

ABOUT THE STANDARD

- ◆ This standard is broken in to a few key parts
 - ◆ Naming
 - ◆ Isomers
 - ◆ Solubility, melting points and boiling points
 - ◆ Reactions
 - ◆ Polymers
- ◆ There may be explicit questions on each of these areas, but expect naming and reactions to pop up throughout the paper

STRATEGIES FOR SUCCESS

- ◆ Get your naming down 100%
 - ◆ Naming is the fundamental skill in organic chemistry and if you have this down fully then things are going to go a whole lot better. While the first question in the exam is almost always a naming and drawing question it keep coming back again and again throughout the whole paper. If you are totally comfortable with naming then you can spend the rest of your time focussing on the harder content instead of having to worry about whether you are working with the right molecule or not.
 - ◆ If you run out of examples in your workbook then you can always draw your own!
- ◆ Drawing:
 - ◆ When drawing out molecules, it's useful to think in terms of how many bonds you expect each molecule to form. Carbon should always have 4 bonds, no more and no less, nitrogens should have 3 bonds, oxygens should have 2 and hydrogens need to have one and only one!
 - ◆ Don't get lazy with hydrogens! While in class and when you are practicing it's pretty common to not bother drawing in all of the hydrogens. However, in the exam it's crucial that you write all of them in when you draw your structures or you won't get the marks!
- ◆ Reactions:
 - ◆ The big one that everyone freaks out over. ORGANIC CHEMISTRY IS NOT ABOUT MEMORISATION! While yes there are bits you will need to memorise but it's no more than any other subject.
 - ◆ The thing about trying to memorise a big sheet like this is that it doesn't get you to think about the chemistry that's actually going on. Instead of memorising statements like "alkene + acidified water goes to alcohol" try to think about the type of reaction that could possibly occur.
 - ◆ For example, if we had this reaction, what would the product be? Well if we had a bit of a mind blank in the exam and forgot our statement then we would pretty much be out of luck. However we can apply some logic and reasoning to predict the outcome!



- ◆ Think about the four different types of reaction there are in level 2 organics: Addition, elimination, oxidation, and substitution. This reaction has to fit into one of those categories right?
- ◆ If we learn what happens in each reaction, and what sort of molecules do each kind of reaction, then we can just fit our example into one of those categories and take it from there.
- ◆ For a more in depth guide to this thinking check out the StudyTime walkthrough but let's just run through this one really quick.
- ◆ When looking at a question like this we can ask, is this an addition reaction? Well addition reactions are where a carbon-carbon double bond is broken and something new is put on each carbon. Well since our reactant doesn't have a double bond it can't be an addition reaction.
- ◆ Is this an elimination reaction? Well there are only two eliminating agents that we know of, concentration H₂SO₄ (for alcohols) and alcoholic KOH (for haloalkanes). PCl₃ is neither of these so this is not an elimination reaction.
- ◆ Is this an oxidation reaction? Well, we can oxidise alcohols but to do that we need to use either permanganate or dichromate. Again, PCl₃ is neither of those so its not oxidation.
- ◆ So therefore it must be a substitution reaction which is just a swapping reaction. Looking at our reagents what is likely to be swapped? Well the OH looks like something that would swap out so what are we going to put there? It has to come from PCl₃ and out of P and Cl we have only ever seen Cl on an organic molecule before so therefore it must be being swapped with a Cl to give us chloroethane as the final answer!



- ◆ Markovnikoff's and Saytseff's rule:
 - ◆ It's important to get to know these rules really well as they come up almost every year at least once.
 - ◆ While the "rich get richer" and "poor get poorer" are great ways to remember them, you should not be writing these statements in the exam. They are looking to make sure you actually understand what this means rather than parroting a phrase. We need to be much more specific when explaining why two products might form for a given addition or elimination reaction. Instead of the "rich get richer" something like "The carbon with the most Hs will preferentially get the H, this leads to the formation of the major product" works a lot better.
- ◆ Identification questions:
 - ◆ Another common type of question is the identification one. You know, the one where they give you 5 colourless liquids and some reagents and you are asked to tell the difference between the liquids by doing some chemistry.
 - ◆ What's important here is to think visually. If you have an alkene there is no point in reacting Acidified water with it to make an alcohol because you are reacting two colourless compounds to make another colourless compound. Visual things like oxidation reactions, bromine water and litmus paper are all great examples.
 - ◆ When writing your answer you need to write things in full. It's not good enough to write something like "ethanoic acid will react with the litmus paper while everything else won't..."
 - ◆ It's better to say something like "Blue litmus paper is dipped into all of the solutions. The one that is ethanoic acid will turn the blue litmus paper red because it is an acid while the other solutions will leave the blue litmus unchanged"

- ◆ Notice how that was a lot more specific and referenced what the actual observation would be instead of saying “a reaction took place”.

OVERALL

- ◆ Everything comes down to naming and reactions, and they can appear all over the place in the exam and are not confined to single question like say polymers or identification
- ◆ We've covered some important strategies and things to remember, but we haven't covered everything.
- ◆ We really recommend going through the last 3-4 years of exam papers, and also using the StudyTime Walkthrough Guide and Checklist to really check and consolidate your knowledge and feel 100% prepared!