CK CHEMISTRY

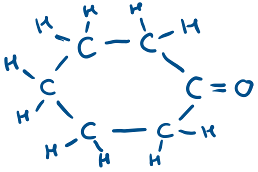
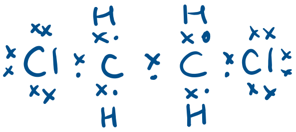
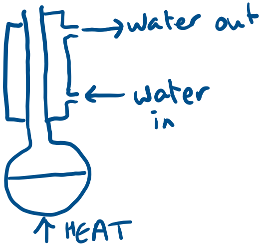
October Retrieval Practice: Year 13

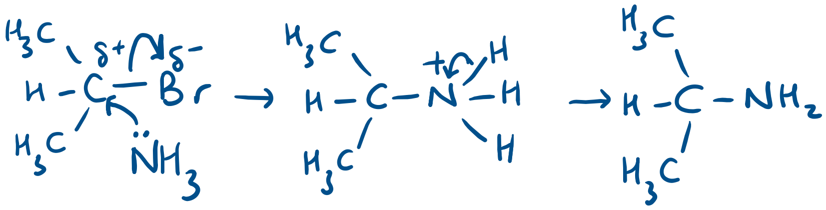
Rules: Never look at your notes for retrieval practice! Do as many as you can, even if they are educated guesses. When you have tried (hard!) to answer them all, check the mark scheme and rate each question:

- 🙂 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	Draw the displayed formula of cyclohexanone	🙂 😕 ☹
2	Describe and explain the trend in boiling points down group 7	🙂 😕 ☹
3	Write equations for two propagation steps in the reaction between chlorine and ethane	🙂 😕 ☹
4	Define electrophile	🙂 😕 ☹
5	Draw a dot and cross diagram for 1,2-dichloroethene	🙂 😕 ☹
6	Calculate the percentage error for an average titre value of $18.2cm^3$	🙂 😕 ☹
7	Identify the reducing agent in the following equation: $2Fe^{2+} + Br_2 \rightarrow 2Fe^{3+} + 2Br^-$	🙂 😕 ☹
8	Draw the apparatus for heating under reflux	🙂 😕 ☹
9	Balance the following equation: $HBr + H_2SO_4 \rightarrow Br_2 + SO_2 + H_2O$	🙂 😕 ☹
10	Calculate the relative atomic mass of magnesium given the following information about isotopic abundance: ^{24}Mg: 78.6%, ^{25}Mg: 10.1%, ^{26}Mg: 11.3%	🙂 😕 ☹
11	Draw the mechanism for the reaction between ammonia and 2-bromo propane	🙂 😕 ☹
12	Explain why ethanoic acid has a higher boiling point than propanal	🙂 😕 ☹
13	Write an equation for the formation of butanal from butan-1-ol (using [O] to represent the oxidising agent	🙂 😕 ☹
14	Give the oxidation state of vanadium in V_2O_5	🙂 😕 ☹
15	Calculate the mass of methanol required to produce 7.82 g of methanoic acid by oxidation.	🙂 😕 ☹

Answers:

	Question	Rating
1	Draw the displayed formula of cyclohexanone  	🙂 😕 ☹
2	Describe and explain the trend in boiling points down group 7 Down the group the molecules get larger / have more electrons. This leads to stronger London forces (or Van der Waals). More energy needed to overcome these forces.	🙂 😕 ☹
3	Write equations for two propagation steps in the reaction between chlorine and ethane $Cl^{\cdot} + C_2H_6 \rightarrow C_2H_5^{\cdot} + HCl$ $C_2H_5^{\cdot} + Cl_2 \rightarrow C_2H_5Cl + Cl^{\cdot}$	🙂 😕 ☹
4	Define electrophile A species/substance that accepts a pair of electrons from a C=C bond/pi bond (to form a new bond)	🙂 😕 ☹
5	Draw a dot and cross diagram for 1,2-dichloroethene  	🙂 😕 ☹
6	Calculate the percentage error for an average titre value of 18.2cm^3 Error in one burette reading = ±0.05cm^3 The burette is used twice (initial and final reading) % error = (0.05 x 2) ÷ 18.2 x 100 = 0.55%	🙂 😕 ☹
7	Identify the reducing agent in the following equation: $2Fe^{2+} + Br_2 \rightarrow 2Fe^{3+} + 2Br^-$ Fe^{2+} is the reducing agent as it loses electrons and donates them to bromine. (It is important to not just say ‘iron’ in this question!)	🙂 😕 ☹
8	Draw the apparatus for heating under reflux  	🙂 😕 ☹
9	Balance the following equation: $HBr + H_2SO_4 \rightarrow Br_2 + SO_2 + H_2O$ $HBr + H_2SO_4 \rightarrow Br_2 + SO_2 + 2H_2O$	🙂 😕 ☹
10	Calculate the relative atomic mass of magnesium given the following information about isotopic abundance: ^{24}Mg: 78.6%, ^{25}Mg: 10.1%, ^{26}Mg: 11.3% (24 x 78.6 + 25 x 10.1 + 26 x 11.3) ÷ 100 = 24.3	🙂 😕 ☹

11	Draw the mechanism for the reaction between ammonia and 2-bromo propane 	☺ 😕 ☹
12	Explain why ethanoic acid has a higher boiling point than propanal Ethanoic acid has hydrogen bonding between molecules, propanal has permanent dipoles. Hydrogen bonding is stronger so requires more energy to overcome.	☺ 😕 ☹
13	Write an equation for the formation of butanal from butan-1-ol (using [O] to represent the oxidising agent $CH_3CH_2CH_2CH_2OH + [O] \rightarrow CH_3CH_2CH_2CHO + H_2O$	☺ 😕 ☹
14	Give the oxidation state of vanadium in V_2O_5 + 5	☺ 😕 ☹
15	Calculate the mass of methanol required to produce 7.82 g of methanoic acid by oxidation. M_r methanol = 32 M_r methanoic acid = 46 Moles methanol = 7.82 / 32 = 0.244 Mass methanoic acid = 0.244 x 46 = 11.22 g	☺ 😕 ☹