

請務必於試卷紙上作答，違者該科不於計分。

1. What are the biological epigenetic markers in eukaryotic cells? (10%)
2. Draw a figure and explain the cell death pathways. (10%)
3. Describe the basic experimental methods to measure apoptosis and cell cycle progression. (10%)
4. Describe the role of “proteolysis” in cell cycle progression. (10%)
5. Describe the interaction between specific transcription factor, enhancer, promoter, initiator, and general transcription factors in eukaryotic transcriptional activation. (10%)
6. Describe the initiation of replication in prokaryotic cell. (10%)
7. Describe the production and biological function of miRNA in eukaryotic cells. (10%)
8. Describe the folding of DNA into interphase chromosome in eukaryotic cell. (10%)
9. The expression of X gene can be induced by incubation of the cells with epidermal growth factor. Addition of actinomycin D can abolish this induction. What is your experimental approach to study the molecular mechanism of induction of X gene by epidermal growth factor. (10%)
10. You have identified a novel gene KMU-1, and expressed the HA-tagged KMU-1 protein in COS-1 cells. Immunofluorescence with anti-HA antibody revealed the KMU-1 was mainly localized in cytosol; however, the KMU-1 rapidly transported into nucleus after UV irradiation. What is your experimental approach to study the molecular mechanism of KMU-1 translocation under UV irradiation? (10%)