Session #26: Homework Problems
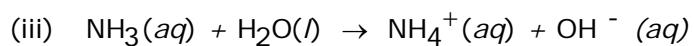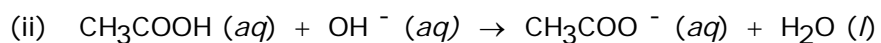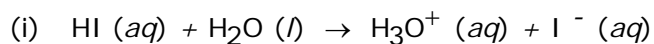
Problem #1

(a) Identify the conjugate acid-base pairs in the following reactions:

(i) HI (*aq*) + H_2O (*l*) → H_3O^+ (*aq*) + I^- (*aq*)

(ii) CH_3COOH (*aq*) + OH^- (*aq*) → CH_3COO^- (*aq*) + H_2O (*l*)

(iii) NH_3 (*aq*) + H_2O(*l*) → NH_4^+(*aq*) + OH^- (*aq*)

(b) Identify which of the following cannot be a Brønsted base and give a reason for your choices: H_3O^+, $AlCl_4^-$, CN^-, O^{2-}, SiH_4, AsH_3.

(c) Estimate the *p*H and *p*OH of a 0.03091 M solution of hydroiodic acid ($K_a \cong 10^9$).

3.091SC Introduction to Solid State Chemistry
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