

C4 Quick Revision Questions

H = Higher tier only

SS = Separate science only

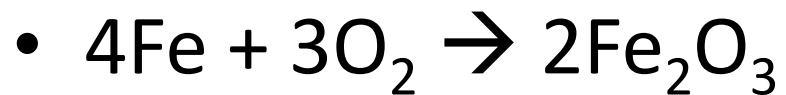
Question 1

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- Write the equation which shows the formation of iron oxide

Answer 1

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Question 2

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- Define an oxidation reaction and define a reduction reaction (in terms of oxygen)

Answer 2

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- Oxidation – gains oxygen
- Reduction – loses oxygen

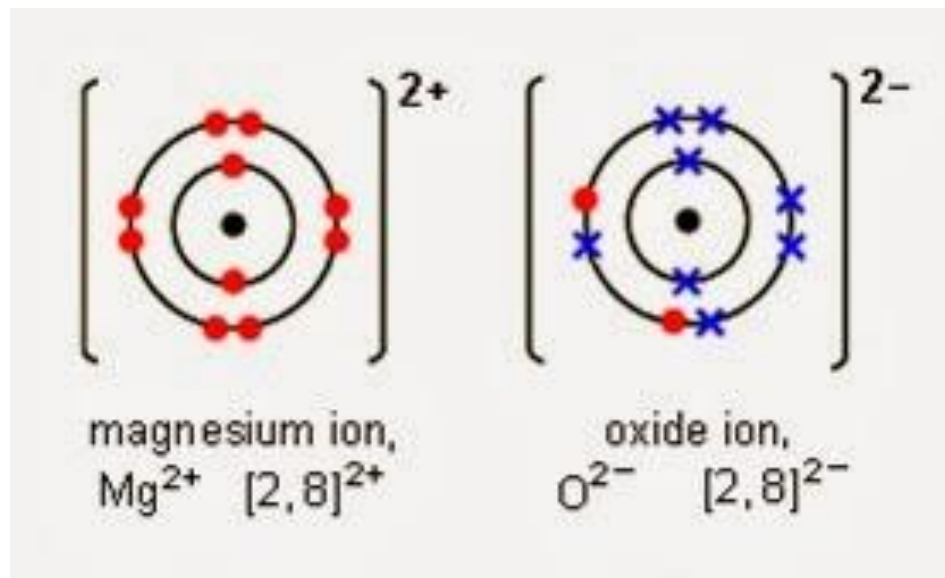
Question 3

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- Draw the dot and cross diagram for magnesium oxide MgO

Answer 3

.... of 50



Question 4

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- Put the group 1 metals in order of their reactivity, from highest to lowest

Answer 4

.... of 50

- Potassium
- Sodium
- Lithium
- Calcium
- Magnesium

Question 5

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- Define displacement reaction

Answer 5

.... of 50

- Chemical reaction where one element displaces or 'pushes out' another element from a compound

Question 6

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- What are the two stages involved in the extraction of zinc?

Answer 6

.... of 50

- Convert the ore zinc blende (ZnS) to zinc oxide
- Convert the zinc oxide to zinc

Question 7

.... of 50

- What are the two reactions that represent the iron extraction process simply?

Answer 7

.... of 50

- $2\text{C} + \text{O}_2 \rightarrow 2\text{CO}$
- $\text{Fe}_2\text{O}_3 + 3\text{CO} \rightarrow 2\text{Fe} + 3\text{CO}_2$

Question 8

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- Write the following equation as two half equations:
 - $\text{Zn} + \text{Fe}^{2+} \rightarrow \text{Zn}^{2+} + \text{Fe}$

Answer 8

.... of 50

- $\text{Zn} - 2\text{e}^- \rightarrow \text{Zn}^{2+}$
- $\text{Fe}^{2+} + 2\text{e}^- \rightarrow \text{Fe}$

Question 9

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- In these two half equations which species is oxidised and which is reduced
 - $\text{Al} - 3\text{e}^- \rightarrow \text{Al}^{3+}$
 - $\text{Cr}^{3+} + 3\text{e}^- \rightarrow \text{Cr}$

Answer 9

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- Al is oxidised
- Cr is reduced

Question 10

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- Write the word equation for the formation of iron (II) sulfate

Answer 10

.... of 50

- Iron (II) + sulfuric acid \rightarrow iron(II) sulfate + hydrogen

Question 11

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- Write two half equations for the reaction between zinc and an acid

Answer 11

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- $\text{Zn} - 2\text{e}^- \rightarrow \text{Zn}^{2+}$
- $2\text{H}^+ + 2\text{e}^- \rightarrow \text{H}_2$

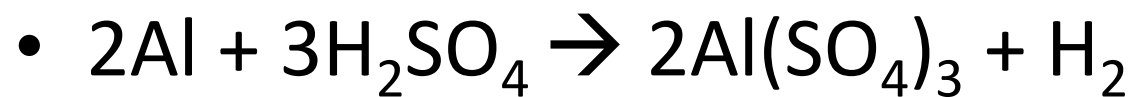
Question 12

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- Write a balanced chemical equation for the reaction of aluminium with sulfuric acid

Answer 12

.... of 50



Question 13

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- Give the general word equation for acid + metal carbonate

Answer 13

.... of 50

- Acid + metal carbonate \rightarrow salt + water + carbon dioxide

Question 14

.... of 50

- Deduce the formula of copper nitrate

Answer 14

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- $\text{Cu}(\text{NO}_3)_2$

Question 15

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- Write a balanced equation for the reaction between calcium carbonate and nitric acid

Answer 15

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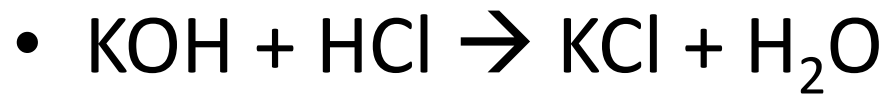
Question 16

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- Write the equation for the reaction between potassium hydroxide and hydrochloric acid

Answer 16

.... of 50



Question 17

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- What is the equation for zinc carbonate and hydrochloric acid

Answer 17

.... of 50



Question 18

.... of 50

- What two substances are needed to make magnesium sulfate?

Answer 18

.... of 50

- Magnesium (s)
- Sulfuric acid (l)

Question 19

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- What two processes are needed to obtain the salt product from the solution of the two reactants?

Answer 19

.... of 50

- Evaporation
- Crystallisation

Question 20

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- What ion in nitric acid makes it acidic?

Answer 20

.... of 50

- H^+

Question 21

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- Explain the difference between acids and alkalis?

Answer 21

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- Acids produce hydrogen ions in aqueous solution
- Alkalis produce hydroxide ions in aqueous solution

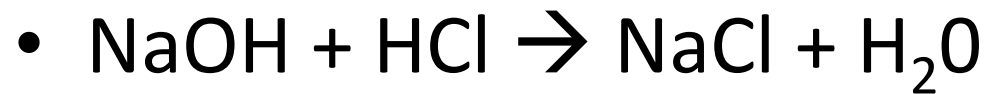
Question 22

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- Write an ionic equation for the reaction between hydrochloric acid and potassium hydroxide

Answer 22

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Question 23

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- If universal indicator turns green, what is the pH of the solution?

Answer 23

.... of 50

- pH 7
- Neutral

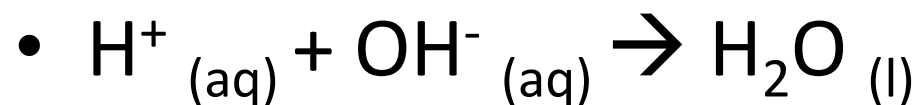
Question 24

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- Give the reaction for neutralisation

Answer 24

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Question 25

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- Identify the ions in phosphoric acid

Answer 25

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- H^+
- PO_4^{3-}

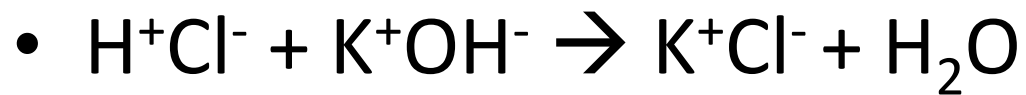
Question 26

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- Write an ionic equation for the reaction between hydrochloric acid and potassium hydroxide

Answer 26

.... of 50



Question 27

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- What piece of apparatus is needed to measure a fixed volume of the alkali?

Answer 27

.... of 50

- Burette

Question 28

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- The concentration of Jo's alkali in mol/dm^3 is 0.12. Calculate the number of moles in 25cm^3

Answer 28

.... of 50

- Mol = mass/molar mass
- 0.12 mol in 1 dm³
- 0.00012 mol in 1cm³
- 0.003mol in 25cm³

Question 29

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- Give an example of a strong acid and an example of a weak acid

Answer 29

.... of 50

- Strong acid = sulfuric, nitric or hydrochloric
- Weak acid = ethanoic, citric or carbonic

Question 30

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- What ion is the pH scale related to?

Answer 30

.... of 50

- H⁺ ions

Question 31

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- How is pH related to H^+ ion concentration?

Answer 31

.... of 50

- If the pH decreases by one unit, the hydrogen ion concentration of the solution increases by a factor of 10

Question 32

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- A solution is made from 6g of citric acid added to 100cm^3 of water. What is the concentration of the solution in g/dm^3 ?

Answer 32

.... of 50

- $6\text{g}/100\text{cm}^3$
- $6\text{g}/0.1\text{dm}^3$
- $60\text{g}/1\text{dm}^3$
- $60\text{ g}/\text{dm}^3$

Question 33

.... of 50

- Define electrolysis

Answer 33

.... of 50

- The process of passing direct current through a solution or melted ionic compound to move ions apart and so break the compound down and discharge some of the elements at the electrodes

Question 34

.... of 50

- Give the charges of the anode and the cathode

Answer 34

.... of 50

- Anode = positive electrode
- Cathode = negative electrode

Question 35

.... of 50

- Identify the two products that would form if molten copper chloride was electrolysed

Answer 35

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- Cu^{2+}
- Cl^-

Question 36

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- What happens when negative ions reach the anode?

Answer 36

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- They lose electrons to the electrode

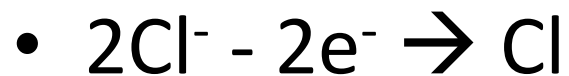
Question 37

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- Give the half equation for the discharge of the chloride ion

Answer 37

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Question 38

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- What is a simple binary electrolyte?

Answer 38

.... of 50

- One that is made up of two ions e.g. lead bromide or copper chloride

Question 39

.... of 50

- What does it mean if an electrode is inert?

Answer 39

.... of 50

- The electrode won't react with any element that is discharged during electrolysis

Question 40

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- Give an example of an inert electrode

Answer 40

.... of 50

- Carbon/graphite

Question 41

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- What is the name of aluminium's ore?

Answer 41

.... of 50

- Bauxite

Question 42

.... of 50

- Describe the flow of electrons as aluminium oxide is electrolysed

Answer 42

.... of 50

- Aluminium ions (+) migrate to the negative cathode
- Gain electrons at the negative cathode
- Oxide ions (-) migrate to the positive anode
- Transfer electrons to the anode
- Anodes (carbon) react with the oxygen being evolved to make carbon dioxide

Question 43

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- Write the half equations of the reaction at the cathode and the anode in the electrolysis of dilute sodium sulfate solution

Answer 43

.... of 50

- Cathode: $\text{Na}^+ + \text{e}^- \rightarrow \text{Na}$
- Anode: $4\text{OH}^- - 4\text{e}^- \rightarrow 2\text{H}_2\text{O} + \text{O}_2$

Question 44

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- How does an atom of sodium join with an atom of chlorine?

Answer 44

.... of 50

- Sodium has one electron in its outer shell
- Chlorine has seven electrons in its outer shell
- Sodium donates its one electron to chlorine (ionic bond)
- The two now have full outside shells

Question 45

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- Why are helium and argon unreactive?

Answer 45

.... of 50

- They have no unpaired electrons in their outer shells

Question 46

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- What is acid rain?

Answer 46

.... of 50

- Rain water with a pH lower than 5.6

Question 47

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- How is relative formula mass calculated?

Answer 47

.... of 50

- Adding up the relative atomic masses (A_r) of each element in a formula

Question 48

.... of 50

- How can we test for hydrogen?

Answer 48

.... of 50

- If present, it pops with a lighted splint

Question 49

.... of 50

- When dilute sulfuric acid is electrolysed, what substance is at the anode?

Answer 49

.... of 50

- Oxygen

Question 50

.... of 50

- Why cannot solid copper sulfate be used for electrolysis?

Answer 50

.... of 50

- The ions need to be free to move in order to conduct electricity
- Therefore they need to be molten or in solution