

國立嘉義大學九十六學年度
生物醫藥科學研究所碩士班招生考試試題

科目：生物化學

1. Please according following descriptions to answer the questions.

Description 1: the average molecular weigh of a nucleotide is 650 daltons

Description 2: the average length of a nucleotide is 3.4 Å

Description 3: the average molecular weigh of an amino acid is 110 daltons

Description 4: one turn of the helix is 0.54 nm containing 3.6 amino acids

A α -helix protein containing fifteen turns, please answer the following questions: (25%)

Question A: the total molecular weight of the α -helix protein.

Question B: How much molecular weight of the mRNA to translate the protein?

Question C: The gene contains exons without introns. How long of the gene to make the protein?

Question D: The protein is a transmembrane protein. Please predict the numbers of hydrophobic and hydrophilic domains on the protein, respectively.

Question E: Please describe a method to purify the protein.

2. The classification numbers of enzyme is 6. Among them, class 1 is oxidoreductases. Please write the other enzyme classes and their catalyzed functions. (25%)
3. How does the amino acid sequence of a protein specify its three-dimensional structure? (25%)
4. Explain the principle and biological application of “differential centrifugation” and “isopycnic centrifugation”. (25%)