國 立 臺 北 科 技 大 學

九十八學年度研究所碩士在職專班入學考試

有機高分子研究所
乙組：高分子概論（含高分子加工）試題

填 准 考 證 號 碼 　　　　　　　　第 一 頁　共 一 頁

注意事項：

1. 本試題共【8】題，配分共 100 分。
2. 請按順序標明題號作答，不必抄題。
3. 全部答案均須答在試卷答案欄內，否則不予計分。

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1. Explain following term: 【16%】
   A. Power law fluid (give equation, gragh and example)
   B. Flory theta temperature

2. Use phase diagram to describe LCST vs. UCST behavior and define the binodal and spinodal curves.　Why LCST is often observed for polymer blends? 【14%】

3. Describe the relation of melt viscosity of polymer with temperature (both low and high temp.)? 【13%】

4. Describe stress relaxation of polymer using Maxwell model. Give definition of relaxation time. 【12%】

5. In extrusion of polymer melt through a die of lenth L and radius R, describe the relation of swell ratio with the L/R ratio, shear rate and temperature. Explain why. 【10%】

6. Describe free radical polymerization (give an example of Poly(ethyl acrylate) using Benzoyl peroxide as initiator). 【10%】

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7. What is the definition of solubility parameter? What is the relation of solubility parameter with the heat of mixing for a solution of non-polar polymer in non-polar solvent? 【12%】

8. What is Mark-Houwink relation (define the constants)? What kind molecular weight of polymer can be obtained using this relation (give the definition of this molecular weight)? 【13%】