Acids and Bases Practice

1. Define Arrhenius acid:
2. Define Arrhenius base:
3. Define Bronsted Lowry acid
4. Define Bronsted Lowry base
5. Define Lewis acid
6. Define Lewis base
7. What is the difference between a Bronsted Lowry base and an Arrhenius base?
8. What is the difference between a Bronsted Lowry acid and an Arrhenius acid?
9. True or false – all Bronsted Lowry acids are Arrhenius acids.
10. True or False – all Arrhenius bases are Bronsted Lowry bases.
11. Describe how AlCl3 is an acid by the Lewis definition.
12. Describe how HCl is an acid by all three definitions.
13. Describe how NH­­3 is a base by the Bronsted Lowry definition.
14. Describe how NaOH is a base by all three base definitions.
15. Which set of definitions is the most inclusive?

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ANSWERS

1. Define Arrhenius acid: gives off hydrogen ion in solution
2. Define Arrhenius base: gives off hydroxide ion in solution
3. Define Bronsted Lowry acid proton donor
4. Define Bronsted Lowry base proton acceptor
5. Define Lewis acid electron pair acceptor
6. Define Lewis base electron pair donor
7. What is the difference between a Bronsted Lowry base and an Arrhenius base? – Bronsted bases do not have to give off OH— in solution
8. What is the difference between a Bronsted Lowry acid and an Arrhenius acid? Bronsted acids do not have to give off hydrogen ion in solution.
9. True or false – all Bronsted Lowry acids are Arrhenius acids. FALSE
10. True or False – all Arrhenius bases are Bronsted Lowry bases. TRUE
11. Describe how AlCl3 is an acid by the Lewis definition. AlCl3 can accept an electron pair on the Al
12. Describe how HCl is an acid by all three definitions. HCl gives off H in solution; it donates a proton in solution; the H becomes an electron acceptor in solution
13. Describe how NH­­3 is a base by the Bronsted Lowry definition. NH3 accepts a proton to become NH4+ in solution
14. Describe how NaOH is a base by all three base definitions. NaOH gives off hydroxide in solution; it accepts a proton in solution; the OH- donates an electron pair
15. Which set of definitions is the most inclusive? Lewis acids and bases