

※ 注意：請於答案卷上依序作答，並應註明作答之部份及其題號。

**Part I, 50%**

**A: Brief question (5% each), 20%**

1. What is the nucleosome (include the histone components)?
2. What is the single X chromosome hypothesis?
3. How to detect the DNA methylation by using restriction enzymes?
4. How many types of DNA binding proteins (transcription factor) based on their structural conformation?

**B: Complete question (10 % each), 30%**

1. What is RNA interference silencing? What are Argonaute Protein, Drosha complex and Dicer complex?
2. Please describe the nuclear RNA splicing process. What are the group II and group I RNA splicing?
3. Please describe the mechanism by which the *Agrobacterium tumefaciens* transfer T-DNA to plant host.

**Part II, 50%**

**A: Term Explanation (2% of each), 10%**

1. Nick translation
2. AP endonuclease
3. Photolyase
4. DNA Ligase IV/XRCC4
5. Mfd protein

**B: Assay, 40%**

1. What are the "SOS response" and "Error-prone repair by DNA polymerase V", how the RecA to involve with it ?? (10%)
2. 3'-OH is essential for DNA replication, please describe 4 different ways to provide the 3'-OH in priming reaction. (10%)
3. Double-strand DNA break triggers recombination in *E. coli* which involves with (a) chi site (b) Rec complexes (c) Ruv factors, please describe the mechanism. (20%)

試題隨卷繳回