Session #26: Homework Problems

Problem #1

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

(i)
$$HI(aq) + H_2O(l) \rightarrow H_3O^+(aq) + I^-(aq)$$

(ii) CH₃COOH (aq) + OH
$$\overline{}$$
 (aq) \rightarrow CH₃COO $\overline{}$ (aq) + H₂O (/)

(iii)
$$NH_3(aq) + H_2O(1) \rightarrow NH_4^+(aq) + OH^-(aq)$$

- (b) Identify which of the following cannot be a Brønsted base and give a reason for your choices: $\rm H_3O^+$, $\rm AICI_4^-$, $\rm CN^-$, $\rm O^{2-}$, $\rm SiH_4$, $\rm AsH_3$.
- (c) Estimate the pH and pOH of a 0.03091 M solution of hydroiodic acid $(K_a \approx 10^9)$.

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