

CHEMISTRY 12 –BRÖNSTED-LOWRY ACIDS & BASES WORKSHEET

1) Define Brönsted-Lowry acid. (1 mark)

A substance that donates a proton to another substance

2) Define Brönsted-Lowry base. (1 mark)

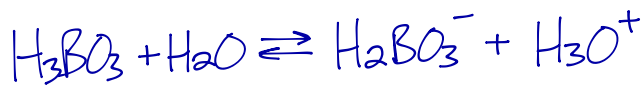
A substance that accepts a proton from another substance

3) Write balanced equations showing the reaction of the following weak acids with water: (8 marks)

(a) $\text{H}_2\text{C}_6\text{H}_6\text{O}_6$



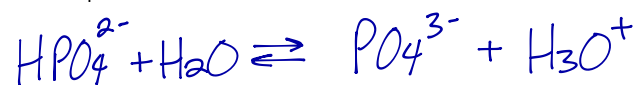
(e) H_3BO_3



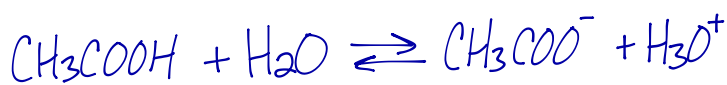
(b) $\text{C}_6\text{H}_5\text{OH}$



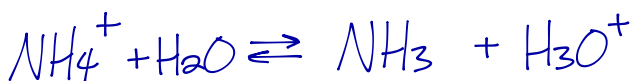
(f) HPO_4^{2-}



(c) CH_3COOH



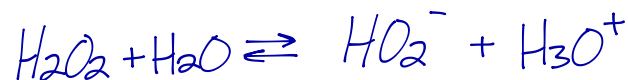
(g) NH_4^+



(d) HCO_3^-



(h) H_2O_2

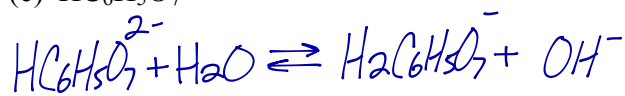


4) Write balanced equations showing the reaction of the following weak bases with water: (8 marks)

(a) F^-



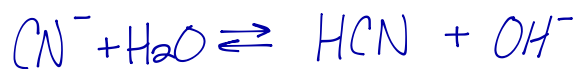
(e) $\text{HC}_6\text{H}_5\text{O}_7^{2-}$



(b) HPO_4^{2-}



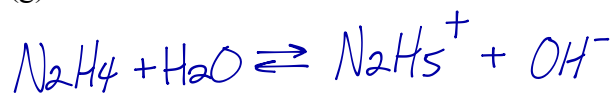
(f) CN^-



(c) CH_3NH_2



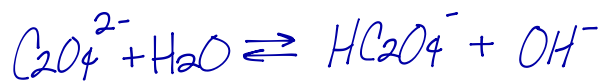
(g) N_2H_4



(d) NH_3



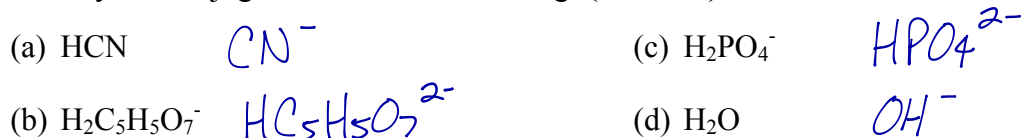
(h) $\text{C}_2\text{O}_4^{2-}$



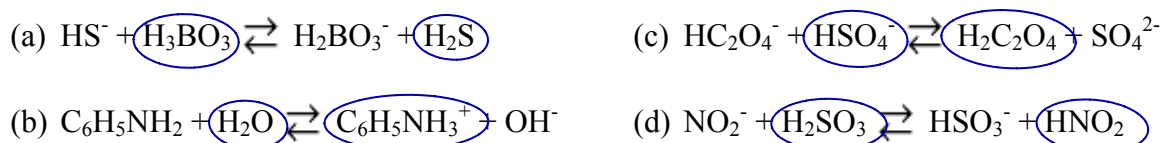
5) Identify the conjugate acid of the following: (4 marks)



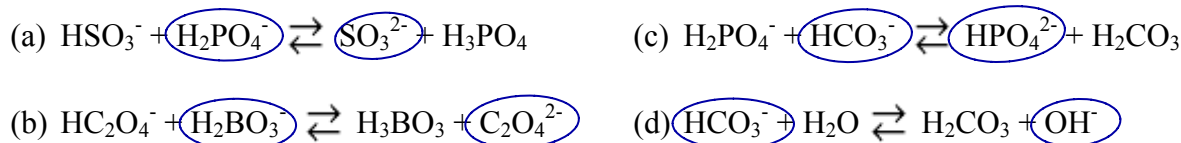
6) Identify the conjugate base of the following: (4 marks)



7) Circle the Brønsted-Lowry acids in the following equilibria: (4 marks)



8) Circle the Brønsted-Lowry bases in the following equilibria: (4 marks)



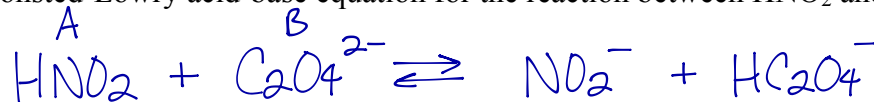
9) (a) Write the Brønsted-Lowry acid-base equation for the reaction between HCN and NH_3 . (1 mark)



(b) Write a conjugate acid-base pair from the equation above. (1 mark)



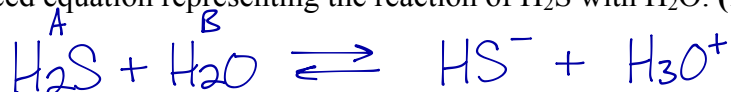
10) (a) Write the Brønsted-Lowry acid-base equation for the reaction between HNO_2 and $\text{C}_2\text{O}_4^{2-}$. (1 mark)



(b) Write a conjugate acid-base pair from the equation above. (1 mark)



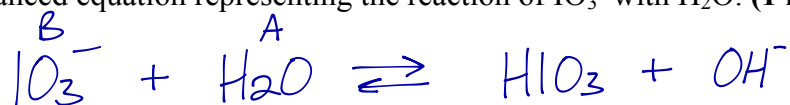
11) (a) Write the balanced equation representing the reaction of H_2S with H_2O . (1 mark)



(b) Identify the Brønsted-Lowry acids in the above equation. (1 mark)



- 12) (a) Write the balanced equation representing the reaction of IO_3^- with H_2O . (1 mark)



- (b) Identify the Brønsted-Lowry bases in the above equation. (1 mark)



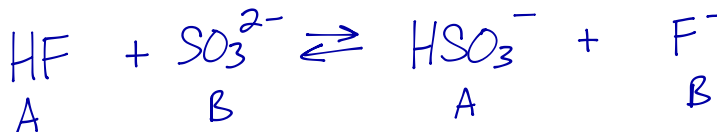
- 13) (a) Write the acid-base equation for the reaction between H_3BO_3 and HSO_3^- . (1 mark)



- (b) Write a conjugate acid-base pair from the equation above. (1 mark)



- 14) In an acid-base reaction, the two Brønsted-Lowry acids are hydrofluoric acid (HF) and the hydrogen sulphite ion (HSO_3^-). Write the equation for this reaction. (2 marks)



- 15) In an acid-base reaction, the two Brønsted-Lowry bases are HC_2O_4^- and H_2BO_3^- . Write the equation for this reaction. (2 marks)

