

國立成功大學

111學年度碩士班招生考試試題

編 號： 275

系 所： 微生物及免疫學研究所

科 目： 微生物學

日 期： 0220

節 次： 第 3 節

備 註： 不可使用計算機

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第1頁，共1頁

※ 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。

[細菌學部分]

1. There are so many bacterial virulence mechanisms, please describe at least three different mechanisms, briefly introduce each mechanism and list one example of each mechanism. (15%)
有許多細菌毒力機制，請敘述至少三種機制並各自略為介紹且每種機制舉出一個例子。
2. There are several mechanisms for horizontal gene transfer, please describe bacterial horizontal mechanisms and briefly introduce each mechanism. (15%)
有一些基因水平轉移的機制存在，請敘述細菌的基因水平轉移機制有那些?並各自略為介紹。
3. Nucleic acid testing or PCR is often used when diagnosing bacterial infections in the laboratory. Please describe the principle of PCR. (10%)
在實驗室診斷細菌感染時常常會使用核酸檢測即 PCR，請敘述 PCR 的原理。
4. A stool specimen was collected from a patient with diarrhea. The doctor judged that it was caused by a bacterial infection, but it still did not improve after vancomycin treatment. If you are a medical laboratory worker, how would you isolate the bacterium that cause diarrhea? (10%)
有份糞便檢體收集自一位腹瀉病人，醫師判斷是細菌感染所造成，但經過萬古黴素治療依然沒有改善。如果你是一個醫檢實驗室工作人員，請問你會如何分離出導致腹瀉的病菌呢?

[病毒學部分]

5. (1) Please describe the process of influenza A virus replication. (10%) (2) Please explain what antigenic shift is and which step of replication cycle may contribute to antigenic shift. (5%)
6. Please describe how human immunodeficiency virus (HIV) destroy the immune system and what types of illnesses cause death in patients with acquired immunodeficiency syndrome (AIDS)? (10%)
7. Please design experiments to prove that human papillomaviruses (HPV) cause cervical cancer. (15%)
8. The ongoing pandemic caused by the novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). (1) Please describe how SARS-CoV-2 entry the target cells. (4%) (2) Please list two available/potential antiviral drugs and their therapeutic targets. (6%)