

※下列題目請標明題號，依序作答於試卷內「非選擇題作答區」。可用中文或英文作答※

- 一、 Please explain the following terms (20%):
 - (1) retrotransposon
 - (2) spliceosome
 - (3) fluorescence recovery after photobleaching (FRAP)
 - (4) noncompetitive inhibitor
 - (5) genome-wide association study (GWAS)
- 二、 Please describe the mechanism that short-lived proteins, such as cyclins, are recognized and degraded in cells. (10%)
- 三、 Please describe the structure and function of the centrosome in detail. (10%)
- 四、 Please describe the mechanism that lysosomal enzymes are sorted and transported at the *trans*-Golgi network (TGN). Please include the roles of receptors, adaptors and coat proteins during the process in your answer. (10%)
- 五、 Please describe the most likely events leading to the evolvement of photosynthesis organisms from prokaryotic ancestors. (10%)
- 六、 Please shortly describe an example of signaling pathway that is common in animals but absent from plant cells, and vice versa. (10%)
- 七、 Please explain how the CRISPR-Cas9 gene editing technique works. (15%)
- 八、 Please explain how real-time polymerase chain reaction (RT-PCR) experiments are conducted and what Ct values mean. (15%)

試題隨卷繳回