

簡答下列問題，每題十分。所有考題務必在答案卷上作答。

- Describe the types of noncovalent interactions that are important in providing stability to the structure of macromolecules.
- What is buffer solution?
- Describe the primary structure of a protein.
- A biochemist obtains the following set of data for an enzyme that is known to follow Michaelis-Menten kinetics.

Substrate concentration (μM)	Initial velocity ($\mu\text{M}/\text{min}$)
1	49
2	96
8	349
50	621
100	676
1000	698
5000	699

What is V_{max} for the enzyme? Explain how you determined V_{max} .
 What is K_{m} for the enzyme? Explain how you determined K_{m} .

- What is the molecule to which fatty acids are esterified to form triacylglycerol?
- AcetylCoA is a very important intermediate that initiate the Krebs Cycle, describe the possible sources for the generation of acetylCoA.
- For each two-carbon increase in the length of a saturated fatty acid chain, how many additional moles of ATP can be formed when it is completely oxidized to CO_2 and H_2O ?
- Describe classes of hormones and explain their general mode of action.
- Compare transcription and reverse transcription in terms of the following characteristics: (a) direction of polynucleotide synthesis; (b) template; (c) primer; (d) incorporated nucleotides.
- Why must the DNA polymerase used in the polymerase chain reaction (PCR) be heat stable?