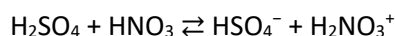


SL & HL Questions on Theories of acids & bases

1. Using the reactions between water and ammonia and water and hydrogen chloride explain why water can be considered as both a Brønsted-Lowry acid and a Brønsted-Lowry base. In each case give the acid - conjugate base pairs.
2. The hydroxide ion, OH^- , can show amphiprotic behaviour. Deduce the acid – conjugate base pairs when it is acting **i.** as an acid and **ii.** as a base.
3. State the conjugate acid formed from **i.** ammonia, NH_3 and **ii.** the hydrogen sulfide ion, HS^- .
4. State the conjugate base formed from **i.** hydrogen cyanide, HCN and **ii.** the hydrogen sulfide ion, HS^- .
5. Identify the Brønsted-Lowry acids in the following reaction.



6. Identify with an explanation which of the following is **not** a Brønsted-Lowry acid - conjugate base pair.
 - i. $\text{CH}_3\text{COOH} / \text{CH}_3\text{COO}^-$
 - ii. $\text{H}_3\text{O}^+ / \text{OH}^-$
 - iii. $\text{H}_2\text{SO}_4 / \text{HSO}_4^-$
 - iv. $\text{HSO}_4^- / \text{SO}_4^{2-}$