

※ 考生請注意：本試題不可使用計算機

1. What is “RNA interference”? Please describe the underlying mechanisms and its implications (15 points).
2. What are “Telomere” and “Telomerase”? Please describe their roles in biology and pathology (15 points).
3. Protein A is possibly involved in regulating expression of Gene B. Please design experiments to determine whether Protein A is a transcriptional factor for Gene B expression. (20 points).
4. Describe the role of the base inosine in wobble pairing. (10 points)
5. How does the tRNA that binds to the AUG start codon differ from the tRNA that binds to an AUG codon elsewhere in the coding sequence of an mRNA? (10 points)
6. Describe the major differences between prokaryotic and eukaryotic mRNA? (15 points)
7. Define the following terms and describe their applications: (15 points)
 - a. SNP
 - b. minisatellite
 - c. reverse genetics