1. Explain the following terms: (20%)
   (a) Isotactic polypropylene
   (b) Positive resist
   (c) Polyurethane
   (d) Urea-formaldehyde resins

2. Describe how to obtain the absolute propagation and termination rate constants
   from experimental method.   (10%)

3. (a)Interpret the relation between the Tg of polymer blends and miscibility. (5%)
   (b)Discuss the effect of heating rate on value of Tg from the DSC measurement.
      (5%)
   (c)Explain the principle of GPC measurement.   (5%)
   (d) Explain the term Zimm plot.   (5%)

4. For an acid-catalyzed polyesterification with non-equimolar ratio   (15%)
         $r = [OH]_o / [COOH]_o$
   (a)Write the rate equation.
   (b)Derive an equation in terms of r, k, P, and t.
      Where k: rate constant;   P: fraction of COOH groups reacted; t:time

5. Is a material's stress relaxation modulus always equal to the reciprocal of its creep
   compliance? Hint: examine this question for a simple model, for example, a
   Maxwell element.   (10%)

6. Estimate the copolymer structure from the following reactivity ratios.   (10%)
   (a) $r_1 >> 1$, $r_2 >> 1$ (b) $r_1 = 0$, r_2 is infinite
   (c) $r_1 = 1$, $r_2 = 0$ (d) $r_1 = 0$, $r_2 = 0$

7. Describe the thermal characteristics of amorphous, crystalline and liquid crystalline
   polymers, respectively, during a heating process starting from the temperature
   below Tg.   (15%)

試題隨卷繳回