

慈濟大學 101 學年度
研究所碩士班招生考試命題紙

科目：生物化學

共1頁

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1. Briefly describe the RNA interference and its application. (10%)
 2. 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%)
 3. (1) Briefly define the primary, secondary and tertiary structure of a protein.(6%)
(2) Define a two-dimension (2D) gel electrophoresis of proteins. (6%)
 4. (1) Name the type of bond that links the following molecules (a) amino acid to amino acid in protein (b) nucleotide to nucleotide in DNA (c) codon in mRNA to anticodon in aminoacyl-tRNA. (3 %)
(2) Briefly describe the “Nucleosomes” (7%).
 5. In a mixture of the five proteins listed below, please write down the elute order in size-exclusion (gel- filtration) chromatography? Why? (8 %)
Protein A; $M_r = 20$ KDa
Protein B; $M_r = 250$ KDa
Protein C; $M_r = 205$ KDa
Protein D; $M_r = 95$ KDa
Protein E; $M_r = 43$ KDa
 6. What is polymerase chain reaction (PCR) and what are the important elements/reagents needed to perform a PCR? (10%)
 7. What is quantitative reverse transcription-PCR (qRT-PCR) and its applications? (10%)
 8. Briefly describe the basic principle of DNA sequencing. (10%)
 9. Briefly describe the basic structure of a gene in mammalian system. (10%)
 10. (1)What is the difference between single nucleotide polymorphism (SNP) and mutation? (5%)
(2) Briefly describe the different types of mutation. (5%)