

1. Please describe Krebs cycle in carbohydrates metabolism. (15%)
2. Please answer in the structural characteristics and properties of protein. (15%)
 - (1) Explain why, for proteins with a single transmembrane segment, the segment is a hydrophobic helix. Why a helix? Why hydrophobic residue?
 - (2) Please list three distinctive features of enzymes that distinguish them from chemical catalysts and briefly explain.
3. Please describe the difference between prokaryotic and eukaryotic cells in detail. (10%)
4. Please give examples to explain what they are and what is the importance of coenzyme and cofactor, respectively? (10%)
5. Please give a description on the molecular mechanism to express the differences between gene knockout and gene knockdown in mammalian system? (10%)
6. Hemoglobin and myoglobin are oxygen-binding proteins, please describe their roles and the cooperation in our body. (10%)
7. When we take exercise, cells will take what kinds of strategy for providing more energy. (Hint: describe energy from glycogen). (10%)
8. Please describe the following analytical techniques. (10%)
 - (1) High performance liquid chromatography
 - (2) Capillary electrophoresis
9. Enzyme activity can be affected by some factors, please describe them and explain the reasons. (10%)