

M.Sc. Examination, 2019
Semester-II
Biotechnology
Course : VII
(Immunology)

Time : 3 Hours

Full Marks : 40

Questions are of value as indicated in the margin.

Answer **any four** of the following

1. What are secondary lymphoid organs and tissues? Describe the structural organization and immune micro-environment of spleen with proper diagram. How is central tolerance achieved for T cells? 2+6+2=10
 2. a) What is multivalency of antibodies? How is this property helpful to develop various immunoassays?
b) What are antigenic determinants? A protein antigen has distinct amino acid sequences for hydrophobic peptides and hydrophilic peptides. To develop a vaccine, how might these peptides be used as vaccine candidates to induce different kinds of immune responses? (1+3)+(1+5)=10
 3. Compare hormones and cytokines by their general structural and functional properties. Explain the general working principle of the cytokine receptors with proper diagram. 5+5=10
 4. Mention the modes of attainment of functional diversity during somatic recombination in lymphocytes. Describe any two of them with proper diagrams. Explain the role of Activation-induced cytidine deaminase (AID) in antibody class switching. 2+6+2=10
 5. a) What is Anaphylaxis? How does it differ from Delayed type hypersensitivity?
b) Explain the granzyme-perforin pathway of CTL effector mechanism. (1+5)+4=10
 6. Short notes on **any four** of the following : 2.5×4=10
 - a) MALT
 - b) General structure of TLR
 - c) Interferon
 - d) Membrane Attack Complex
 - e) MHC haplotype
 - f) Recombinant vaccine
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