

※ 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。

1. Please describe the techniques that can be used to measure the levels of genes expressed in cells (20%) or in tissues (20%). Please briefly explain the concept of all the techniques mentioned.

2. Polyacrylamide gel electrophoresis (PAGE) is a technique often used to separate protein molecules. Usually sodium dodecyl sulfate (SDS) will be added to the polyacrylamide gel, sometimes not. What is the purpose of adding SDS and how do you decide whether to include SDS in your PAGE? (20%)

3. The figure present a cell apoptosis assays after cells receiving treatments of C, F, C+F, or blank control with or without the co-treatment of N. Please describe the interaction between C, F, and N on the regulation of cell apoptosis based on the result presented here. (40%)

