

慈濟大學 100 學年度
碩士班暨在職專班招生考試命題紙

科目：生物化學 **分遺**

共1頁

1. Explain the principles underlying the following techniques, illustrate with example of application in molecular genetics: (10%)
(a) quantitative RT-PCR (b) restriction fragments length polymorphism (RFLP)
2. Briefly describe the basic principle of Dideoxy DNA sequencing. (8%)
3. Write short notes on: (12%)
(a) Exon and Intron (b) CpG island (c) 5'UTR and 3'UTR regions
4. Briefly describe the following terms: (12%)
(a) frameshift mutation (b) nonsense mutation (c) mutation in a consensus splice site
5. Briefly describe the basic principle for PCR and what are the important elements/reagents needed to perform PCR? (8%)
6. Describe the forces that stabilize protein quaternary structure. (5%)
7. In what part of the eukaryotic cell does each of the following metabolic process take place? (a) glycolysis (b) citric acid cycle (c) gluconeogenesis; oxaloacetate to glucose (d) gluconeogenesis; pyruvate to malate (e) pentose phosphate pathway (10%)
8. (1) Briefly define the primary, secondary and tertiary structure of a protein. (9%) (2) Which methods used to determine the primary, secondary and tertiary structure of a protein, respectively? (6%)
9. In a mixture of the five proteins listed below, please write down the elute order in size-exclusion (gel-filtration) chromatography? (5%)
Protein A; $M_r = 53$ KDa
Protein B; $M_r = 145$ KDa
Protein C; $M_r = 20.5$ KDa
Protein D; $M_r = 450$ KDa
Protein E; $M_r = 68.5$ KDa
10. Briefly describe the microRNA. (5%)
11. Cholesterol is called a membrane fluidity buffer. Why? (5%)
12. Which of the following fatty acid that has the higher melting temperature. Why?
18:0 and 18:1 Δ^9 (5%)