系所組別：生物醫學工程學系丙、丁組

考試科目：生物化學 考試日期：0223，節次：2

※ 考生請注意：本試題不可使用計算機

1. Enzyme-linked immunosorbent assay (ELISA) has become an important clinical method to analyze the biomarkers, please express it in detail and then describe its problems in practical use? (10%)
2. What are the glycoproteins and proteoglycans？ (10%)
3. What are the definitions and the units of K_M and k_{cat} in the enzyme kinetic analysis? (10%)
4. Glucose oxidase is a FAD-containing redox enzyme, how do it recognize and react with glucose? (10%)
5. Please draw the chemical structure of a tetrapeptide: (10%)
   NH_3^+-Arg-Gly-Asp-His-Tyr-COO^--
6. How does insulin functionize on cell membrane to transport glucose into the cell? (10%)
7. What is "fluorescence"? Please give an example and explain how it can be used in biotechnology. (10%)
8. The enzyme is classified to be six kinds as the following, please express their main function respectively. (10%)
9. Please explain the following technology and their applications: (4 x 5 = 20%)
   (1) Protein microarray
   (2) Buffer solution
   (3) Osmotic pressure
   (4) van der Walls interactions