Retrieval Practice: Year 13 Number 2

Rules: Never look at your notes for retrieval practice! Do as many as you can, even if they are educated guesses. When you have tried (hard!) to answer them all, check the mark scheme and rate each question:

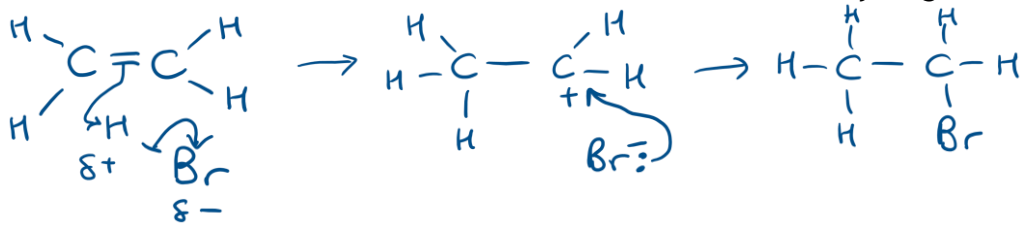
Easy, remembered perfectly

Harder – could remember part of it or was familiar when I saw the answer

Very hard – didn't recognise the answer so need to go back over this

	Question	Rating
1	Describe a test that would distinguish between chloride ions and iodide ions	
2	Write a balanced equation for the polymerisation of propene	
3	Write a balanced equation, including state symbols, for the standard enthalpy of formation of aluminium oxide	
4	Calculate the mass of sodium carbonate needed to prepare 250cm^3 of a 0.100 mol dm^{-3} solution	
5	Write a balanced half equation for the conversion of H_2SO_4 to SO_2 and identify whether it is oxidation or reduction	
6	Explain why HF has a higher boiling point than HCl	
7	Draw the mechanism for the reaction between ethene and hydrogen bromide	
8	Explain the trend in first ionisation energy down group 2	
9	Give the shape and bond angle in SO_2	
10	Give the full electronic configuration of a V^{3+} ion	

Answers:

	Question
1	Describe a test that would distinguish between chloride ions and iodide ions *Add acidified silver nitrate* *Chloride - white precipitate; iodide - yellow precipitate* *(Bonus - add dilute ammonia solution and chloride precipitate dissolves)*
2	Write a balanced equation for the polymerisation of propene
3	Write a balanced equation, including state symbols, for the standard enthalpy of formation of aluminium oxide *$2\ Al\ (s) + 1.5\ O_2\ (g) \rightarrow Al_2O_3\ (s)$ (can't be multiples - forming **one mole**!)*
4	Calculate the mass of sodium carbonate needed to prepare 250cm^3 of a 0.100 mol dm^{-3} solution *Moles = 0.25 x 0.1 = 0.025* *Mass = mol x Mr = 0.025 x 106 = 2.65 g*
5	Write a balanced half equation for the conversion of H_2SO_4 to SO_2 and identify whether it is oxidation or reduction *$H_2SO_4 + 2H^+ + 2e^- \rightarrow SO_2 + 2H_2O$ Reduction*
6	Explain why HF has a higher boiling point than HCl *HF has hydrogen bonding which is stronger than the permanent dipoles between HCl molecules; more energy needed to overcome the intermolecular forces between HF molecules*
7	Draw the mechanism for the reaction between ethene and hydrogen bromide 
8	Explain the trend in first ionisation energy down group 2 *1st I.E decreases down the group; more shells of electrons means more shielding; outer electron further from the nucleus so less attraction between them; outer electron is easier to remove*
9	Give the shape and bond angle in SO_2 Non-linear/bent/v-shaped; 117.5 (allow between 116-119)
10	Give the full electronic configuration of a V^{3+} ion *$1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 3d^2$*