recruitment stage and destruction stage of inflammation.	3	2	2
3C	HIV is known to evade the body's immune surveillance mechanisms and exploit its machinery for replication. Illustrate the process of this evasion using a flowchart or diagram.	3	3	3
4A	The Th1 phase or the Th2 phase of the T-cell based immunity decides the severity of the pathogenic condition. Explain with help of the downstream events which get activated resulting in the difference in severity.	4	4	3
4B	Why is IgM always the first BCR to be made by the B cells? Can there be instances where we can have exceptions. Explain with the help of a flowchart.	3	3	3

4C	T cells, are said to be of the lymphoid origin. Depict using a diagram, the development of the T cells starting from the bone marrow and culminating in the thymus.	3	3	3
5A	A weaning 2 years old child was given locally available cow's milk. The first instance brought about a bout of diarrhea even though the milk was pasteurized. His drinking milk was discontinued. After 3 years he visited his aunt's house where he was offered chocolate shake. The very instance resulted in aggravated reaction in his body and he was rushed to the hospital. Why did the condition become worse even after a lapse of the years? Explain using a diagram only.	4	4	3
5B	Drug addiction is a chronic, often relapsing brain disease that causes compulsive drug seeking and use, despite of harmful consequences to the drug addict. The chemical molecule that is often targeted is dopamine. Considering different actions of different drugs on this target molecule, how is the immunity affected?	3	4	3
5C	There was an outbreak of typhoid, a bacterial infection in one of the tropical regions and the nodal lab was detecting it using the qPCR technique. How does the technique work? How is it different from conventional PCR?	3	4	4
CO: Course Outcome; BLT: BLOOM TAXONOMY LEVEL: 1-Remember, 2-Understand, 3-Application, 4-Analysis, 5-Evaluation, 6-Creation				