

note all cyclical reactions *

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- (a) solid calcium carbonate is strongly heated.
- (b) a piece of nickel metal is immersed in a solution of copper(II) sulfate.
- (c) equal volumes of equimolar solutions of disodium hydrogen phosphate and hydrochloric acid are mixed.
- (d) chlorine gas is bubbled into a solution of sodium bromide.
- (e) ammonia gas is bubbled into a solution of ethanoic (acetic) acid.
- (f) solid ammonium carbonate is added to a saturated solution of barium hydroxide.
- (g) drops of liquid dinitrogen trioxide are added to distilled water.
- (h) solutions of potassium permanganate and sodium oxalate are mixed.
- (e) hydrogen gas is passed over hot iron(II) oxide powder.
- ** (f) solid potassium amide is added to distilled water.
- (g) a strip of magnesium metal is heated strongly in pure nitrogen gas.
- (h) a solution of nickel chloride is added to a solution of sodium sulfide.
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- (a) Solutions of tin(II) chloride and iron(III) chloride are mixed.
- (b) Solutions of cobalt(II) nitrate and sodium hydroxide are mixed.
- (c) (C_2H_2) Ethyne gas is burned in air.
- (d) Equal volumes of equimolar solutions of phosphoric acid and potassium hydroxide are mixed.
- ** (e) Solid calcium sulfite is heated in a vacuum.
- ** (f) Excess hydrochloric acid is added to a solution of diamminesilver(I) nitrate.
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- ** (b) a solution of sodium bromide is added to an acidified solution of potassium bromate.
- (c) sulfur dioxide gas is bubbled into distilled water.
- (g) Solid sodium oxide is added to distilled water.
- (h) A strip of zinc is added to a solution of 6.0-molar hydrobromic acid.

* Where it applies give net ionic equations