※ 考生請注意：本試題 □可 ☑不可 使用計算機

1. Please describe several methods that can be used to detect single nucleotide polymorphism in DNA. (12%)
2. Please describe several methods that are commonly used to quantitate the amplicons during real-time PCR. (13%)
3. (1) Define **proteomic analysis**; (2) Provide three different proteomic approaches/techniques commonly employed in biomedical research; (3) Briefly explain the principles and procedures for each of these three techniques. (12%)
4. (1) Define **comparative genomic hybridization (CGH)**; (2) Briefly explain the principles and procedures for CGH. (7%)
5. Explain why **umbilical cord blood (臍帶血)** has become a very useful biotech product. And how it can be employed to medical treatment/research? (6%)
6. In breast cancer cells, protein X can be down-regulated in response to anti-cancer drug. Please design four methods to explore the down-regulation and describe their rationale. (20%) What do you expect the possible roles of the protein X in breast cancer? (5%)
7. What is component vaccine? Please describe the advantages and disadvantages of component vaccines generated by recombinant protein technology. (25%)