Chemical analysis

Answers

GCSE science knowledge recall

This topic online

Q	Answer	Remember
1	pure substance	In everyday speech 'pure' means natural or untouched; in chemistry it means only one substance is present.
2	pure	Impurities make a substance melt over a range of temperatures, usually lower than the pure value.
3	up	Impurities raise the boiling point and lower the melting point.
4	formulation	Paints, medicines, cleaning sprays and fertilisers are all formulations.
5	Its ingredients (pigment, binder, solvent) are mixed in carefully measured amounts so that the product does a particular job well.	Not every mixture is a formulation: the key words are measured quantities and a useful purpose.
6	chromatography	From the Greek for 'colour writing': the dyes write their own pattern on the paper.
7	paper	Mobile moves, stationary stays still: the solvent travels, the paper does not.
8	pencil	Pencil graphite does not dissolve, so it cannot run up the paper like pen ink would.
9	1	Two or more spots means a mixture of at least that many substances.
10	R_f = distance moved by substance ÷ distance moved by solvent	The solvent always travels furthest, so an R_f value can never be bigger than 1.
11	0.25	3.0 ÷ 12.0 = 0.25. R_f has no unit because it is one length divided by another.
12	high	More time dissolved in the moving solvent means further up the paper.
13	hydrogen	The pop is a tiny explosion as hydrogen burns with oxygen to make water.
14	oxygen	Glowing splint for oxygen, lighted splint for hydrogen: do not swap them.
15	limewater	The cloudiness is solid calcium carbonate forming in the solution.
16	chlorine	The paper must be damp; blue litmus may flash red first because the gas is acidic.
17	lithium	Lithium is crimson, a deep red; calcium is a more orange-red.
18	yellow	Street lamps that glow yellow-orange use sodium vapour.
19	lilac	Lilac is faint and easily hidden by sodium's strong yellow, which is why mixtures are hard to read.

Free for classroom and home use: print, photocopy and share. Not for resale or re-hosting.

Q	Answer	Remember
20	green	Copper salts are used in fireworks to make green colours.
21	blue	Copper: blue. Iron(II): green. Iron(III): brown. Picture a blue sky, green grass, brown rust.
22	iron(III)	Brown like rust, and rust is an iron(III) compound.
23	aluminium	Aluminium hydroxide reacts with excess alkali and dissolves; the other two stay cloudy.
24	carbonate	Acid plus carbonate gives salt, water and carbon dioxide; the fizzing is a clue too.
25	silver nitrate	Nitric acid comes first to remove carbonate ions, which would also make a precipitate.
26	bromide	Chloride white, bromide cream, iodide yellow: the colours darken as you go down the group.
27	sulfate	Barium for sulfate, silver for halides: 'B' and 'S' sit together in barium sulfate.
28	flame emission spectroscopy	Each metal ion gives its own pattern of lines, like a barcode.
29	They are more accurate, more sensitive (work with tiny samples) and faster than chemical tests.	Any one of accurate, sensitive or rapid is enough; machines also work on mixtures that confuse flame tests.
30	The brightness (intensity) of the lines is compared with a calibration made from solutions of known concentration.	Position of the lines tells you which ion; intensity tells you how much.

Free for classroom and home use: print, photocopy and share. Not for resale or re-hosting.