

## ABOUT THE STANDARD

- ◆ This standard is broken in to a few key parts
  - ◆ Electron configurations
  - ◆ Periodic trends
  - ◆ Lewis structures, shapes and polarities
  - ◆ Intermolecular forces
  - ◆ Enthalpy calculations
  - ◆ Enthalpy and entropy (spontaneity)

## HOW TO START A QUESTION

### ◆ Learn your definitions:

- ◆ Unfortunately there is a bit of memorisation in this standard and they can just ask you to straight up define something like ionisation energy and so it's good to have a pretty specific definition down. For example "the amount of energy required to remove one mole of electrons from one mole of gaseous atoms" for ionisation energy.
- ◆ Other key ones include all of your enthalpy definitions such as enthalpy of formation, enthalpy of combustion, fusion vaporisation or sublimation. All of these have very specific definitions so it's good to know them all. While they will help you answer questions where they ask for a definition it will also help in other questions when you need to write equations. For example seeing  $\Delta_f H(C_2H_6)$  and being able to write the corresponding chemical equation that this statement represents. E.g.  $2C + 3H_2 \rightarrow C_2H_6$

### ◆ Learn the reasons for the periodic trends:

- It's all very well to know that atomic radius decreases as you go across the periodic table and increases as you go down but if you want to push for those M and E marks its a good idea to learn why this happens.
- ◆ In the case of atomic radius:
    - As you go down the periodic table the number of electron shells increases so naturally the atomic radius is going to increase as each shell we add is further and further away form the nucleus.
    - ◆ As we go across the periodic table however the reason is a little different.
      - As we go across we are adding electrons but they are all going into the same shell as each other.
      - Of course we are adding protons to the nucleus as we go across as well. Since there is a greater positive charge pulling on electrons that are the same distance apart.
      - This greater nuclear charge is going to pull on those electrons more strongly so those electrons will be pulled closer making our atoms get smaller.
    - ◆ All of the other trends, electronegativity, ionisation energy and ionic radius (which is not really a trend as such but more a comparison) can be explained using similar types of sentences which you need to be using to get those M and E marks.

#### ◆ Intermolecular forces:

There is for sure going to be a question on intermolecular forces in your exam, and they are always going to ask about it in the same way. Whenever you see a question that asks about melting points or boiling points that should be like a trigger in your mind that means you are meant to be talking about intermolecular forces.

- ◆ If you are comparing two compounds, for example  $\text{H}_2\text{S}$  and  $\text{H}_2\text{O}$  start by listing all of the forces each molecule has.
  - In this case,  $\text{H}_2\text{S}$  has temporary dipole-dipole forces because everything has those, and since it is a polar molecule it will have permanent dipole-dipole forces.
  - $\text{H}_2\text{O}$  also has temporary dipole-dipole forces and permanent dipole-dipole because it too is polar but since in this molecule there is an H bonded to an O it will also have hydrogen bonding.
  - Since  $\text{H}_2\text{O}$  has stronger intermolecular forces than  $\text{H}_2\text{S}$  the molecules will be held together more strongly and so it will have a higher boiling point.
- ◆ Structuring your answers like this is a great way to ensure your answer is clear and easy to read for the examiner.

## 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 esters.
- ◆ 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!