

科目：分子生物學

系所組：營養科學系

1. How are eukaryotic transcripts processed? Please describe the mechanisms by which messenger RNA precursors can be post-transcriptional processing. (25%)
2. DNA damage may arise from endogenous processes or from exogenous agents, such as UV light, ionizing radiation, or mutagenic chemicals. Cells have extraordinarily diverse and effective systems to repair these lesions in DNA so that the genetic information is not lost or altered. Please explain the DNA repair system including direct reversal damage repair, single-strand damage repair and double-strand break repair. (25%)
3. Cellular proteins are in a dynamic state of turnover, with the relative rates of protein synthesis and protein degradation ultimately determining the amount of protein present at any point in time. In some instances, the amounts of regulatory proteins such as transcription factors are controlled via selective protein degradation. List 5 most common post-translational modifications of proteins and the working mechanisms. (25%)
4. You are designing, by genetic engineering, a protein that needs to be synthesized in the cytoplasm and then localized in the nucleus of the cell. Please describe general mechanisms by which cytosolic proteins are delivered to the nucleus by translocation. (25%)

※ 注意：1. 考生須在「彌封答案卷」上作答。

2. 本試題紙空白部份可當稿紙使用。

3. 考生於作答時可否使用計算機、法典、字典或其他資料或工具，以簡章之規定為準。