

(A) Define the following terms: (40%)

- 1) Enthalpy and entropy
- 2) Active and facilitated transport
- 3) N-linked and o-linked glycans
- 4) Competitive and noncompetitive inhibitors
- 5) Consensus sequence and enhancer sequence
- 6) Southern blotting and Western blotting
- 7) Oncogenes and protein kinases
- 8) Curie and IU of enzyme activity

(B) Answer the following questions: (60%)

- 1) a) Compare the structural and functional differences between myoglobin and hemoglobin.
b) Explain how the Chou-Fasman method can be used for the prediction of protein secondary structure.
- 2) What is ribozymes and give an example to show the reaction of ribozymes.
- 3) Compare the differences between lactate and ethanol fermentation, and explain how these reactions are important in the origin of cells.
- 4) a) Draw a diagram to illustrate the glyoxylate cycle.
b) Compare the differences between this cycle and Kreb's cycle.
- 5) a) Give the different types and consequences of DNA damage.
b) Explain how the damage DNA can be repaired in *E. coli*.
- 6) a) Draw a diagram to show the basic principle of site-directed mutagenesis technique.
b) What is the purpose of this technique in biochemical study.