Common Acids and Bases

A Level

Test your knowledge of common acids and bases with the questions below.

Part A Nitric acid

Enter the molecular formula for nitric acid (listing hydrogen in the formula first).

Part B Sulfuric acid

Enter the molecular formula for sulfuric acid (listing hydrogen in the formula first).

Part C Hydrochloric acid

Enter the molecular formula for hydrochloric acid (listing hydrogen in the formula first).

Part D Carbonic acid

Enter the molecular formula for carbonic acid (listing hydrogen in the formula first).

Part E Ammonia

Enter the molecular formula for ammonia.

Part F Potassium hydroxide

Enter the molecular formula for potassium hydroxide.

Part G Sodium hydroxide

Enter the molecular formula for sodium hydroxide.

Part H Ethanoic acid

Ethanoic acid is an example of a carboxylic acid, containing the carboxylic acid group composed of four atoms. If not drawing out the organic structure, we still usually make the functional group it contains clear, by writing the formula as:

CH_3 [ ] [ ] [ ] [ ]

Items:

H C N O F

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Acid-base Terminology

A Level

The terminology surrounding acids and bases can be a bit confusing. Answer the questions below to test your understanding of this topic.

Part A Fully dissociated

What do we call an acid or base that fully dissociates in aqueous solution?

Part B High $\mathrm{mol\,dm^{-3}}$

What do we call an acid or alkali solution that has a high value of $\mathrm{mol\,dm^{-3}}$?

Part C Low $\mathrm{mol\,dm^{-3}}$

What do we call an acid or alkali solution that has a low value of $\mathrm{mol\,dm^{-3}}$?

Part D Acidic solutions

An acid with a very high K_a value is a [ ] acid, but it can still be [ ] if we create a solution of it with large amounts of water. At the same concentration, a [ ] acid will have a lower pH than a [ ] acid.

Items:

strong **weak** **concentrated** **dilute**

Part E Two acidic protons

What do we call an acid such as H_2SO_4 that has two acidic protons it can lose in succession?

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Gameboard:

STEM SMART Chemistry Week 21

Essential Pre-Uni Chemistry J1.4

A Level

Give the conjugate acid of NH_3.

Gameboard:

STEM SMART Chemistry Week 21

Essential Pre-Uni Chemistry J1.5

A Level

Give the conjugate base of H_2SO_4.

Gameboard:

STEM SMART Chemistry Week 21

Essential Pre-Uni Chemistry J1.6

A Level

Give the conjugate base of $\mathrm{NH_3}$.

Gameboard:

STEM SMART Chemistry Week 21

Essential Pre-Uni Chemistry J1.7

A Level

Give the conjugate base of $\mathrm{H_3N^+CH_2COO^-}$.

Gameboard:

STEM SMART Chemistry Week 21

Essential Pre-Uni Chemistry J1.8

A Level

Give the conjugate acid of $\mathrm{H_3N^+CH_2COO^-}$.

Gameboard:

STEM SMART Chemistry Week 21

Essential Pre-Uni Chemistry J1.9

A Level

Give the conjugate acid of PO_4^{3-}.

Gameboard:

STEM SMART Chemistry Week 21

Essential Pre-Uni Chemistry J1.10

A Level

P P P

Give the conjugate base of $\mathrm{CH_3OH}$.

Gameboard:

STEM SMART Chemistry Week 21

Acid-Base Reactions

A Level

Part A Reaction 1

$$\mathrm{HNO_3 + KOH \longrightarrow KNO_3 + H_2O}$$

- acid-base reaction
- other

Part B Reaction 2

$$\mathrm{Mg(OH)_2 + 2\,HCl \longrightarrow MgCl_2 + 2\,H_2O}$$

- acid-base reaction
- other

Part C Reaction 3

$$\mathrm{Zn + CuSO_4 \longrightarrow ZnSO_4 + Cu}$$

- acid-base reaction
- other

Part D Reaction 4

$$C_2H_4O + H_2O_2 \longrightarrow CH_3COOH + H_2O$$

- acid-base reaction
- other

Part E Reaction 5

$$2\,NH_3 + H_2SO_4 \longrightarrow (NH_4)_2SO_4$$

- acid-base reaction
- other

Part F Reaction 6

$$Fe + 2\,HCl \longrightarrow FeCl_2 + H_2$$

- acid-base reaction
- other

Part G Reaction 7

$$ZnCO_3 + 2\,HNO_3 \longrightarrow Zn(NO_3)_2 + H_2O + CO_2$$

- acid-base reaction
- other

Part H Reaction 8

$$SO_3 + H_2S_2O_7 + 2\,H_2O \longrightarrow 3\,H_2SO_4$$

- ○ acid-base reaction
- ○ other

Based on Question J1.3 from the Physical Chemistry book