

※ 考生請注意：本試題不可使用計算機。請於答案卷(卡)作答，於本試題紙上作答者，不予計分。

1. Please describe how the different subsets of T cells (i.e. Th1, Th2, Th17, TFH, and Treg cells) are differentiated, and their distinct effector functions. (20%)
2. (a) Please describe the processes to generate the antibody diversity.
(b) What is allelic exclusion in individual B cells? (20%)
3. How to achieve immunological tolerance in our body? Please describe both central tolerance and peripheral tolerance. (20%)
4. (a) Please describe the immune surveillance theory of cancer.
(b) In order to increase the anti-tumor immunity, the strategy of check-point blockage has been used to develop immunotherapy for cancers. Please describe how PD-1-PD-L1 interaction can be beneficial for cancer growth, and the blockage strategy to improve the outcome of cancer treatment. (20%)
5. What are the mechanisms used by bacteria and viruses, respectively, to subvert the host immune system? (20%)