系所組別： 生物科技研究所甲、乙組

考試科目： 分子生物學

※ 考生請注意：本試題 □可 ☑不可 使用計算機

SHORT ESSAY 簡答題(Five points for each question.每題五分)

1. What is DNA marker? Please explain the significance and how to apply it in bio-industry.
2. What is different between genomic DNA library and cDNA library? Please explain the significance.
3. What is EST (expressed sequence tag)? Please explain its application in biosciences or biotechnology.
4. What is SNP (single nucleotide polymorphism)? Please explain its application in biosciences or biotechnology.
5. What is RNA interference (RNAi)? Please explain the mechanism and how to apply it in biosciences or biotechnology.
6. What is imprinting? Please explain the mechanism and significance.
7. What is the different between gene cluster and gene family?
8. What is epigenetic inheritance? Please explain its significance.
9. What is the experiment that gives the results to prove that DNA replication is semiconservative. Please draw and explain the results and significance.
10. Draw the clover leaf tRNA structure and point out the important structure elements.
11. What is the process of telomere synthesis? Please explain the mechanism and significance.
12. If the anticodon sequence is 3' AUG 5', what is the sequence of the nontranscribed DNA?
13. What is RNA editing? Please explain the mechanism.
14. What is the 5' cap in eukaryotic mRNA? Please explain the significance.
15. Please describe what is negative regulation and positive regulation in operon.
16. What is P element? Please explain how to apply it in biosciences or biotechnology.
17. What is the nuclear run-on assay? Please explain how it differs from a run-off assay.
18. What is the translocon? Please explain the mechanism and significance.
19. What is type I topoisomerase? Please explain the mechanism and how to apply it in biosciences or biotechnology.
20. What enzyme performs proofreading in human base excision repair? Please explain the mechanism and how to apply it in biosciences or biotechnology.