Chemistry exams

26ci. The reverse reaction is favoured with increased temperature. This shows that the reverse is endothermic. As endothermic reactions are more sensitive to temperature change due to it's higher activation energy. This shows the forward reaction is exothermic showing that enthalpy change is negative. **Endothermic consumes added heat, formation of red vapour indicates reverse being favoured**

ii. the K value is now lower than before as concentration of bromide gas increases within the expression through the observation.

iii. higher temperature leads to more particles having higher or equal energy to the activation energy. Higher frequency successful collisions leads to a faster reaction rate for both forward and reverse. However, initially reverse is favoured (**favoured**) due to the activation energy being higher (products being more influenced) until both rates are equal.

27. HCl in it's solid form is a covalent molecular with no mobile charges (ions or delocalised electrons to carry current) stuck in its structure. In liquid there is also no mobile charges. However in aqueous state they ionise to form mobile charges that are able to carry current. Calcium carbonate in its solid state doesn't have mobile charges (ions or delocalised electrons to carry current) in its liquid state it dissociates to form mobile charged ions. It's insoluble in water and therefore can't produce ions to carry current. **(must add equations)**

28. right, left has two identical side groups which therefore are identical if the double bond where to twist.

29. b, e, c, 2,8,2, a & e, A2B, **ionic bond**

30. 1-propanol & propanoic acid

31. add (**acidified**) potassium permanganate to all, only 1-propanol would react. It would go from purple to pale pink. Oxidation from alcohol to carboxylic acid

Increase, **increase**, no change, decrease, decrease,

33b. As oxygen cools down it loses energy and comes closer in with other oxygen molecules. It's randomly oscillating electrons cause temporary dipoles (**assymetrical electron distribution)** which influence temporary dipoles in now closer molecules. These new dipoles cause electrostatic attraction which is increased due to close proximity. (**form between slightly negative and positive sides)**

34. NH3, NH4+. If it had equal concentrations of each and was in large concentrations. (equation) if h+ or OH- was added, the equilibrium will shift to favour the reaction rate to minimise the change. (if this was added conc would increase if this conc would increase) therefore with minimal change to H3O+ the pH will stay near constant.

35. ester, alcohol group

Soap has a large non, polar side and a shorter charged side.(**use hydrophilic and phobic)** The non polar side's high dispersion forces dissolves in grease and oil (substances which predominantly use dispersion forces) whilst the polar side uses dipole-dipole interactions to dissolve in water. **Surfactant ions form** a micelle, the soap helps grease and non polar substances dissolve in water. Hard water has high concentrations of calcium and magnesium ions which precipitate when in contact with soap. This makes it hard to lather and unable to do its job in cleaning.

37a. sodium and chloride ions don't **hydrolyse** with water to form hydroxide or hydronium ions therefore they will not interfere with the concentrations of which, no change in pH. **Neutral salt. Solutions of these form ph of 7**

37c. Primary standard is a substance that can be accurately be weighed out and dissolved in an accurate known quantity of water to have a known concentrations. Primary standard must have a high molecular mass, not hydroscopic, known formula reactions and high purity. Standard solution is any solution with a high accuracy of concentration. These can be primary standards or secondary standards.

38. Use phenolphthalein as its end point is in basic range, sulfamic acid is a weak acid and therefore it's conjugate base is basic. The equivalence point will then be in the basic region. (equation) for the end point to occur.

Lower Sulfumic acid volumes indicate less NaOH in flask. This might be due to rinsing with water, rinsing pipette with water / over filling volumetric flask / not transferring entire mass of Drano to vol flask / use of incorrect indicator (would have to be an indicator with end point at a very high pH for this to occur)

38b. chromium electrode decreases in size, colour of deep green intensifies. Tin electrode increases in size. Drop in voltage as reaction proceeds.

Tin ions are the limiting reagent

A lower voltage. On the table the values are closer together. Copper will reduce and tin oxidise. 0.48 v which is lower than 0.62

High temperature is used so that higher proportion of particles will have higher or equal to activation energy. Higher frequency of successful collisions lead to a faster reaction rate. As the forward is endothermic with a higher activation energy, the forward is affect more as it's more sensitive to changes in temperature favouring the forward and increasing yield. Lower pressure decreases reaction rate **mostly** on the product side as it contains gaseous particles. lower concentration products lead to less collisions which result in lower that reaction rate (favouring forward reaction and increasing yield). **removal of Mg vapour will decrease the reverse reaction rate, as there will be fewer particles to collide, however once again, would not impact on collision of reactant particles**
removal of Mg vapour will increase yield, because this will favour forward reaction in an attempt to increase the concentration of Mg in accordance with LCP

40a. the substance has a high boiling point due to strong hydrogen bonding. It contains four hydrogen atoms available to hydrogen bond. These strong bond requires a lot of energy to break therefore a higher boiling point. it's high water solubility is due to having similar strength intermolecular forces to water. Water water and hydrazine hydrazine IMF forces are disrupted to form hydrazine water bonds. Water's main bond is hydrogen bonding with similar strength to hydrazine resulting in high solubility. **4 n-h bonds 2 lone pairs, other molecules of similar weight only have dispersion forces.**

40b. hydrazine acts as a Bronsted lowry base and accepts a proton. The low k value of () shows us that it is a weak base **not go to completion** and is **higher concentration of reactants than products**

Redox reactions are reactions that include the transfer of electrons. Nitrogen **in hydrazine** oxidises from -3 to -2, oxygen **in hydrogen peroxide** reduces from +1 to -2. **Oxidation is loss reduction is gain of electrons, reducing agent and oxidising agent**

2016
28a. decrease in concentration. H30+ concentration decreases as pH increases, due to le chateliers principles, the reverse reaction is favoured **to oppose the change and increase H+ again** and consumes hclo faster than produced decreasing it's concentration until new equilibrium is reached.

Decrease in concentration. Reverse is endothermic therefore will be favoured (increased) more than forward initially. Hclo will be consumed more than produced decreasing it's concentration. **To oppose the increase in heat**

Unsaturated due to double bonded carbon-carbon

Sodium/**potassium** hydroxide

A catalyst provides an alternative reaction pathway with a lower activation energy. Therefore more particles have equal or more energy than activation energy leading to a higher frequency of successful collisions (reaction rate)

It is described as an addition reaction as the water 'adds' on to the ethene to form ethanol **across double bond**.

It is described as a condensation reaction as it involves the production of water/ **small molecules.**

- **Enzymes can be denatured at high temperatures. Enzymes work best at specific pH and temperature. They are biochemical molecules / proteins**
- **they catalyse specific reactions**
- **they work by having a particular shape**
- **they are pH sensitive**

they can be destroyed/denatured at high temperatures

Stearate ion has a large non polar tail which is hydrophobic and dissolves in grease and dirt (non polar substances) **forms dispersion forces** the polar head which is hydrophilic dissolves in water **through dipole dipole forces**. The surfactant ions form a micelle which helps the grease and dirt dissolve into the water.

It is hard to lather and clean with it as it precipitates out. it's unsightly. **the scum can be unsightly / makes clothes look dirty/grey / can block filters**

The reaction acts as a buffer to partially replenish H+ concentration to have minimal change in pH.

Potassium chromate could be used as an indicator as it has a rapid colour change at a specific pH allowing that to be the end point. **has two colours in different states, only works with strong base strong acid reactions as end point is near 7**

Sulfuric acid 1 mol-1L does not have a pH of 0 as it's diprotic.

25 degrees Celsius and atm pressure **100kPa**

As volume decreases pressure (concentration) increases for both. However reactant concentration increases twice more than products as there is a 2 reactant gas molecules for every 1 product. Equilibrium then shifts to product side to favour less gaseous molecules. Reactant concentration decreases twice as product concentration increases. Both concentrations are higher than before. **More collisions therefore rate of reactions for both increase. Rate of forward increases more. Overtime the rates of forward and reverse become equal.**

This was done to help the substance fully dissolve in the water and increase the k value.

It could be a systematic error as some aspartic acid could have been left in the original container giving lower volumes of sodium hydroxide as there was less aspartic acid.

As aspartic acid would be acidic the end point would occur before the equivalence point. this would need less sodium hydroxide to neutralise the aspartic acid, making the students believe that there was less aspartic acid and lower purity.

The lower the titre volume needed the less accurate it is due to ??

Uncertainty error when reading a burette is fixed. The lower the volume the more significant the error is

Hydrogen bonding between lone pairs of oxygen atom and highly positive hydrogen on N-H

Less Harmul Sulfur dioxide is reduced form atmosphere. Lower cost of transport.
Higher temperature will reduce yield will be expensive. Catalyst will provide a faser reaction without economic disadvantages.
Differences between spontaneous and non spontaneous:
Spontaneous is one that occurs naturally
If one is a strong enough reducing agent or oxidise agent to reduce or oxidise another species
In this equation () this is a stronger reducing agent to this so it occurs spontaneously
Cell potential is positive, in this equation it's __
In galvanic cells the spontaneous reaction determines which one is cathode and which one is anode.
A non spontaneous reaction will not occur without an external voltage
In purification of copper, cell potential is 0. An external source must be applied to make one electrode cathode and one anode.

Differences between galvanic and electrochemical:
Galvanic is spontaneous in two half cells, anox redcat
Electrons go to cathode due to spontaneous reaction
Example
Chemical to electrical
Cathode is positive anode is negative

In electrolytic cells anox redcat also but electron flow is caused by external voltage
Cathode is negative anode is positive because electrons are pushed towards cathode
Electrical to chemical

Weak vs strong oxidising agent:
Oxidising agent has a tendency to accept one or more electrons from another species
The tendency to remove can be compared, ones that readily remove electrons can be called strong oxidising agents.
These can be strong oxidising agents as they accept electrons when they reduce to form elemental mentals
However this is stronger oxidising agent than this (equation) because they accept electrons
Relative strengths can be compared using the table
Weakest have this potential, strongest have this potential

2016a
Zwitterion has a positive and a negative side yet is overall neutral. Positively charged hydrogen goes to amine side to make it positive, leaving carboxyl side negative. **this is the most common form of glutamic acid.**
Primary structure determines secondary and tertiary. Tertiary structure is determined by side chains of residues within primary structure. Secondary is dependent on the residues to form hydrogen bonding between residues. **Hydrogen bonds between amine group and double bonded oxygen, creates alpha helix or beta pleated sheets. If primary structure is changed, hydrogen bonds can be disrupted or changed,**

A closed system is needed for equilibrium to be established.

Product concentrations are higher than reactants. The constant says nothing about the rate of reaction

Acid base indicators use conjugate acid base pairs. That are in equilibrium.

It would as carbon dioxide is weakly acidic, as the end point is in the acidic range, the indicator is suitable.

Lead nitrate. It would undergo metal replacement reaction with tin.

Esterification

Shift left, mass of ammonium carbamate increases,

Shift left. Less particles have equal or more than activation therefore lower frequency of successful collisions leading to a slower reaction on both sides. As endothermic has a higher activation energy, it'll be more influenced and it's reaction rate will initially be slower than the reverse until a new equilibrium is established.

It shows that most of the particles are on the reactant side

Sodium fluoride. Buffer is an **base** conjugate pair. To be more effective it needs equal concentrations of both therefore requiring HF's conjugate base fluoride ions.

No reaction

No reaction

But-1-ene has identical hydrogen atoms within the terminal carbon from the double bond.

But-2-ene can twist it's double bond to either have hydrogen in the same side (cis) or opposite (trans)

But-2-ene combined with water can be turned into butan-2-ol. This with a following oxidation reaction can be used to form butanone.

Long non polar hydrophobic end, short polar hydrophilic end.

Detergents have a dodecylbenzene sulfonate

Long non polar 'tail' dissolves in other nonpolar dirt and grease through dispersion whilst polar 'head' uses dipole-dipole forces to dissolbe in water. Together the surfactant ions form a micelle to dissolve the grease into the water thus cleaning. An advantage over soap is that in hard water (high conc of calcium and magnesium) soap will precipitate out making it hard to clean and lather, detergents don't precipitate.

pH level, concentrations of H2S, HS-, S2-, temperature

high concentrations of H+ in low pH result in higher frequency of collisions in the product side. This results in increased frequency of successful collisions leading to faster reaction rate of the reverse side. Within reaction 2, concentration of HS- increases S2- decreases and within reaction 1, HS- decreases and H2S increases. As pH increases, concentration of H+ decreases, reaction rate for reverse decreases shifting equilibrium right. S2- increases

sulfur gets oxidised from -2 to 6 whilst chlorine gets reduced from 0 to -1. The transfer of electrons change in oxidation states infer that it's a redox reaction

unwanted side reactions, impurities in the reactants

biodiesel doesn't come from fossil fuels such as crude oil like petrol. It comes from natural fats therefore it has a net carbon emission of 0

provides alternate reaction pathway with a lower activation energy, more particles have eaqual or higher energy than activation energy leading to a higher frequency of successful collisions (rr)

more energy for particles, more particles have equal or higher energy than activation energy leading to a higher frequency of successful collisions (rr)

the sodium hydroxide plus the soap undergoes saponification to produce soap and water

lipase as an enzyme has a specific structure that can only catalyse specific reactions. Lipase doesn't use Sodium hydroxide and therefore can't be used to have saponification occur
it makes nylon be very strong, due to strong hydrogen bonds and is allowed to have strong elasticity **high mp, bp, very strong, resists wear and tear**
condensation polymerisation occurs, diamine loses 2 hydrogens, dicarboxylic acid loses two OH- to form long chains. Produces two waters
 I don't care
Turns electrical energy into chemical. Forces a flow electrons to cause a non spontaneous redox reaction to occur.
Take care when handling electrical currents. Keep at a low voltage.
Voltages aren't calibrated correctly.

2016 B
Decrease, decrease
Increase, decrease
Increase, increase
Decreasing concentration of reactants, leads to fewer collisions (frequency of successful collisions decreases) leading to decrease in reaction rate for forward only (initially). Equilibrium shifts left and products (CS2) are consumed faster than produced until a new equilibrium is produced with equal and lower reaction rates than before.
Decrease, Remain the same
Increase, increase,
Decrease, decrease
Increase, increase
OH- reacts with acid neutralising it, concentration of HCN decreases and equilibrium shifts to right consuming toxid HCN gases.
Propan-2-ol has dipole dipole bonding, dispersion forces and strong hydrogen bonds between lone pairs of oxygen atom and highly positive hydrogen. Propanone only has dispersion and dipole dipole with it's double bonded oxygen. Due to propan-2-ol's stronger intermolecular forces it requires more energy to break the bonds leading to a higher boiling point
Use acidified potassium permanganate. It'd go from pale pink to purple in the hexan-1-ol and stay purple in hexane.
Heat both substance. Propanoic acid has a much higher boiling point than propanone.
pH test, propanoic acid is weakly acidic.
Some points are above and below the line of besfit
They only took 5 readings, they should have done more with different concentrations
Not sure
zinc oxidises to form zinc ions that dissolve into the water. Zinc will oxidise readily as it's oxidation E0 is above 0 however gold will need a voltage of at least 1.5 Volts. However, as the voltage is kept relatively low it won't have sufficient voltage and will stay on the cathode. To reduce on the cathode, the Zinc ions will need 0.76 volts however the voltage will be too low and the zinc ions will be left in the solution.
Heat addition favours formation of products increasing the K value. Forward reaction is favoured through heat addition 'consuming extra heat' therefore it's endothermic.
H2PO4-, HPO42-. This is because they are a conjugate acid base pair. **compare**

Hydroxide ions neutralise with hydronium ions to form water, hydronium concentration decreases. Reactant collisions decrease as forward reaction increases, so hydronium ions are produced faster than consumed to partially counteract change. the change in hydronium concentration is minimal.

Decreases.

Dipole dipole

Ion-dipole

5

With the back titration strong acid and strong base neutralised completely to form a neutral salt of pH 7. If it was applied directly, ammonia would be formed which is basic and would leave a pH above 7

Kvalue: strongly favours products at 25 c

Indicators, weak acids or bases where the acidic is different colour from basic

2016d

Relatively low temperatures. Due to the reverse being endothermic which is more susceptible to temperature changes, the reverse will decrease more than the forward producing NO faster than being consumed. Low pressures increase volume. As there's higher number of gaseous molecules on the product side, increase volume favours product side.**state compromise and both sides**

Acidity is due to the ratio of H+ and OH-. Although H+ increases so does OH, equal ratios mean acidity is neutral

Ethanoate ion is basic due to this equation. Since the solution is acidic due to low pH, the phosphonium ion must be more acidic than ethanoate is basic. And could be a strong acid or a weak acid.

Higher temperature results in more energy for particles which now more particles have more or equal to activation energy. Higher frequency of successful collisions lead to a faster reaction rate and faster formation (rate) of SO3.

Exothermic, the reaction with the lower temperature has concentrations of SO3. When temperature is increased this concentration goes down indicating that the reverse is endothermic as endothermic reaction is favoured.

So2 injected rapid increase in so2 concentration. Then the concentration of both reactants decrease indicating that the forward reaction was favoured to consume and decrease concentration **collision theory**

Temperature decreases, concentration of reactants decreased overtime showing that the forward reaction was favoured . due to it being exothermic, the temperature was decreased,

Volume of the system was increased, rapid decrease in concentration. Reactant concentrations increased due to system favouring more gaseous molecules.

changes in H+ concentration is counteracted through favouring equilibrium in the direction to counteract the change having minimal changes in h+ concentration therefore pH

when added more naoh he increased concentration of ethanoate ions. This allowed more basic ethanoate ions to neutralise the HCl due to the added ethanoate ions and the ones from the concentration increase

stearic acid has a highermelting point due to being a long and linear straight chain with hydrogen bonding. Due to it's straight chainness, it can fit closely with other molecules allowing strong dispersion forces to form. Lino one is bent and can't fight as closely. Lina is shorter with a lower molecular weight with weaker dispersion forces. Less energy is needed

to break intermolecular forces leading to lower mp **state forces for all. Strength of dispersion forces is proportional to the number of electrons in linear molecules.** unsaturated fatty acids have carbon carbon double bonds that can't twist. Due to their bent structures, they can't fit as closely to develop stronger dispersion forces. Less energy is then needed to break intermolecular forces leading to a lower melting point.

equation. When OH^- is added to the solution, the reactant frequency of successful collisions increase, increasing reaction rate for the forward consuming OH^- faster than being produced. This results in partially decreasing the OH^- concentration added. This due to minimal change in OH^-, minimal change in H^+ there is minimal change in pH. There is enough reactant to partially consume OH^-

secondary structure uses the hydrogen bonding from primary within the NF bond and the lone pairs on the Oxygen molecule. To form beta pleated sheets or alpha helix structures. Therefore primary structure affects secondary. Tertiary structure relies on the primary structure residues' side chains in which it can form intermolecular bonds to hold sections of a protein together. The side chains is dependant on the primary structure due to the sequence and residues within. **Different amino acids in primary structure mean different side chains and and residues therefore the same secondary and tertiary structure may not be able to form**.

Kalanolein would be unsuitable for this reaction as once neutraisaton reaction occurs (equation) an ethanoate ion is weakly basic (equation) will be formed. Therefore the equivalence point is in the basic range above 7, as the end point (colour change) is in acidic range it will not indicate the equivalence point
Equation metal displacement for all of them. Magnesium nitrate could be stored as the reactions potential is below 0 and won't undergo metal displacement reaction under standard conditions. Magnesium is not a strong enough oxidising agent to cause aluminium to oxidise and therefore a reaction will not occur. **Compare to others**
Right. Neutralisation reaction. OH^- conc decreases. Forward faster **favoured** than reverse producing HCLO faster than consuming increasing concentration. Until rates are equal again. Equilibrium shift to right.
Decrease. Reverse is endothermic and increases more than forward consuming faster than producing. Equilibrium shifts left. Lower concentration left.
A catalyst provides an alternate reaction pathway with a lower activation energy. More particles can now have equal or greater than the activation energy required. This leads to a higher frequency of successful collisions leading to a faster reaction rate on both sides.
It is an addition reaction as water 'adds' to ethene across its double bond. **Double bond breaks and H and OH attach on adjacent carbon atoms**
It is a condensation reaction as it results in the formation of water or small molecules.
It is described as unsaturated due to the presence of carbon carbon double bonds
A large excess of methanol is used so that as much of the triglycerides can be used up as possible. This reduces the chances of unwanted soap formation through saponification of tryglcerides with sodium hydroxide
Soaps have a long hydrophobic non polar 'tail' and a short charged polar head. The non polar tail uses dispersion forces to dissolve in non polar grease and dirt due to similar

Intermolecular forces. The hydrophilic 'head' dissolves in water. The surfactant ions then form a micelle and help the grease dissolve into the water.

Detergents unlike soap don't react ith magnesium or calcium in hard water to form precipitate like scum.

It can constantly be used due to constant input of reactants, **consistent EMF, non toxic emissions**

It's more expensive, **reactants need to be constantly fed into it**

Sodium carbonate is soluble in water therefore will be a strong electrolyte as it completely dissociates. It produces anions and cations to carry charge and complete the circuit.

Dissociation equation **not a good choice. If they come in contact with chromium ions they'll form a precipitate which will block up the salt bridge stopping flow of charge and stopping circuit**

CHEMISTRY REVISION:

Going down group IV, elements become more metallic

Group 3, elements on the right have more oxidation states than the ones on the left

Dry cells: anode reaction is oxidation of zinc, electrolyte paste is MnO_2 and NH_4Cl, is MnO_2 makes contact with zinc casing cell voltage decreases

Sodium carbonate can't be used as a primary standard in redox titrations

Alcohols and carboxylic acids react with group 1 metals to form H_2 gas

Slightly soluble is still precipitate

Sometimes polarity decreases but molar mass increases increasing boiling point

Yes. Na_2CO_3 has the properties required of a primary standard: i) it can be obtained with a high degree of purity and has a known formula; ii) it undergoes reactions according to known chemical equations; iii) it is stable (to air); iv) it has a high formula mass; v) reacts rapidly with acids; vi) dissolves readily to give standard solutions

Kinetic theory assumes molecular motion decreases with temperature

Hygroscopic: attaches to water

Doesn't have cis trans isomerism as groups about the double bonds are the same. It only works when there are different atoms or groups of atoms on the hybridised carbons

Propene reacts with bromine solutions=1,2 – dibromopropane

A buffer keeps the pH of a solution the same when small amounts of acid or base are added to it. The extent to which the buffer is able to resist a change In pH or 'absorb' the additional acid or base is referred to as the buffer capacity of the buffer. Buffer capacity depends on the (a) relative concentrations of the weak acid and the conjugate base and (b) the concentration of the weak acid and its conjugate base.

Na and Ca **not** acceptable

As atomic number increases in group 7 tendancy to gain electrons decreases

Sodium chlorite $NaClO_2$

Differentiate from methanol and methanal, add acidified acetic acid=fruity smell

Magnesium hydroxide dissolves if added with acid

H_2O has strong intramolecular forces out of it's group

hydrogen half-cell is assigned an E° of 0 V or reference cell

cadmium half-cell E° is determined relative to the hydrogen half-cell.

negative value means that the cadmium half- cell is anodic relative to the hydrogen half-cell (OR electrons flow from the cadmium to the hydrogen cell or some other version)

trygly plus methanol equals to biodiesel plus glycerol

no2- and no3-

metal oxides are basic. Non metal oxides are acidic, Na2S is basic

if spill acid use nahco3 powder

covalent molecular substances have low solubility in water

as temperature increases, solubility of dissolved gasses decreases not anything else

elements are arranged according to atomic mass

HNO3 has hydrogen bonding

Recognition that differences in bpts is primarily due to differences in IMFs.

6molsulfuric acid with sodium acetate makes a complete reaction

Available in solid form

• Available with high degree of purity

• Not hygroscopic

• High molar mass

• High solubility

• Readily available

• Stable

• Known formula

Must have distilled water

K value-quantity of products Is greater then reactants

S03 is planar

Iron III nitrate in water is acidic and can dissolve copper metal

Potassium carbonate and hcl gives pH

Metal oxide plus acid gives water and metal ion

Explains hydrogen bonding in terms of:

oxygen being extremely electronegative leading to the high

polarity of the O-H bond or

a big difference in electronegativity of O and H

Explains the strength of the H-bond (any one of the following) • highly polar

• high charge density of H

• low electron density

• appropriate annotated diagram

The values of E depend upon concentration.(1molL)

• Applies only to aqueous solutions

• The emf of a cell can depend on temperatures

• The values of E^0 give no indication of reaction rate/high activation energy

• Predictive tool – reaction may not occur • All gases at 100kPa (standard pressure)

Use correct measuring cylinder to minimise random error

Enzyme is lipase

Best representation is co2+h20+co32-→ 2Hco3-

If it involves numbers it is quantitative

Conserve charge

Two layers form when bromine water plus alkene

Always talk about all imfs

the difference between the energy released in the formation of new forces of attraction and the energy required to overcome the existing forces of attraction increases

always look at sf

if 16.33ml on titre use exact value

if you need to find volt use reduction table style (reduction potential voltage)

titre is within 0.1 mil

Arrhenius: acids have H+, base has OH-

Humphry davy: replaceable hydrogen 2HCL+Mg→MgCl2+H2

Bronsted lowrie: acids donate proton, bases accept proton

In buffer questions add what happens in non buffer solutions too

___ is at equivalence point, it hydrolyses with water to form ___ions, therefore acidic at equivalence point. pH of the colour change of the indicator approximates pH of equivalence point. Na+ doesn't hydrolyse with water, neutral, no effect on pH

Neutralisation to decrease H+ ions, reduction causes equilibrium shift right, favour right. Forward greater than reverse relative until equilibrium reestatblished and the H+ increases again. As H3O increases close to initial, minimal change in H+ is minimal change in pH. If OH- is added to a non bufferd solution, no weak acid species to react with and so fully contribute to the pH change

Increase concentrations of bothote conjugate acid base species, more ions to react with h+ or OH-, more acid or base can be added before significant change

Amphoteric-work as acid or base

Different solubilities:

1)Solvent solute forces (name them) are weak between solutes (name them) and solvents (name them)

1.5) insufficient energy available to disrupt the solvent-solvent and solute-solute forces of attraction and so solubility is low.

2)strength of solvent solute forces (name them) are stronger than between solute (name them)

3) sufficient energy is released during bond formation to disrupt more forces of attraction in the solute and solvent and so has higher solubility.

4)strengths of solute solvent forces (name them) are stronger than between solute (name them.

5) so sufficient energy is released, and dissolving occurs.

6)as there is more hydrogen bonding between water and most soluble, solubility is greater than solute 1 and 2

Efferevescent is bubbling

Random errors are fluctuations in measured data due to limitations of the measurement device/technique, they occur unpredictably and to varying extents throughout the experiment. Non-directional effect on results.

Systematic errors are repeatable errors that occur due to faulty equipment or poor experiment design, they occur consistently to the same extent throughout the experiment. Results are skewed in one direction.

Have particles moving faster

Boltzman diagram for reaction rates

All about valencies

The difference between the energy released in the formation of new forces of attraction and the energy required to overcome the existing forces of attraction increases

Weak acids have ion dipole attractions with water

Condensation have two functional groups that can link

Addition have c-C coudble bonds that can 'open' up to allow bonding to other atoms

CH_2CHOH can be used as a polymer

Fermentation gives off co2

Ethene and ethanoic acid gives ethyl ethanoate

Esterase is for esterification

Lipase is for biodiesel

Colourless insoluble liquid with a sweet/fruity odour /(two immiscible colourless liquids layers visible * optional extra info).

still liquid

zymase for fermentation of ethanol

volume is for gas only

amino and carbonyl groups of the polypeptide backbone

rather than the side chains of the amino acids (as in tertiary)

are ion–dipole forces (and hydrogen bonding) and dispersion forces between soap head and water

Ion-dipole forces are stronger

Two ionisable H hydrogen atoms per molecule

Cis-but, has a dash

Ester has high solubility in kerosene

Due to more co2, h+ increases a lot, co32- decreases a little, hco3- increases a little

People who pay more gets higher interest