

## CHEMISTRY AS 90934

### Demonstrate understanding of aspects of chemical reactions

#### GLOSSARY

- aqueous (aq) - dissolved in water
- catalyst - substance that alters the speed of a reaction but is still there at the end of the reaction
- chemical change - a process of change in which chemical bonds are broken or created; a new substance(s) is made with different chemical properties and the change is not reversible (except in some cases by another chemical change)
- classification - sorting things into groups
- combination reaction - where two elements combine to make a single compound with no other product
- combustion - burning; chemical reaction that occurs between oxygen and other substances
- decompose - break down a substance into other simpler substances
- decomposition reaction - a more complex substance breaks down into its more simple parts
- displace – take the place of, replace, push out
- displacement reaction -  $AX + Y \rightarrow YX + A$  (this is just one type of displacement reaction however)
- dissolve - when a solid splits up and mixes into water, or another solvent, forming a solution
- enzyme - biological catalyst
- equation – representation of the chemical change occurring in words or symbols
- exchange – swap place
- gas (g) – a phase of matter in which particles are free to move; large spaces between particles
- insoluble - does not dissolve in a particular liquid / solvent
- ion – charged particle formed when atom/group of atoms have lost or gained electrons
- ionic equation - equations used for reactions that occur in aqueous solutions, showing the participating species only.
- liquid (l) - a phase of matter in which particles are free to move, but are still loosely held to one another
- observations - something you see, feel, hear, smell or taste (although tasting is rarely used in scientific observation because it can be dangerous)
- oxidation - the addition of oxygen to a compound (in other instances the loss of electrons)
- physical change - a process of change in which chemical bonds are not broken or created; no new substance is made and the change is normally reversible
- precipitate - the process by which atoms dissolved in a solution come together and form a solid; represented by (s), solid in a precipitation equation

- precipitation reaction - a chemical reaction in a solution, in which an insoluble solid is produced
- product - a substance formed in a chemical reaction
- reactant - chemical that is used up in a reaction; the starting chemicals in a reaction
- reaction - occurs when existing chemicals are changed into new substances
- reactive – reacts strongly with other chemicals
- reactivity - how strongly a chemical reacts with others
- solid (s) - a phase of matter in which all particles are closely bonded together; state of matter that has a fixed shape and volume
- soluble - a substance that can be dissolved
- solution - result when a solid is dissolved in a liquid
- spectator ion – ion that remains in solution and are not part of the reaction
- thermal – involving heat

The AS refers to demonstrating understanding as typically involving the following: An *example* of what this *might* involve is given below.

- **analysing the classification of chemical reaction** – discussing why a reaction is grouped or classified in a particular way and not in another
- **classifying** – labelling a reaction as a particular type e.g. precipitation or combination
- **comparing and contrasting** – how are two reactions similar and how are they different
- **describing** – saying what something looks like or does, observations
- **drawing** – a diagram
- **elaborating** – going into much greater depth or detail about something
- **evaluating** – judging (the worth of) the evidence
- **explaining** – using chemical ideas to describe what is happening or why
- **explaining the classification of chemical reaction** – explaining why a reaction is grouped or classified in a particular way; probably a simple definition
- **giving an account of** – describing what happens in a reaction, either something you would see – or what is happening in this reaction
- **identifying** – picks out, chooses, names something
- **justifying** – backing up an explanation with observations and equations or explaining why a reaction is classified as a particular type and not another; eliminates other possibilities
- **naming** – give the chemical name of a substance reacting or formed
- **relating** – linking a colour change *of a solution* from blue to colourless to the conversion of  $\text{Cu}^{2+}(\text{aq})$  to copper,  $\text{Cu}(\text{s})$

### Activity series

Ca Mg Al Zn Fe Pb (H) Cu Ag

### Colours of selected ions and solids

Colourless ions	chloride, iodide, sulfate, hydroxide, carbonate, calcium, magnesium, zinc, lead, barium, silver
Blue ions	copper
Pale green ions	iron(II)
White solids	calcium sulfate, calcium hydroxide, calcium carbonate, magnesium hydroxide, magnesium carbonate, zinc carbonate, lead chloride, lead sulfate, lead carbonate, barium sulfate, barium hydroxide, barium carbonate, silver chloride
Green solid	iron(II) hydroxide, iron(II) carbonate
Blue solid	copper hydroxide
Yellow solid	lead iodide
Cream solid	silver iodide

### Solubility rules

nitrates	All soluble
chlorides	All soluble except silver chloride, lead chloride
iodides	All soluble except silver iodide, lead iodide
sulfates	All soluble except barium sulfate, lead sulfate, calcium sulfate
hydroxides	All insoluble except potassium hydroxide, sodium hydroxide
carbonates	All insoluble except potassium carbonate, sodium carbonate