

慈濟大學 103 學年度  
研究所碩士班招生考試命題紙

科目：生物化學(分遺碩)

共1頁

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1. Write short notes on: (10 %)

(a) 5'UTR and 3'UTR regions (b) Exon and Intron

2. (a) Briefly define the primary, secondary and tertiary structure of a protein.(10%)

(b) Define a two-dimension (2D) gel electrophoresis of proteins. (10%)

3. What is quantitative reverse transcription-PCR (qRT-PCR) and its applications? (10%)

4. Briefly describe the non-sense mutation. (10%)

5. In a mixture of the five proteins listed below, please write down the elute order in size-exclusion (gel- filtration) chromatography? (10 %)

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

6. Briefly describe the microRNA. (10%)

7. Name the bonds or forces that contribute to stabilizing the native structure of a protein (10%)

8. If you are given 1  $\mu$ g of total RNA extracted from a rat liver and all the necessary reagents needed for cloning a gene, please briefly show us step-by-step how you can clone a liver gene X and prove that you have the complete sequence. (20%)