

Chemguide – questions

GROUP 7: ASSORTED REACTIONS

What you need to know about the assorted facts on this page will depend on your syllabus. Check what you should know, and then just concentrate on those questions. It is pointless learning facts that you don't need!

- In the reactions between the halogens and hydrogen, describe briefly how the reactivity changes as you go down the group.
- Write equations for the reactions between chlorine and
 - white phosphorus where the chlorine isn't in excess;
 - red phosphorus where the chlorine is in excess.
- Describe what you would see, and write the equation, if you lowered some hot sodium into a gas jar of bromine vapour.
- Anhydrous iron(III) chloride can be made by passing dry chlorine over heated iron wool in a tube. Describe what you would see, and write the equation for the reaction.
 - How would the reaction differ if you used iodine vapour instead of chlorine?
- If you bubble chlorine gas through iron(II) chloride solution, this reaction occurs:
$$2\text{Fe}^{2+} + \text{Cl}_2 \longrightarrow 2\text{Fe}^{3+} + 2\text{Cl}^-$$
 - Describe what you would see during this reaction.
 - Explain what is happening during the reaction in terms of oxidation and reduction.
 - Does a similar reaction occur between iron(II) ions and bromine or iodine instead of the chlorine? Explain your answer.
- The equation for the reaction between cold dilute sodium hydroxide solution and chlorine is
$$2\text{NaOH} + \text{Cl}_2 \longrightarrow \text{NaCl} + \text{NaClO} + \text{H}_2\text{O}$$
This is known as a *disproportionation reaction*. By working out the oxidation states of all the chlorines in the equation, explain what that means.
 - Name the products of the reaction between chlorine and hot concentrated sodium hydroxide solution, and write the equation for the reaction.