

※ 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。

問答題 (50 points for each question)

1. a. Many bacteria acquire increased resistance to antibiotics due to the drug resistance gene inside a transposon, which has very low copy number before drug treatment. Write down possible mechanisms involved to explain the phenomenon (25%)
b. For eukaryotic cells, many transposons also present in the genomes. Write down possible pathways these transposons change gene expression. (25%)
2. Baker's yeast (*Saccharomyces cerevisiae*) belongs to fungi from phylogenic point of view. Write down reasons to explain:
 - a. The good and bad sides of using it to represent eukaryotes. (25%)
 - b. Why biologists use it as a model system to study eukaryotic cell physiology such as cell cycle. (25%)