

1. (5) Draw structures for (1) allyl bromide; (2) *m*-chloroperbenzoic acid; (3) tri(*n*-butyl)phosphine; (4) HMPA; (5) DMF.

2. (4) Draw structures for the simplest carbonyls of Co and Ni.

3. (9) Which of the three given metal complexes would be most suitable for carrying out a process that requires an oxidative addition as the first step in the reaction mechanism? Briefly explain why one species is suitable; also explain why the others are not.  $\text{Pt}(\text{PPh}_3)_4$   $\text{Ir}(\text{CO})_2(\text{PPh}_3)_2^+$   $\text{Cp}_2\text{ZrCl}_2$

4. (6) Predict the products and provide a reasonable mechanism for the process illustrated below.

