Exercise II

1) Which molecule is non-polar: NH_3, BH_3, H_2S or IH ?

BH_3, because of its geometry (but BH_3 dimerizes under normal conditions!)

2) Which of the following processes is endothermic?

$H(g) \rightarrow H^+(g) + e^-$
$H(g) + e^- \rightarrow H^-(g)$
$H_2O(g) + H^+(g) \rightarrow H_3O^+(g)$
$2\ H(g) \rightarrow H_2$

The 1st one.

3) Which of the following compounds is a hydride, and which is a salt: HCl, SiH_4, NaH, or NH_3 ?

Hydride: SiH_4, NaH
Salt: NaH

4) In which reaction do you liberate H_2 ?

$NaH + H_2O \rightarrow$
$NaCl + H_2O \rightarrow$
$Na_2O + H_2O \rightarrow$
$NaOH + H_2O \rightarrow$

The 1st one

5) Which of the following hydrogen bonds is the weakest: C-H---O, N-H---O, O-H---O or O-H---N ?

The 1st one

6) In which solvent pair do you observe intermolecular hydrogen bonding?

Acetonitrile and toluene
THF and diethyl ether
Ethanol and ethylamine
Diethyl ether and dibutyl ether

The 3rd one.