

# 國立臺北科技大學 101 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 4 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。

- 1 (a) Explain the meaning of entropy and enthalpy ?(10%)  
(b) Entropy and Enthalpy play important roles in the deformation process of a polymer. When we stretching a polymer that is above the glass transition temperature, why entropy is more important than enthalpy?  
(15%)
- 2 3M company is famous for its pressure sensitive adhesive around the world. poly(3-ethylhexyl acrylate) is the major component of the pressure sensitive adhesive. Why do they use poly(3-ethylhexyl acrylate) ? (25%)
- 3 Explain the following problems  
(a) the partial molar quantity (5%)  
(b) fugacity (5%)  
(c) the second rule of thermodynamics(5%)  
(d) activity coefficient(5%)
- 4 Prove the following equations  
(a)  $(dT/dV)_s = -(dP/dS)_v$  (10%)  
(b)  $(dT/dP)_s = (dV/dS)_p$  (10%)  
(c) The Clapeyron equation,  $dP/dT = H/TV$   
H is the enthalpy change between two phases  
V is the volume change between two phase(10%)