

國立交通大學試題紙

九十九學年度第二次
博士班資格考

科目：生化學

日期：100 年 7 月 29 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. Protein-protein interactions are important for the initiation of many biological events.
 - a. Please explain how specific proteins can recognize each other.
 - b. What can be the consequence following protein-protein interaction?
 - c. What biochemical techniques are useful to study protein-protein interactions?
2. Posttranslational modifications of protein are crucial for the function of many proteins.
 - a. Please describe what biological activities can be regulated by posttranslational protein modification.
 - b. What biochemical tools can be used to study posttranslational modification?
 - c. Please give three examples of protein post-translational modifications.
3. Protein structure plays a critical role on every biological event including protein-protein interaction and protein posttranslational modification described above.
 - a. Please describe primary, secondary and tertiary structures of a protein.
 - b. Describe how the three dimensional protein structure can be determined. Please give two examples and briefly describe their theory and limitation.
4. Purification and separation of proteins are important to identify and understand how protein works.
 - a. How would you separate each protein from cell extract? How would you identify each protein following the separation?
 - b. How would you purify a protein? Please list the procedures required.
 - c. K_m , V_{max} , k_{cat} and k_{cat}/K_m are basic kinetic constants used to characterize the activity of enzymes. Please give definition for each of the rate constant.
5. Most protein sequences are obtained through the translation of DNA sequence of their genes.
 - a. Please briefly describe the structure of DNA that can demonstrate its function as genetic material.
 - b. What would you do to clone a gene from cell?