

國立臺北科技大學九十九學年度碩士班招生考試

系所組別：3721 有機高分子研究所乙組

第二節 熱力學 試題 (選考)

第一頁 共一頁

注意事項：

1. 本試題共 5 題，配分共 100 分。
2. 請標明大題、子題編號作答，不必抄題。
3. 全部答案均須在答案卷之答案欄內作答，否則不予計分。

5. When we stretch a polymer, how the enthalpy and entropy affect the deformation process if the temperature is below the glass transition temperature of the polymer. (15%)

1. If we stretch a piece of rubber with force f a distance, dL
 $dw = PdV - fdL$
Explain the relationship between the entropy and f ? (25%)

2. What is
(a) the partial molar quantity, (7%)
(b) fugacity, (6%)
(c) activity, (6%)
(d) Carnot cycle (6%)

(共計 25%)

3. For a two phase system,
Prove the Clapeyron equation
 $dP/dT = H/TV$
where H is the latent heat of vaporization, and
 V is the volume change of vaporization. (20%)

4. Prove $(dU/dS)_V = (dH/dS)_P$ (8%)

$(dT/dP)_S = (dV/dS)_P$ (7%)

(共計 15%)