

系所組別：醫學檢驗生物技術學系

考試科目：微生物與免疫

考試日期：0220，節次：3

※ 考生請注意：本試題 可 不可 使用計算機

1. Describe the principle of Gram stain and the importance of the stain in clinical microbiology. (10%)
2. Describe possible mechanisms that confer bacterial resistance to antimicrobial agents. (10%)
3. Please describe the following questions related to 2009 pandemic influenza virus (20%).
 - (A) Genetic characteristics of 2009 pandemic influenza virus
 - (B) Detection methods for 2009 pandemic influenza virus and methods to differentiate 2009 pandemic influenza virus from other influenza viruses
4. Antibody detection against pathogens is very important for clinical diagnosis. Please describe the following questions regarding to antibody response
 - (A) What are the differences between primary and secondary antibody responses (10%)
 - (B) What are the explanations for these differences? (5%)
 - (C) Knowing these differences, what considerations we should take when antibody detection is used as a diagnostic marker for a pathogen-induced infection? (5%)
5. The innate immune system engages an array of germline encoded pattern-recognition receptors (PRRs) to detect invariant microbial motifs. Please describe the following questions regarding to innate immunity:
 - (A) How many kinds of PRRs did you know? (6%) Please briefly describe their recognition strategy and signaling pathways. (6%)
 - (B) Please explain briefly the following terms:
 - i. inflammasome (2%)
 - ii. apoptosis (2%)
 - iii. pyroptosis (2%)
 - iv. autophagy (2%)
6. List four major mechanisms of immunologically mediated hypersensitivity reactions and give an example (disorder) for each mechanism. (8%)
7. Describe how viruses cause diseases in brief. (12 %)