

C6 revision questions

Question 1 of 50

- What is electrolysis?

Answer 1 of 50

- Electrolysis is the process of passing direct current through a solution or melted compound to break it down. The solution or molten compound is called the electrolyte

Question 2 of 50

- What happens in electrolysis?

Answer 2 of 50

- Two electrodes are used in electrolysis. They are called the cathode (negative electrode) and the anode (positive electrode).
- Electrolytes are made from ions. During electrolysis, positive ions are attracted to the cathode and are called cations. The negative ions are attracted to the anode and called anions

Question 3 of 50

- Write half equations to show the reactions that take place at the electrodes in the electrolysis of the electrolytes NaCl and KCl

Answer 3 of 50

NaCl

- At the cathode $2\text{Na}^+ + 2\text{e}^- \longrightarrow 2\text{Na}$
- At the anode $2\text{Cl}^- - 2\text{e}^- \longrightarrow \text{Cl}_2$

KCl

- At the cathode $2\text{K}^+ + 2\text{e}^- \longrightarrow 2\text{K}$
- At the anode $2\text{Cl}^- - 2\text{e}^- \longrightarrow \text{Cl}_2$

Question 4 of 50

- Write half equations to show the reactions that take place at the electrodes in the electrolysis of NaOH and CuSO₄

Answer 4 of 50

NaOH

- At the cathode $2\text{H}^+ + 2\text{e}^- \longrightarrow \text{H}_2$
- At the anode $4\text{OH}^- - 4\text{e}^- \longrightarrow 2\text{H}_2\text{O} + \text{O}_2$

CuSO₄

- At the cathode $\text{Cu}^{2+} + 2\text{e}^- \longrightarrow \text{Cu}$
- At the anode $4\text{OH}^- - 4\text{e}^- \longrightarrow 2\text{H}_2\text{O} + \text{O}_2$

Question 5 of 50

- What affects the amount of substance produced during electrolysis reactions?

Answer 5 of 50

- Size of current
- Time the current is passing through the electrolyte

Question 6 of 50

- What are fuel cells and what are they used for?

Answer 6 of 50

- Fuel cells are a special type of electric cell that have a fuel tank that needs refilling every now and then. They do not need replacing or recharging like ordinary batteries.
- They are used in spacecraft and small vehicles.

Question 7 of 50

- Why are fuel cells used in spacecraft?

Answer 7 of 50

- They are efficient – waste very little energy
- The water produced is not wasted - the astronauts drink it!
- They are lightweight
- They are compact
- There are no moving parts
- They are used continuously – no time out needed for recharging

Question 8 of 50

- What is the main product of a hydrogen-powered fuel cell?

Answer 8 of 50

- water

Question 9 of 50

- Why is oxygen gas needed in the fuel cell?

Answer 9 of 50

- Oxygen reacts with the hydrogen fuel to produce water. The reaction is exothermic and gives out a lot of energy.

Question 10 of 50

- What is a redox reaction?

Answer 10 of 50

- A redox reaction is one where electrons are gained and lost

Question 11 of 50

- What are the 6 ways of preventing rust?

Answer 11 of 50

- Cover the iron with
 1. oil or grease
 2. paint
 3. tin plate
 4. layer of zinc
- Sacrificial protection
- Alloying

Question 12 of 50

- What type of reaction is rusting?

Answer 12 of 50

- Redox reaction

Question 13 of 50

- Write an equation for the rusting process

Answer 13 of 50

- iron + oxygen + water \longrightarrow hydrated iron (III) oxide

Question 14 of 50

- During rusting, what species gains electrons and what species loses electrons?

Answer 14 of 50

- During rusting, oxygen is the oxidising agent
 - iron loses electrons – it is oxidised
 - oxygen gains electrons – it is reduced

Question 15 of 50

- What is a displacement reaction?

Answer 15 of 50

- A displacement reaction is a chemical reaction where a more reactive element displaces or 'pushes out' a less reactive element from a compound

Question 16 of 50

- Give three main uses of ethanol

Answer 16 of 50

- The three main uses of ethanol are
 - In petrol replacement
 - As a solvent eg methylated spirit
 - In alcoholic drinks

Question 17 of 50

- What group of compounds does ethanol belong to?

Answer 17 of 50

- Alcohols

Question 18 of 50

- Ethanol is can be made using fermentation.
What is needed for fermentation?

Answer 18 of 50

- Sugar from plants
- Water
- Enzymes from yeast
- A temperature between 25°C and 50°C
- An absence of oxygen

Question 19 of 50

- What is the molecular formula of ethanol?

Answer 19 of 50

- C_2H_5OH

Question 20 of 50

- What is the word equation for the fermentation of glucose to make ethanol?

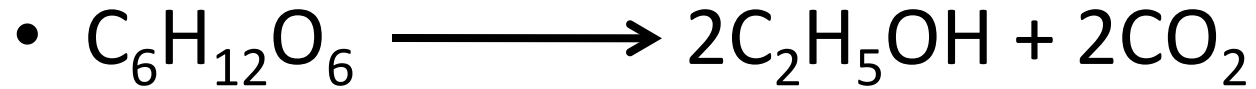
Answer 20 of 50

- glucose \longrightarrow ethanol + carbon dioxide

Question 21 of 50

- What is the balanced symbol equation for the fermentation of glucose to make ethanol?

Answer 21 of 50



Question 22 of 50

- Dilute ethanol is produced in fermentation. What process is used to convert this dilute ethanol to almost pure ethanol?

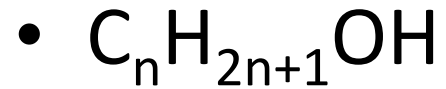
Answer 22 of 50

- Fractional distillation

Question 23 of 50

- What is the general formula for an alcohol?

Answer 23 of 50



Question 24 of 50

- What would happen if fermentation happens in too cold temperatures?

Answer 24 of 50

- The enzymes in yeast would be inactive

Question 25 of 50

- What would happen if fermentation happens in too hot temperatures?

Answer 25 of 50

- The enzymes in yeast would be denatured

Question 26 of 50

- What would happen if fermentation happens in the presence of air?

Answer 26 of 50

- Ethanoic acid (vinegar) would be produced instead of ethanol

Question 27 of 50

- What chemical from crude oil is used to make ethanol?

Answer 27 of 50

- Ethene

Question 28 of 50

- What is the word equation for the hydration reaction to make ethanol?

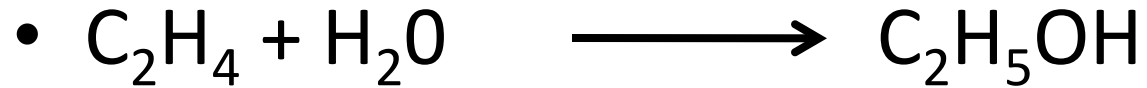
Answer 28 of 50

- ethene + water \longrightarrow ethanol

Question 29 of 50

- What is the balanced symbol equation for the hydration reaction to make ethanol?

Answer 29 of 50



Question 30 of 50

- What is the name of the catalyst used to make ethanol in a hydration reaction?

Answer 30 of 50

- Hot phosphoric acid catalyst

Question 31 of 50

- Give three advantages of making ethanol by fermentation

Answer 31 of 50

- It is a renewable resource
- It is carbon neutral
- Household waste can be fermented to make ethanol, reducing the need for landfill sites

Question 32 of 50

- Give a disadvantage of making ethanol by fermentation

Answer 32 of 50

- Large areas of natural forest may be cut down to make room for the crops

Question 33 of 50

- What is an advantage of making ethanol by hydration of ethene?

Answer 33 of 50

- It is a much cheaper route

Question 34 of 50

- What is a disadvantage of making ethanol by hydration of ethene?

Answer 34 of 50

- It is a non-renewable method

Question 35 of 50

- Give four problems caused by UV radiation

Answer 35 of 50

- Sunburn
- Ageing skin
- Skin cancer
- Cataracts of the eyes

Question 36 of 50

- What part of the atmosphere contains the ozone layer?

Answer 36 of 50

- The stratosphere

Question 37 of 50

- What do CFCs do to the ozone layer?

Answer 37 of 50

- They attack the ozone layer to break down ozone molecules into oxygen molecules and oxygen atoms

Question 38 of 50

- What does ozone do to UV radiation?

Answer 38 of 50

- It absorbs UV radiation from the sun.

Question 39 of 50

- What is the link between CFCs and UV radiation?

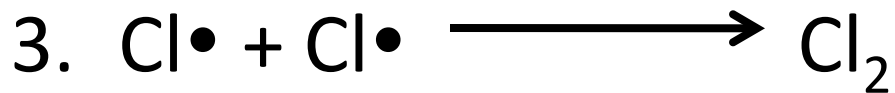
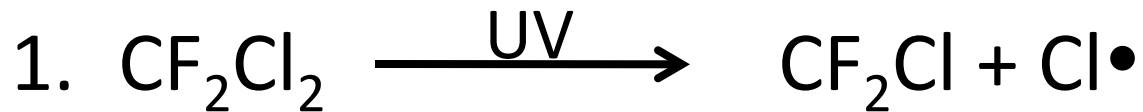
Answer 39 of 50

- The more CFCs are used, the more depleted the ozone layer gets. Therefore, the more the UV radiation can get through to the earth's surface.

Question 40 of 50

- Write equations for the three stages of the chain reaction in the breakdown of ozone

Answer 40 of 50



Question 41 of 50

- What is the problem with hard water?

Answer 41 of 50

- It clogs up pipes and makes it very difficult for soap to lather (make bubbles)

Question 42 of 50

- What ions cause water hardness?

Answer 42 of 50

- Magnesium or calcium ions

Question 43 of 50

- How can permanent water hardness be distinguished from temporary water hardness?

Answer 43 of 50

- If the water hardness is destroyed after boiling the water, it is temporary water hardness
- If boiling water has no effect on the water hardness, it is called permanent water hardness

Question 44 of 50

- Name four ways of removing water hardness

Answer 44 of 50

- Thermal decomposition
- Using washing soda
- Using ion exchange resins
- Using limescale removers

Question 45 of 50

- What is the difference between a fat and an oil?

Answer 45 of 50

- A fat is solid at room temperature
- An oil is liquid at room temperature

Question 46 of 50

- What is the difference between a saturated compound and an unsaturated compound?

Answer 46 of 50

- A saturated compound has only carbon-carbon single bonds
- An unsaturated compound has one or more carbon-carbon double bonds

Question 47 of 50

- How do we test a compound for unsaturation?

Answer 47 of 50

- Bromine water is orange. If bromine water decolourises when shaken with a compound, the compound is unsaturated

Question 48 of 50

- What are the conditions for making margarine from vegetable oils?

Answer 48 of 50

- Hydrogen is bubbled through the oil at about 200°C using a nickel catalyst

Question 49 of 50

- What is the difference between a colloid and an emulsion?

Answer 49 of 50

- A colloid is a suspension of one substance inside another
- An emulsion is a special type of colloid, where the suspension is of one liquid in another liquid

Question 50 of 50

- Write a word equation for the manufacture of soap

Answer 50 of 50

- Fat + sodium hydroxide \longrightarrow soap + glycerol

Question 51 of 51

- What are the 4 steps in the manufacture of soap?

Answer 51 of 51

- Vegetable oils are heated with sodium hydroxide solution
- Salt is added at the end of the reaction to make the soap precipitate out
- The solid soap is removed
- Coloring and perfume may be added