

C1 Topic 4 Chemical Changes and Energy Changes REVISION

Reactivity of Metals	
1. What ions do metal atoms form?	Positive ions
2. What is the reactivity of a metal related to?	It's tendency to form positive ions
3. What does a more reactive metal do to a less reactive metal in a compound?	Displace it
4. What two things are formed when a metal reacts with water?	A metal hydroxide and hydrogen
5. What two things are formed when a metal reacts with an acid?	A salt and hydrogen
6. Name two metals that are unreactive	Silver, Gold, Platinum
7. How do you extract metals less reactive than carbon (from their oxides)?	Reduction (with carbon)
8. Reduction involves ... oxygen	Losing
9. Oxidation involves oxygen	Gaining
10. What do metals produce when they react with oxygen?	Metal oxides
Reactions of Acids	
11. What two things are produced when a metal oxide reacts with an acid?	Salt and water
12. What two things are produced when a metal hydroxide reacts with an acid?	Salt and water
13. What three things are produced when a metal carbonate reacts with an acid?	Salt, water and carbon dioxide
14. What salt is produced from a reaction with hydrochloric acid?	(Metal) chloride
15. What salt is produced from a reaction with sulfuric acid?	(Metal) sulfate
16. What salt is produced from a reaction with nitric acid?	(Metal) nitrate
17. What four (insoluble) things can you react with an acid to make a soluble salt?	Metals, metal oxides, metal hydroxides and metal carbonates
18. How would you remove an excess solid?	Filter it (filtration)
19. How do you obtain a solid salt from a salt solution?	Crystallisation
20. What ion makes something an acid?	H⁺ (hydrogen ions)
21. What ion makes something an alkali?	OH⁻ (hydroxide ions)
22. What is the pH range of acidic solutions?	pH 1-6 (less than 7)
23. What is the pH range of alkaline solutions?	pH 8-14 (more than 7)
24. What is the pH of a neutral solution?	pH 7
25. What is the equation for neutralisation?	$H^+(aq) + OH^-(aq) \rightarrow H_2O(l)$
26. What do we use to measure the pH of	An indicator

something (which shows a colour change)?	
Electrolysis	
27. What do we need to do to ionic compounds to enable them to conduct electricity? Why?	Melt or dissolve them, so that the ions can move
28. What is the liquid or solution that is used in electrolysis called?	The electrolyte
29. What does passing an electric current through an electrolyte cause the ions to do?	Move to the electrodes
30. What electrode do negative ions move to?	The positive electrode
31. What do the ions form at the electrode?	Elements
32. Which electrode is the cathode?	Negative
33. Which electrode is the anode?	Positive
34. When is electrolysis used to extract metals?	Metal too reactive/ reacts with carbon
35. Why is electrolysis expensive?	It uses a lot of electricity
36. What ions does water break down into during electrolysis?	H ⁺ and OH ⁻ or hydrogen ions and hydroxide ions
Energy Changes	
37. Energy is in chemical reactions	Conserved
38. What happens during an exothermic reaction?	Heat is transferred to the surroundings
39. What happens during an endothermic reaction?	Heat is taken in from the surroundings
40. What is the minimum amount of energy required for particles to react called?	The activation energy
Skills	
41. How would you extract zinc?	By reduction with carbon
42. How would you extract potassium?	By electrolysis
43. Nitric acid + Calcium carbonate →	Calcium nitrate + Water + Carbon dioxide
44. Hydrochloric acid + Magnesium oxide →	Magnesium chloride + Water
45. Sulfuric acid + Potassium →	Potassium sulfate + Hydrogen
46. Sulfuric acid + Sodium hydroxide →	Sodium sulfate + Water
Higher Tier	
47. Reduction is the of electrons	Gain
48. Oxidation is the of electrons	Loss
49. What happens to a strong acid in aqueous solution?	It is completely ionised
50. What happens to a weak acid in aqueous solution?	It is partially ionised
51. The stronger an acid the the pH	Lower
52. 2H ⁺ + → H ₂	2e ⁻
53. What is the process called at the negative electrode?	Reduction