

國立勤益科技大學九十六學年度研究所碩士班招生筆試試題卷

所別：化工與材料工程系碩士班

組別：材料科技組

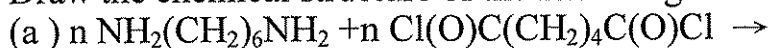
科目：高分子科學

准考證號碼：□□□□□□□□ (考生自填)

考生注意事項：考試時間 100 分鐘。

試題一：〈 20 分 〉

Draw the chemical structure of the following condensation polymers:



試題二：〈 20 分 〉

Describe the differences in physical properties of high-density and low-density polyethylenes, and indicate how these differences can be accounted for in terms of differences at the molecular level?

試題三：〈 20 分 〉

Write name and structure of the monomers needed to synthesize the following polymers: (a) PVC; (b) nylon 6,6; (c) polyethylene terephthalate; (d) PP

試題四：〈20 分〉

Determine solubility parameter for amorphous poly(methyl methacrylate). The density of polymer is 1.18 g /mL.

Representative group molar attraction constants

Group	$G [(cal\ cm^3)^{1/2}\ mol^{-1}]$
CH ₃ —	214
—CH ₂ —	133
\diagup CH—	28
\diagup C—	-93
=CH ₂	190
=CH—	19
—C ₆ H ₅ (phenyl)	735
—CH= (aromatic)	—
\diagup C=O (ketone)	275
—CO ₂ — (ester)	310

試題五：〈10 分〉

What are (1) creep (2) stress relaxation?

試題六：〈10 分〉

Compare the T_m of nylon 6/6 and nylon 6/10? Why?