

Topic 8

1. What is a pure substance?	A pure substance is a single element or compound, not mixed with any other substance.
2. How can you tell the difference between a pure and impure substance?	A pure substance will have a specific melting and boiling point e.g. pure water melts at 0°C and boils at 100°C.
3. Paint is an example of a formulation , what is meant by the word formulation?	A formulation is a mixture that has been designed as a useful product.
4. What process is used to show the different components of food colouring?	Chromatography
5. In chromatography there is a mobile phase and a stationary phase, describe what these terms mean?	Mobile phase is the solvent used e.g. water or ethanol Stationary phase is the paper used
6. Give the equations that is used to calculate the retention factor (R _f) in chromatography.	$R_f = \frac{\text{distance moved by the substance}}{\text{distance moved by solvent}}$
7. In a gas test a lighted splint is placed in the gas, a squeaky popping noise is heard - identify the gas.	Hydrogen
8. What is the name of the gas produced when limewater goes cloudy?	Carbon Dioxide
9. Describe the test used to show that Oxygen gas has been produced.	A glowing splint/spill is placed into the gas and the splint/spill re-lights.
10. Describe the test used to show that Chlorine gas has been produced.	Damp blue litmus paper is put into the gas and is bleached and turns white.
11. In order to identify positive metal ions flame tests are carried out, if the following colours are produced what ions are present: a) Green b) Lilac c) Yellow d) Crimson e) Orange - red	a) Green = Copper b) Lilac = Potassium c) Yellow = Sodium d) Crimson = Lithium e) Orange - red = Calcium
12. Sodium Hydroxide is used to identify some metal positive ions, what is observed when solutions of calcium and magnesium ions are added?	A white precipitate is formed

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<p>13. When Sodium Hydroxide is added to the following solutions, what colours are observed?</p> <p>a) Copper_(II) b) Iron_(II) c) Iron_(III)</p>	<p>a). Copper_(II) - blue precipitate b). Iron_(II) - green precipitate c). Iron_(III) - brown precipitate</p>
<p>14. What is the ionic equation for the reaction between Sodium Hydroxide (OH⁻) and Aluminium Sulfate (Al³⁺)?</p>	$\text{Al}^{3+}_{(\text{aq})} + 3\text{OH}^{-}_{(\text{aq})} \rightarrow \text{Al}(\text{OH})_{3(\text{s})}$
<p>15. What is the ionic equation for the reaction between Sodium Hydroxide (OH⁻) and Iron Chloride solution (Fe²⁺)?</p>	$\text{Fe}^{2+}_{(\text{aq})} + 2\text{OH}^{-}_{(\text{aq})} \rightarrow \text{Fe}(\text{OH})_{2(\text{s})}$
<p>16. What would be observed if a metal carbonate is reacted with an acid?</p>	<p>Bubbles of Carbon dioxide would be observed which can be identified using limewater.</p>
<p>17. What 2 chemicals are used in the test for halide ions?</p>	<p>Nitric Acid Silver Nitrate solution</p>
<p>18. What colour changes will be observed when the following halide ions are present: a). Iodide ions b). Chloride ions c). Bromide ions</p>	<p>a). Iodide ions - yellow precipitate b). Chloride ions - white precipitate c). Bromide ions - cream precipitate</p>
<p>19. Sulfate ions are tested using Hydrochloric Acid and Barium Chloride solution, what would be observed?</p>	<p>A white precipitate</p>
<p>20. Why are instrumental methods used to identify elements and compounds?</p>	<p>Instrumental methods are accurate, sensitive and rapid.</p>
<p>21. What is the name of the instrumental method used to analyse metal ions in solution?</p>	<p>Flame emission spectroscopy</p>
<p>22. How does the method of flame emission spectroscopy work?</p>	<p>The sample is put into a flame and the light given out is passed through a spectroscope. The output is a line spectrum that can be analysed to identify the metal ions in the solutions and measure the concentrations.</p>