

Core questions – Chemistry Unit 8 - Chemical analysis

No.	Question	Answer
1	What is a pure substance in everyday life?	A substance that has had nothing added to it
2	What is a chemically pure substance?	A single element or compound
3	What information can be used to determine purity?	Melting and boiling point
4	What is a formulation?	A mixture that has been designed as a useful product
5	What are 7 examples of formulations?	Fuels, cleaning agents, paints, medicines, alloys, fertilisers, foods
6	How are formulations made?	By mixing components in carefully measured quantities
7	What is chromatography used for?	Separation and identification of substances
8	What is the visible record that shows the results from chromatography called	Chromatogram
9	What is the stationary phase?	The solid or liquid that the mobile phase passes through. In paper chromatography, this is the paper.
10	What is the mobile phase?	The solvent that moves through the stationary phase. E.g water
11	What is the R _f value?	Retention factor – used to calculate how far different substances have travelled
12	How do you calculate retention factor?	$R_f = \frac{\text{Distance moved by substance}}{\text{Distance moved by solvent}}$
13	How are different substance identified using chromatography?	By visual comparison or comparing R _f values with known substances
14	How is a pure substance identified using chromatography?	Only a single spot is visible
15	What are the key features when carrying out paper chromatography?	Start line drawn in pencil, use a suitable solvent, start line has to be above solvent level
16	How is carbon dioxide tested for?	Bubble it through limewater
17	What is the positive result for presence of carbon dioxide?	Limewater turns cloudy
18	How is chlorine tested for?	Use litmus paper
19	What is the positive result for the presence of chlorine?	Litmus paper is bleached (turns white)
20	How is hydrogen tested for?	Burning splint is held at the open end of a test tube
21	What is the positive result for presence of hydrogen?	A squeaky pop
22	How is oxygen gas tested for?	Glowing splint inserted into a test tube
23	What is a positive result for the presence of oxygen?	Glowing splint re-ignited
24	How are flame tests carried out? (Triple only)	Use safety glasses, clean wire with hydrochloric acid, burn loop in flame, dip wire in substance to be tested, burn in blue flame to observe colour
25	What are flame tests used to identify? (Triple only)	Metal ions (cations)
26	What is a positive flame test for lithium? (Triple only)	Crimson flame
27	What is a positive flame test for sodium? (Triple only)	Yellow flame
28	What is a positive flame test for potassium? (Triple only)	Lilac flame
29	What is a positive flame test for calcium? (Triple only)	Orange-red flame

30	What is a positive flame test for copper? (Triple only)	Green flame
31	How is sodium hydroxide used to identify metal ions in a solution? (Triple only)	Add sodium hydroxide and observe of precipitate formed
32	What is a precipitate? (Triple only)	An insoluble solid produced in a reaction
33	What colour precipitate is observed when sodium hydroxide is added to a solution containing aluminium ions? (Triple only)	White
34	What colour precipitate is observed when sodium hydroxide is added to a solution containing calcium ions? (Triple only)	White
35	What colour precipitate is observed when sodium hydroxide is added to a solution containing magnesium ions? (Triple only)	White
36	What colour precipitate is observed when sodium hydroxide is added to a solution containing copper (II) ions? (Triple only)	Blue
37	What colour precipitate is observed when sodium hydroxide is added to a solution containing iron (II) ions? (Triple only)	Green
38	What colour precipitate is observed when sodium hydroxide is added to a solution containing iron (III) ions? (Triple only)	Brown
39	How are magnesium, calcium and aluminium precipitates distinguished apart? (Triple only)	Aluminium re-dissolves with more sodium hydroxide, calcium and magnesium should be flame tested
40	What is the test for a carbonate? (Triple only)	Reacts with dilute acid to form carbon dioxide
41	What is the test for halides in solution? (Triple only)	Add nitric acid and silver nitrate solution
42	What is a positive result for chloride ions? (Triple only)	White precipitate
43	What is a positive result for bromide ions? (Triple only)	Cream precipitate
44	What is a positive result for iodide ions? (Triple only)	Yellow precipitate
45	What is the test for sulfate ions in solution? (Triple only)	Add barium chloride and hydrochloric acid
46	What is a positive test for sulfate ions? (Triple only)	Forms a white precipitate
47	What are the advantages of using instrumental methods over chemical tests? (Triple only)	More accurate, sensitive and rapid
48	What is one example of an instrumental method of testing for metal ions in solution? (Triple only)	Flame emission spectroscopy
49	How are result from flame emission spectroscopy used to identify a substance? (Triple only)	By comparing lines from the spectra to known substances
50	How is flame emission spectroscopy carried out? (Triple only)	Sample is put into a flame and the light given out is passed through a spectroscope