系所組別：資源工程學系乙組

考試科目：熱力學

※ 考生請注意：本試題不可使用計算機。 請於答案卷(卡)作答，於本試題紙上作答者，不予計分。

(1) Explain clearly what is meant by a thermodynamically reversible process. Why is the reversible work done by a system the maximum work? (15%)

(2) Explain the thermodynamic meaning of a system, distinguishing between open, close and isolated systems. Which one of these system is (a) a fish swimming in the sea or (b) an egg? (10%)

(3) Consider the following statements:
(a) In a reversible process there is no change in the entropy.
(b) In a reversible process the entropy change is dq_{rev}/T.
How must these statements be qualified so that they are correct and not contradictory? (15%)

(4) Consider the following statements:
a. The solution of certain salts in water involves a decrease in entropy.
b. For any process to occur spontaneously there must be an increase in entropy.
Qualify these statements so that they are correct and not contradictory. And suggest a molecular explanation for the behavior. (15%)

(5) Giving an account of the effect of pressure on (a) the position of equilibrium and (b) the equilibrium constant. (15%)

(6) Detail the steps in going from the clapeyron equation to the Clausis-Claperon equation. What specific assumptions are made? (15%)

(7) Why do positive and negative deviation from Raoult's law occur? (15%)