Name Date

Worksheet 22.1: Lewis acids and bases and their roles in organic reactions

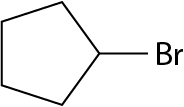


**1** Identify the Lewis acid and Lewis base in the following reactions (forward reaction only):

1. NH3 + BCl3 → H3NBCl3
2. (CH3)3CBr + OH− → (CH3)3OH + Br−
3. 2H2O  H3O+ + OH−
4. H2C=CH2 + H2O → C2H5OH
5. HNO3 + H2SO4  NO2+ + H2O + HSO4−
6. Fe3+ + 6CN− → [Fe(CN)6]3−
7. AlCl3 + Cl2 → AlCl4− + Cl+

**2** Draw the structural formula of the major organic product in each of the following reactions.   
Name the type of reaction.

1. CH3CH=CH2 + HBr →
2. CH3CH2CH2Br + KOH(aq) →
3. CH3CHOHCH3 with acidified potassium dichromate(VI)
4. 2-chloro-2-methylbutane with KCN
5. ethanedioic acid with excess LiAlH4



1. with NH3 in a 1 : 1 mole ratio



1. C6H6 with concentrated HNO3 and H2SO4.

**3** Complete the following reaction sequence with

A diagram of a chemical reaction

Description automatically generated

1. reagents and reaction conditions for each of the steps 1–7;
2. name of the types of reaction for steps 8–10;



1. Draw the mechanisms for each of the steps 1, 3 and 5.