

國立交通大學試題紙

九十七學年度第二次
博士班資格考

科目：生化學

日期：98 年 7 月 24 日 第 1 頁 共 1 頁

請“✓”明 ✓不可看書 可看書

* 請將答案依題號順序寫入答案卷

答題時字跡需工整，否則不予計分。Write your answers legibly; otherwise you will get zero score.

1. Please briefly describe the structure of DNA that can demonstrate its function as genetic material.
2. Please describe the differences among the three types of DNA structures. (A-, B- and Z-DNAs)
3. Please explain why the double-stranded DNA molecules can be separated more easily at pH > 11 and why they can be separated by heat.
4. Please give the approximate size of a cell, protein and water molecule.
5. How would you separate each protein from cell extract? How would you identify each protein following the separation?
6. What would you do to clone a gene from cell?
7. What are the methods that can be used to determine the three dimensional structure of a protein? Please give two examples and briefly describe their theory and limitation.
8. How would you purify a protein? Please list the procedures required.
9. K_m , V_{max} , k_{cat} and k_{cat}/K_m are basic kinetic constants in an enzymatic reaction. Please give definition for each of the rate constant.
10. The solubility of a protein is influenced by pH and ionic strength. Please explain why.