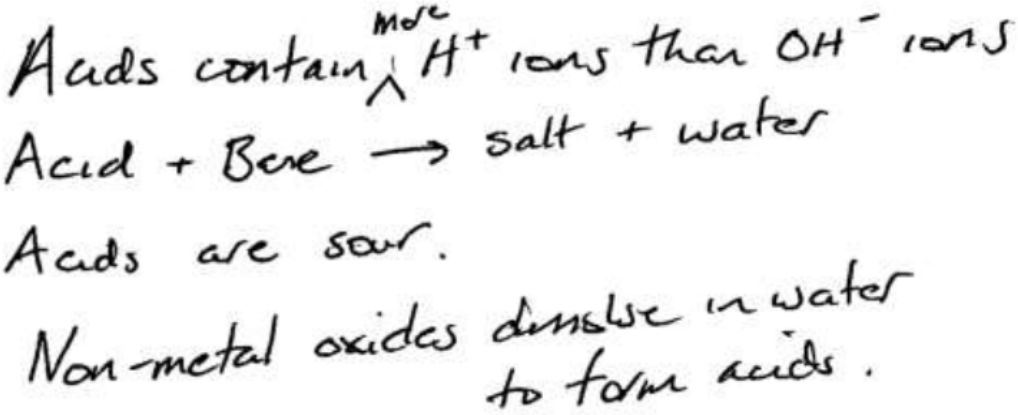
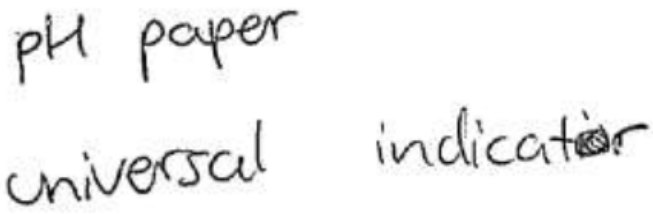
Candidate evidence

Question 5

Candidate 1



Candidate 2



Candidate 3

Metal + alkali ⟶ acid

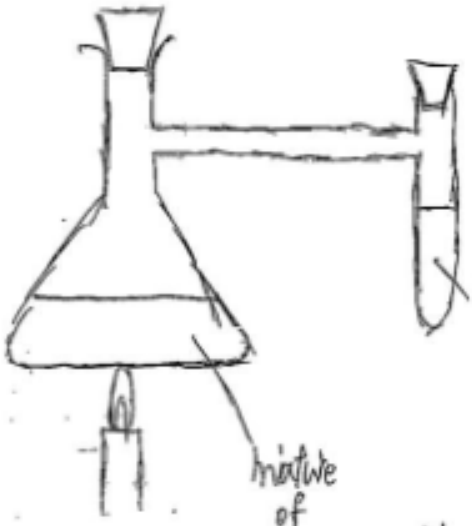
The students could test the pH of the tablets and if they were above 7 then it would be effective.

- If the person is feeling better the next day.
- ~~Whether the tablet~~

Candidate 4

strong acid = Stomach acid

Evaplnation, they can use the mixture of strong acid and calcium carbonate then heat it up then see how long it going to take to produce salt.



strong acid = stomach acid

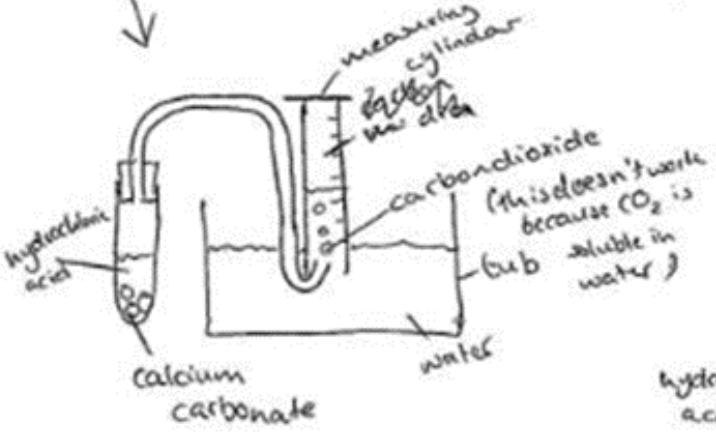
They can heat up the mixture of strong acid and calcium carbonate then measure the time how long is the lime water turn to clearly

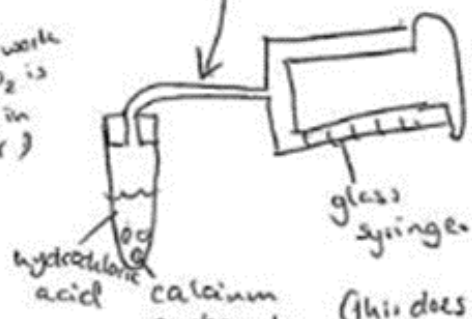
metal carbonate + acids → salt + water + carbon dioxide

Candidate 5

Stomach acid is hydrochloric acid which can be found in chemistry labs. The students could set up an experiment to see how ~~fast~~ quick the rate of reaction is by timing the experiment and measuring the volume of ~~the acid product which~~ would

This experiment would produce a salt, water and carbondioxide which is soluble in water so they could use a glass syringe instead of the tub and measuring sylindar so they can measure the gas collected





(this does work because CO_2 can be collected

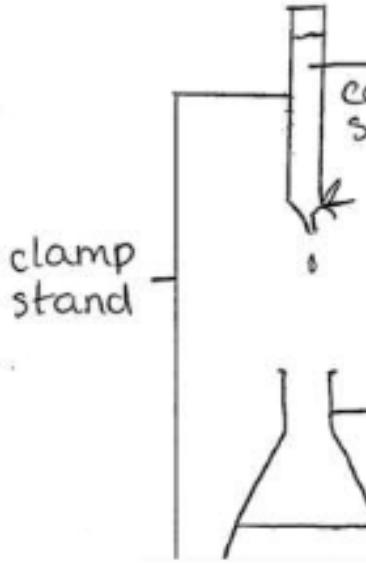
Candidate 6

calcium carbonate is a base, therefore it can neutralise an acid.

neutralisation is when an acid and a base neutralise each other to form a ph of 7.

The students could use a titration experiment to calculate which tablet if better at neutralising an acid.

The students would start by dissolving the calcium carbonate in a solution



- The student would then use a burette to add drop by drop the calcium carbonate solution into the stomach acid. *
- The student would add indicator into the stomach acid. When the indicator turned colourless, the student would know that the reaction was over.
- The student would repeat this more times to get more accurate results

* shaking after each drop.

Candidate 7

They could react each tablet with the same volume of acid and time how long it took to neutralise using a stopwatch Then using pH paper they would test the pH of the solution after the tablets have reacted with the acid.

They would match the colour of the pH paper with the pH scale and if the paper is green then it has a neutral pH of 7.

The experiment could be repeated multiple times and whichever tablet reacted * to form a ☆pH of 7 would be the most effective

* fastest

Candidate 8

1. Measure out the same volume of acid (20cm³), at a same and accurate concentration + pH level.
2. Measure out 5g of 1 type of indigestion tablet.
3. Add the 5g of tablet into the 20cm³ of stomach acid. When the reaction has stopped, measure the pH of the solution and compare to the original pH of the stomach acid.
4. Repeat using second brand of indigestion tablet.
5. Compare results in order to establish which brand is more effective at neutralising stomach acid. (The closer to pH7, the more effective the indigestion tablets are.)

Question 13

Candidate 1

A redox reaction is when an atom takes electrons from another atom to get closer to its nearest group 1 or group 7. The reason its also a reduction reaction is because one of the atoms electrons is being reduced.

Candidate 2

Redox reactions are called redox because the have an oxidation and reduction reaction a reduction reaction is the gain of electrons from an ion.
And an oxidation is the loss of electrons from ions

Candidate 3

Writen redox ~~reacations~~ reactions dont have electrons in them

Candidate 4

one element is always being oxidised (losing electrons) and one is being reduced (gaining electrons). One element becomes an ion and the other becomes an atom.
electrolysis is a redox reaction
e.g.

$$Na^+_{(aq)} + Cl^-_{(aq)} \rightarrow Na_{(s)} + Cl_{(g)}$$

To make an electrochemical cell there is always a redox reaction going on
e.g. a cell with Mg and Cu:

$$Mg + Cu^{2+} \rightarrow Mg^{2+} + Cu$$

Candidate 5

- it shows how electrons gain and lose electrons
- combines reduction and oxidation reaction
- when an element is oxidised it loses electrons to become positively charged
- when reduction happens, an element gains electrons to become negatively charged
- Equation needs to be balanced
- copper loses 2 electrons [redacted] oxidation reaction [redacted] have a charge of 2^+

oxidation

$K^+ + e^- \longrightarrow K$

- when a metal forms an ion it is oxidation
- when a non-metal forms an ion it is reduction

reduction

[redacted]

$Li \longrightarrow Li^+ + e^-$

redox

$K^+ + Li \longrightarrow Li^+ + K$

Candidate 6

~~Redox reactions are the combination~~
oxidation and reduction reactions happen at the same time which together make a redox reaction

~~Oxidation~~
This happens as a more reactive (normally metal) element loses electrons to a less reactive element. (normally metal)

the loss of electron(s) is called an oxidation reaction and the gain of electrons is called a reduction reaction.

equations can be written for both oxidation and reduction reactions which can then be combined to make an overall redox equation.

example

oxidation (loss of electrons);

$Mg \longrightarrow Mg^{2+} + 2e^-$

reduction (gain of electrons)

$Ni^{2+} + 2e^- \longrightarrow Ni$

overall redox equation;

[END OF QUESTION PAPER]

$Mg + Ni^{2+} \longrightarrow Mg^{2+} + Ni$

(electrons are cancelled out)