

※ 考生請注意：本試題不可使用計算機 請勿在本試題紙上作答，否則不予計分

A. 選擇題，每題五分，共 50 分。

1. While most immune reactions suppress tumor formation, tumor-promoting actions of immunity are detectable. Which of the following is **CORRECT**?
 - a. Deleting T cells promotes tumor development due to inactivation of T-dependent of NK cell activity.
 - b. Deleting T cells promotes tumor development due to elimination of Treg cells-associated suppressor activity.
 - c. Deleting macrophages promotes tumor development due to reduction in the tumor blood vessel that is essential for lymphocyte infiltration.
 - d. Deleting macrophages promotes tumor development due to elevated antibody production.
2. There are two types of vaccine (Sabin and Salk vaccines) available to prevent the poliovirus-induced disease. Which of the following statements is **TRUE**?
 - a. Sabin vaccine can induce long-lasting immunity because the attenuated virus can replicate in vivo and produce stronger immune responses, especially the cell-mediated immunity.
 - b. Sabin vaccine has a risk to cause polio vaccine-associated paralysis in very few children with immunodeficiency.
 - c. Sabin vaccine has additional advantage by spreading the attenuated virus through fecal-oral route, therefore increases the herd immunity in the population.
 - d. All of the above.
3. Which of the following statements concerning vaccine design is **TRUE**?
 - a. To increase the immunogenicity of the vaccine antigen, a mixture of superantigen can be used in human.
 - b. Organisms such as *Streptococcus pneumoniae* have large numbers of serotypes. Therefore, an effective vaccine should contain a complex mixture with most of the serotypes.
 - c. The vaccine for *Haemophilus influenza B* is polysaccharide that is strong immunogenic, and thus would induce IgG response or long-lasting protection in children.
 - d. Vaccination is only to prevent the infection-caused disease.
4. The vaccination against smallpox has been developed by Edward Jenner in 1798. Which of the following statement is **FALSE** regarding the Jenner's vaccination?
 - a. He noticed that milkmaids recovered from cowpox infection never obtained the smallpox.
 - b. Injection of cow pustules into a child develops the protective immunity against smallpox infection.
 - c. Protection of smallpox infection by the injection of cow pustules is mediated by the passive immunity.
 - d. Cowpox and smallpox viruses share the common antigenic determinants or epitopes.
5. Regarding the diseases relating to complement deficiency, which of the following is **CORRECT**?
 - a. No autoimmune is associated with mutations in genes encoding early complements.
 - b. C8 deficiency may cause frequent infections by *Neisseria* species.
 - c. Anti-microbial activity of IgA will be markedly enhanced in the absence of complements.
 - d. Complement activation is not required for leukocyte recruitment.
6. By organ transplantation in a random pairing fashion, what is the successful rate?
 - a. 75%
 - b. 50%
 - c. 25%
 - d. Almost zero

(背面仍有題目,請繼續作答)

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7. Which of the following tests is **NOT** dependent on the antigen-antibody interaction?
- Complement fixation assay
 - Thymidine incorporation test
 - Hemagglutination test
 - Western blotting
8. Which of the following is **TRUE** regarding major histocompatibility complex (MHC)?
- It is responsible for antigen presentation to B-cell receptor (BCR).
 - The expression level of MHC molecules is always kept constant.
 - MHC molecules show a broad spectrum for peptide binding.
 - MHC molecules can discriminate between foreign peptides and self peptides.
9. Which of the following is a compliment mediated inflammation?
- Skin rashes to poison ivy
 - Schwartzman reaction
 - Koch reaction
 - Tuberculin reaction
10. Which of the following statements is **TRUE** regarding antibody response?
- The antibody titer in a secondary response is comparable to primary antibody response.
 - IgM is the major antibody species in a secondary response.
 - The average affinity of antibodies is higher in a secondary response to a T-dependent antigen.
 - A secondary response is characterized by a long lag phase and a quick subside.

B. 問答題，每題 10 分，共 50 分。

- Describe what you know about the complement system and their pathways. (10%)
- MHC class I and class II molecules use different pathways for antigen presentation on the cell surface. Described these two different pathways and how these differences are related to the different functions of class I and class II molecules. (10%)
- Toll-like receptors (TLRs) have a crucial role to initiate immune responses by recognition of pathogenic molecules, which are so called pattern recognition receptors (PRRs). Please describe what you know about TLRs and PRRs. (10%)
- Describe what you know about innate immunity and adaptive immunity. Also, how innate immunity can lead to induction of adaptive immune responses? (10%)
- In your own opinion, what is one of the most important immunological questions to be resolved and why? (10%)