Birla Institute of Technology and Science, Pilani
First Semester 2023-24
Immunopharmacology (PHA G538)
Mid-Sem Examination

Max. Marks: 45 **Closed Book** **Duration: 90 Minutes**

Q1. Briefly outline five non-specific defenses against infection. For each, give examples of the physiological/pathological consequence(s) when this is **impaired**. **[5×2=10]**

Q2. "Phagocytosis and antigen presentation play a very critical role in both innate and adaptive immune response" – Describe how phagocytosis and antigen presentation influence **all** types of **adaptive immune response**. **[5]**

Q3. Why do T-cell receptors not undergo somatic hypermutation and affinity maturation? What problem would be there if they start doing that? **[3]**

Q4. What is the significance of having both intracellular and extracellular pattern recognition receptors? If innate immune system cells had only extracellular pattern recognition receptors, what would have been the consequences? **[3]**

Q5. Justify why the complement proteins are called the "antibodies of the innate immune system." **[3]**

Q6. Discuss the importance of macrophage polarization on CD-4 T cell function in terms of induction of inflammatory immune response, as well as control of inflammation. **[4]**

Q7. A person is having a recurrent viral infection. Surprisingly, s/he was found to have reinfection with common viruses, a one-time infection with that induces long-term immunity in a normal person. Cellular diagnosis identified a problem in the expression of a specific protein in the CD4 T cells. Identify that protein and explain the cause of recurrent viral infection. **[5]**

Q8. You were analyzing clinical samples isolated from a patient and found out that the B cells were able to make functional antibodies; however, they are not able to make memory B cells. All other immune cell types are functioning perfectly in that patient. Identify and explain the reason. **[5]**

Q9. What are type-I and type-II interferons? How do **both of them** play a critical role during viral infections? **[4]**

Q10. A virus X expresses three protein antigens, X_a, X_b, and X_c. Among these antigens, X_a has only T-cell epitope, X_b has only B-cell epitope, and X_c has both T-cell and B-cell epitopes. Describe the immune response against these three antigens. **[3]**

***** All the best *****