

國立成功大學

114學年度碩士班招生考試試題

編 號：193

系 所：微生物及免疫學研究所

科 目：微生物學

日 期：0211

節 次：第 3 節

注 意：1.不可使用計算機
2.請於答案卷(卡)作答，於
試題上作答，不予計分。

<細菌學>

1. Bacteria can infect humans through various routes. Please list five examples of bacterial pathogens and the infection routes they utilize. (10%)
2. Antibiotics are one of the most important inventions in human history. There are various antibiotics with different antibacterial mechanisms. Please list five basic mechanisms of antibiotic action. (10%)
3. Many bacteria can evade phagocytic killing through various mechanisms or directly kill the phagocytes. Please name four bacterial mechanisms for escaping phagocytic clearance. (10%)
4. You have obtained a wound isolate of *Streptococcus pyogenes* from a 5-year-old boy with a severe lower limb infection. You suspect this isolate has a higher virulence potential than other strains. Please design a comprehensive study using a complex of methods to assess its virulence and investigate the mechanisms responsible for the disease. (10%)
5. Gram staining is a rapid, powerful, and simple test that allows clinicians to distinguish between the two major classes of bacteria: Gram-positive and Gram-negative. Please compare the differences and similarities between Gram-positive and Gram-negative bacteria. (10%)

<病毒學>

6. Please briefly describe the major steps of viral replication, using one virus as an example. (10%)
7. Compare the differences and similarities between antigenic drift and antigenic shift in the influenza A virus. Which of these factors is more likely to result in pandemics? (10%)
8. Please briefly describe features of prions that distinguish them from viruses. (10%)
9. Hepatitis D virus (HDV) is a defective virus that cannot replicate independently. Please briefly describe HDV coinfection and superinfection. (5%)
10. Mpox, previously called monkeypox, was declared a Public Health Emergency of International Concern (PHEIC) again in August 2024. It is caused by the monkeypox virus (MPXV) and typically presents with a skin rash or mucosal lesions lasting 2 to 4 weeks, along with fever, headache, muscle aches, and swollen lymph nodes.
 - (1) What is the mode of transmission for MPXV? (5%)
 - (2) What treatment options are currently available for mpox? (5%)
 - (3) There are several vaccines available for MPXV. Please list one example and briefly describe what you know about this vaccine. (5%)