

國立交通大學試題紙

科目：生化學

日期：100 年 1 月 28 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. What are the methods that can be used to determine the structure of a protein? Please give two examples and briefly describe their theory and limitation.
2. What are the modern methods used to study proteomics? Please give a simple flow sheet and briefly describe two of the techniques involved.
3. Please give the approximate size of a cell, protein and water molecule.
4. Please describe primary, secondary and tertiary structures of protein.
5. Both SDS-PAGE and gel filtration chromatography are used to separate proteins according to their sizes. Please explain why smaller proteins move faster in SDS-PAGE but slower in gel filtration chromatography.
6. Please give three examples of protein post-translational modifications.
7. Please briefly describe the structure of DNA that can demonstrate its function as genetic material.
8. Please explain why the double-stranded DNA molecules can be separated more easily at pH > 11 and why they can be separated by heat.
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 at low ion concentrations increases as salt is added. However, as more salt is added, the solubility of the protein again decreases. Please explain why.