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Acid Base Sections 1, 2, 3 and 4

Section 4.1

1. In fifty (50) words or less, explain the meaning of life
2. In fifty (50) words or less, explain the awesomeness that is Simms
3. In fifty (50) words or less, describe how chemistry is going thus far.
4. Which of the following are ACIDS, which are BASES, which are SALTS and which are NONE of these three categories?
 - (a) KNO_3 _____
 - (b) $\text{HC}_2\text{H}_3\text{O}_2$ _____
 - (c) CH_4 _____
 - (d) LiOH _____
 - (e) H_2CO_3 _____
 - (f) Na_2CO_3 _____
 - (g) $\text{Ba}(\text{OH})_2$ _____
 - (h) SO_2 _____

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5. Balance the following neutralization equations.

(a) H_2SO_4 reacts with NaOH

(b) H_2SO_4 reacts with $\text{Fe}(\text{OH})_3$

(c) H_3PO_4 reacts with KOH

(d) HCl reacts with $\text{Sn}(\text{OH})_4$

(e) H_2S reacts with $\text{Ca}(\text{OH})_2$

(f) $\text{H}_4\text{P}_2\text{O}_7$ reacts with NaOH

6. Which of the following are properties of acids only, which are properties of bases only, which are properties of both, and which are not properties of either?

(a) form electrically conducting solutions in water _____

(b) react with metals to produce $\text{O}_{2(g)}$ _____

(c) make skin feel slippery _____

(d) turn litmus paper red _____

(e) taste sour _____

(f) react with salts _____

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7. You have been given a solution and are told that it contains an acid or base. What tests would you perform to help decide if the solution is acidic or basic?

Section 4.2

8. Why must containers of NaOH and KOH be tightly closed when not in use?

9. Which acid (H_2SO_4 , HCl, HNO_3 , CH_3COOH) or base (NaOH, KOH, NH_3) is used:

(a) in car batteries? _____

(b) in making pickles? _____

(c) as a refrigerant? _____

(d) in alkaline batteries? _____

(e) for cleaning fireplace bricks? _____

10. Which of the above acids (H_2SO_4 , HCl, HNO_3 , CH_3COOH) is the most reactive?

11. Which of the above acids (H_2SO_4 , HCl, HNO_3 , CH_3COOH) and bases (NaOH, KOH, NH_3) could be used as drying agents?

Section 4.3

12. Write the equations which show how the following acids dissociate in water to give H_3O^+ (aq).

**Section 4.4**

13. In the following reactions, which reactant acts as an acid and which acts as a base?



14. Consider the acids: H_3PO_4 , HF , H_2S , $\text{H}_4\text{P}_2\text{O}_7$, H_2CO_3 , HCN

(a) Which of the acids are MONOPROTIC? (c) Which of the acids are TRIPROTIC?

(b) Which of the acids are DIPROTIC? (d) Which of the acids are POLYPROTIC?

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15. Identify each species in the following equation as being an acid or base.



16. Which of the following would be expected to exhibit amphiprotic behaviour?

