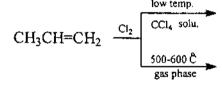
- 1. For the chlorination of sec-butyl chloride, suppose that the products from (S)-sec-butyl chloride show an S,S: meso ratio of 20:80. What would we get from chlorination of (R)-sec-butyl chloride? Estimate the e.e.% of the products.
 - (10 %)2. Compare the following reactions and describe why the selectivities of the reactions are so different?(10 %)

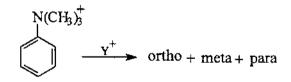
3. (a)Complete the following reactions. (5%)



(b)Complete the following mechanism for the reaction occurred at 500-600 °C or at a very low concentration. (10%)

$$X \cdot + CH_3CH=CH_2$$
 (B)
 $(C) \xrightarrow{X_2} (D)$

4. Draw all resonance structures of ortho, meta, and para attack products of the following reaction, and compare their relative reactivity. (10%)



5. Draw all possible Ortho, Meta, and Para attack products (to NO₂), and compare their stabilities. (10%)

(1)
$$\bigcirc + : \overline{Z} \longrightarrow$$

$$NO_2$$
(2)
$$\bigcirc + : \overline{Z} \longrightarrow$$

(背面仍有題目,請繼續作答)

- 6. (a) Draw the mirror image (II) of the following molecule (I). (5%)(b) Draw the flipping structure (III) of the following molecule (I). (5%)(c)Predict the relationship between (II) and (III), superimposable,
 - interconvertable, or resolvable?

7. Complete the following reactions.

(I)

8. Complete the following reactions. (10%)

(2) CH₃-C-CH-C-CH₃ + CH₃OH H₂SO₄ CH₄ O

9. How do you account for the following relative rates of acetolysis of 2-substituted cyclohexyl brosylates? In which cases is there evidence of a neighboring group effect? (10%)

Relative rate