C1 Topic 4 Chemical Changes and Energy Changes REVISION- Triple

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

to enable them to conduct electricity? Why?	can move
26. What is the liquid or solution that is used in electrolysis called?	The electrolyte
27. What electrode do negative ions move to?	The positive electrode
28. What do the ions form at the electrode?	Elements
29. Which electrode is the cathode?	Negative
30. Which electrode is the anode?	Positive
31. When is electrolysis used to extract metals?	Metal too reactive/ reacts with carbon
32. Why is electrolysis expensive?	It uses a lot of electricity
Energy Changes	
33. Energy is …… in chemical reactions	Conserved
34. What happens during an exothermic reaction?	Heat is transferred to the surroundings
35. What happens during an endothermic reaction?	Heat is taken in from the surroundings
36. What is the minimum amount of energy required for particles to react called?	The activation energy
Chemical Cells and Fuel Cells	
37. What is a simple cell made up of?	2 different metals in contact with an electrolyte
38. What does a battery consist of?	2 or more cells connected in series
39. What sort of batteries are non-rechargeable?	Alkaline batteries
40. What does the overall reaction in a hydrogen fuel cell involve?	The oxidation of hydrogen to produce water
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