※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%):

1. Please define transposon, retrotransposon and retrovirus. Pointing out the similarity and difference. (10%)

2. What is epigenetics? How does histone interact with DNA and the mechanism histone regulate gene expression? (10%)

3. What is the functional difference of RNA polymerase I, II and III? What are the components and function of basal apparatus binding at the promoter during gene transcription? (10%)

4. What is the difference between nuclear RNA splicing and group II/group I autosplicing. (5%)

5. How does the *vir* gene cause T-DNA to be transferred to the plant cell nucleus in *Agrobacterium* system? (10%)

6. What is ribozyme? Please give a example to describe its function, and the evolutionary significance. (5%)

Part II (50%):

1. 以下的方法其主要應用為何 (20%)。
(a) Footprinting
(b) Yeast One Hybrid
(c) Yeast Two Hybrid
(d) RNA Interference
(e) Electrophoretic Mobility Shift Assay

2. 在真核細胞中 Nucleotide Excision Repair 如何進行，以 Xeroderma pigmentosum (XPA to XPG, ERCC1, RPA, $TF_{II}H$, RFC, PCNA, POLδ/ε, Ligase III, XRCC1) 為例 (15%)。

3. 請說明細菌的 *minB* locus 基因，MinC/D/E，如何調控 septum location (15%)。

試題隨卷繳回