

國立清華大學 101 學年度碩士班考試入學試題

系所班組別：生命科學院甲組、醫學生物科技學程

考試科目（代碼）：生物學(0402、0702)

共_2_頁，第_1_頁

*請在【答案卷】作答

I. 單選題 (8%)

1. _____ is defined as the presence of virus in the bloodstream. (2%)
 - A. anemia
 - B. viremia
 - C. hemovirales
 - D. leukemia
 - E. All of the above
2. Which of the following is not protected by IgA? (2%)
 - A. Skin
 - B. Gastrointestinal tract
 - C. Respiratory tract
 - D. Urogenital tract
 - E. All of the above
3. Which virus' infectious process is epitomized by latency? (2%)
 - A. HIV
 - B. Measles
 - C. Herpes
 - D. Pox
 - E. All of the above
4. Which type of vaccine is not appropriate to give to immunocompromised individuals? (2%)
 - A. live attenuated viruses
 - B. recombinant subunit vaccines
 - C. peptide vaccines
 - D. killed or inactivated viruses
 - E. All of the above can be used in anyone.

II. 名詞解釋&簡答題 (4%)

1. Viral envelope glycoproteins (2%)
2. Adjuvant (2%)

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III. 問答題 (88%)

1. Please make the comparisons between Th1 and Th2 cells. (8%)
2. Please describe the current model for the signal mechanism of cotranslational import. (6%)
3. Please describe how G protein-linked receptor, via cAMP, can activate gene expression in the nucleus. (7%)
4. Please describe the distinct mechanisms for converting proto-oncogenes into oncogenes. (7%)
5. Compare and contrast the mechanisms that prokaryotes and eukaryotes use to find the translation initiation AUG codon. (6%)
6. How does a tRNA serve as an adaptor between the 3-bp codons in mRNA and the amino acids in protein? (4%)
7. Describe the basic principle of 2-dimensional gel electrophoresis. (5%)
8. Explain the principle of site-directed mutagenesis, and describe a method to carry out this process. (5%)
9. Give an example of appetite-regulating hormone, and describe how it controls the balance of food intake. (5%)
10. What is MHC? What are the interactions of cytotoxic T cells and helper T cells with MHC molecules? (5%)
11. Describe how antidiuretic hormone (ADH) regulates water balance. (5%)
12. Describe advantages of asexual reproduction and sexual reproduction. (5%)
13. What are EPSP and IPSP? Use them to explain summation of postsynaptic potentials. (5%)
14. Why are photoreceptors of vertebrates hyperpolarized upon light stimulation? (5%)
15. Distinguish Batesian mimicry and Müllerian mimicry. (5%)
16. List the three major threats to biodiversity and give an example of each. (5%)