# Acids & Bases Revision

1. Name three properties that aqueous acids share.

2. Define mineral acids and orga27nic acids. What is the difference between them?

3. Give the formula or name for each of the following:

H2SO4

Nitric Acid

4. Explain why acetic acid CH3COOH will react with a strip of magnesium slower than nitric acid HNO3.

5. What are the three properties of a base?

6. Explain why concentrated sulphuric acid is more corrosive than dilute sulphuric acid.

7. What does dissociate mean?

8. What is the difference between a base and an alkali?

9. What is the definition of a mole?

10. What is the definition of molar mass?

11 Find the molar mass of the compounds below.

a) (NH4)2CO3  b) C6H12O6

12. What does pH stand for? Explain what pH=10 means.

13. What is the possible pH value of an unknown sodium hydroxide solution?

a. 5.5 b. 6.5 c 8.0

14. A substance with a pH of 6 is...

a. a weak acid b. a strong acid c. a weak alkali d. neutral

15. What is the name of the chemical reaction when an acid and an alkali produce a salt?

16. Write balanced equations for the following:

a. ammonium hydroxide reacts with nitric acid

b. zinc metal reacts with hydrochloric acid

c. phosphoric acid reacts with lithium oxide

d. sulphuric acid reacts with potassium bicarbonate

17. What is the difference between a monoprotic and a polyprotic acid?

18. Label the conjugate acid-base pairs:

a)  H3PO4(aq)    +   NO2-(aq)  →  HNO2(aq)  +  H2PO4-(aq)

b)  CN- (aq)      +   HCO3-(aq) →    HCN(aq)    +  CO32-(aq)

c)   HCN(aq)     +  SO32-(aq) →   HSO3-(aq) +   CN-(aq)

d) H2O(l)    +  HF(aq)  →  F-(aq) +   H3O+(aq)

19. Explain why water (H2O) is considered amphiprotic.

20. A solution contains 4.5 x 10-3 mol/L of hydrochloric acid. Determine the following:

a) [H3O+] =

b) [OH] =

c) pH =

21. A solution contains 0.025 mol/L of sulfuric acid. Determine the following:

a)     [H3O+]=

b)    [OH-] =

c)     pH =

22. A solution contains 0.067 mol/L of sodium hydroxide. Determine the following

a)     [H3O+]=

b)   [OH-]=

c)    pOH =

d)    pH=

23. How many grams of calcium carbonate can be produced, when  235 mL  of a 0.444mol/L solution of sodium carbonate reacts with calcium nitrate?

24. A 20 mL sample of sulphuric acid is placed into a conical flask and this is titrated with sodium hydroxide.

|  |  |  |  |
| --- | --- | --- | --- |
| Titration | Initial reading (mL) | Final Reading (mL) | Titre volume (mL) |
| rough | 5.6 | 37.1 |  |
| 2 | 4.5 | 38.0 |  |
| 3 | 10.2 | 41.8 |  |
| 4 | 8.8 | 40.3 |  |

a. What is the standard solution in this practical and what does the end point suggest?

b. Which value would you discard and why?

c. What is the average titre?

d. What equipment do you deliver the sodium hydroxide with? How would you rinse it?

e. What equipment do you deliver the acid with? How would you rinse it?

f. If the concentration of the base is 0.5 mol/L, calculate the concentration of the acid.

g. How would it affect the titre and concentration of the acid if you took the titre reading (the final reading) below eye level provided that the first reading was taken correctly at eye level?

25. Explain what a strong acid and a weak acid is.

26. Beaker A contains a concentrated weak acid. Is this a possibility? Explain why or why not.

27. Explain what a standard solution is and why it is important in a titration.