※ 考生請注意：本試題不可使用計算機

Essay Questions 問答題　總分 100 分

1. Please explain how to sequence a protein. (9 points)

2. Please explain how to determine the molecular weight of a protein. (9 points)

3. Please explain how the sodium-potassium pump operates. (9 points)

4. Please give an overview of pyruvate oxidation and the citric acid cycle. (9 points)

5. Please give an overview of Calvin cycle, in the dark reaction of the photocynthesis. (9 points)

6. Please explain how the ammonia transports and urea synthesis. (9 points)

7. Please descript the protein structure of antibodies. (9 points)

8. Please explain what is triacylglycerols, waxes, glycerophospholipids, sphingolipid, glycosphingolipids; and draw the chemical structures of them. (9 points)

9. Please give a brief definition and an example of the following enzymes. (18 points)
    a. Oxidoreductases
    b. Transferase
    c. Hydrolases
    d. Lyases
    e. Isomerases
    f. Ligases

10. Please explain what is "metabolomics" and give an example. (10 points)