

**Factors necessary for rusting of iron.**

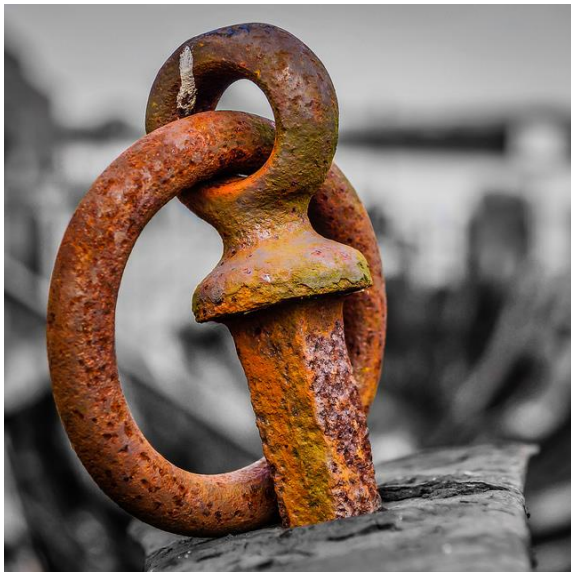
- 1) ..... (.....)
- 2) ..... (.....)

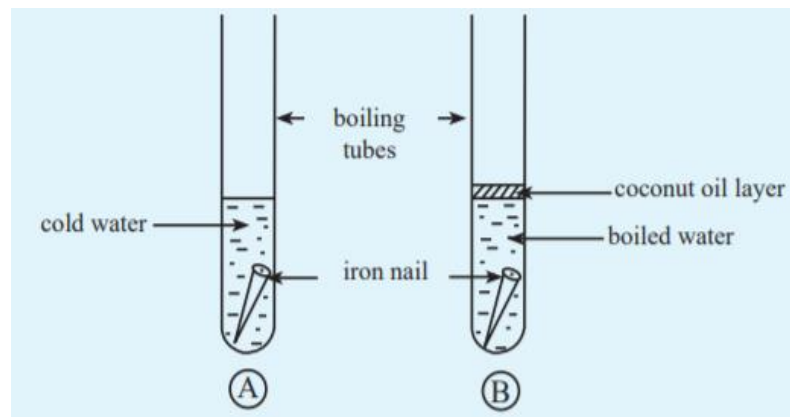
**Factors which increase rusting**

- 1) ..... (sea breeze)
- 2) ..... (lime juice, vinegar)

**Factors which decrease rusting**

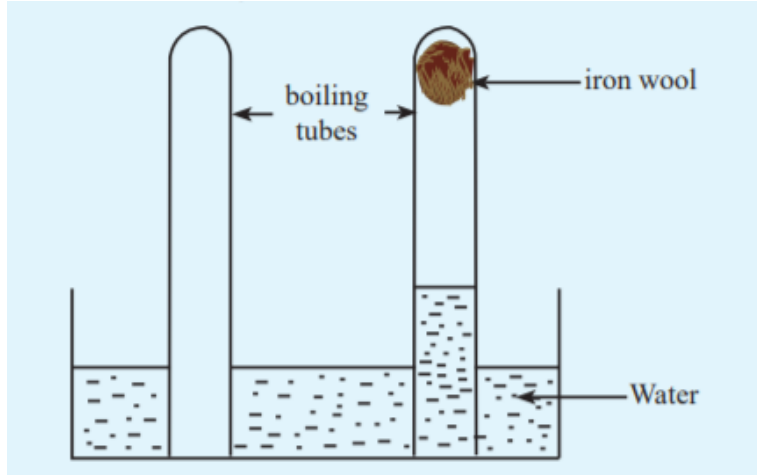
- 1) ..... (soap water)



**How to prove that air is necessary for rusting**

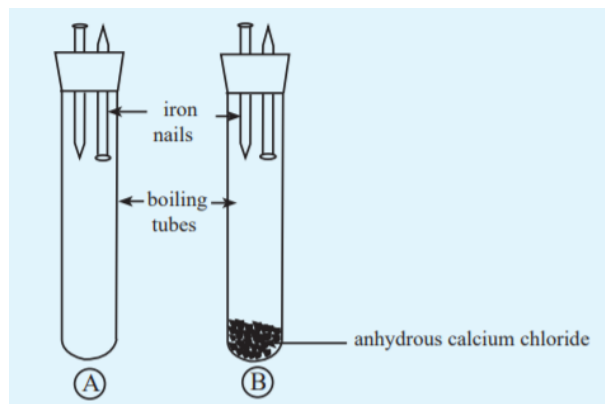
- 1) Dip two ..... new ..... nails in a diluted ..... for 10 minutes.
- 2) This is to remove the ..... coating on the ..... nail.
- 3) Add ..... water to two test tubes and ..... the water in one tube for 5 minutes.
- 4) When ..... water, the ..... air will ..... and therefore the ..... dissolved in water will ..... water as air .....
- 5) Hence ..... water will contain ..... dissolved in ..... and the ..... water will not contain ..... dissolved in .....
- 6) Immerse one nail in the ..... water and immerse the other nail in the ..... water.
- 7) Add some ..... to the ..... water.
- 8) Since the ..... of ..... is ..... than the ..... of water, ..... will float on .....
- 9) Due to the ..... layer, the ..... water will not come into contact with .....
- 10) Therefore new ..... will not dissolved in ..... water. Therefore the ..... water will remain without .....
- 11) Since the ..... water does not have a ..... layer, new ..... can dissolve in ..... water.
- 12) Keep the two test tubes for about one ..... and observe the .....
- 13) The ..... in the cold water has ..... and the ..... in the ..... water has not .....
- 14) Therefore ..... is necessary for .....

### How to prove that $O_2$ is necessary for rusting



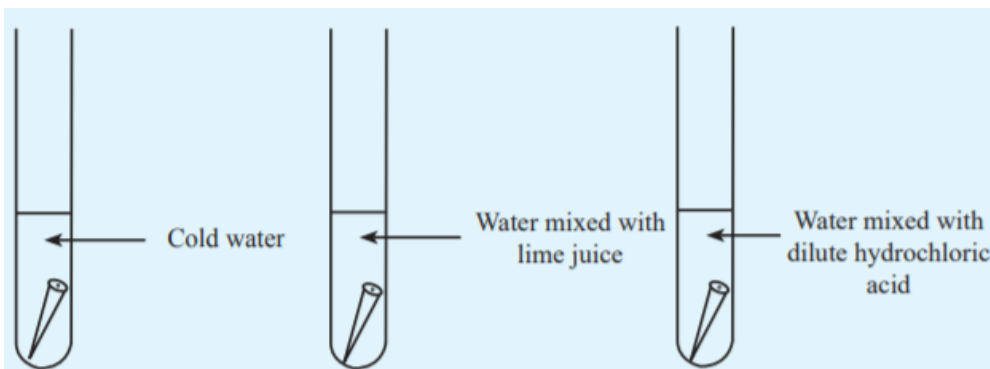
- 1) Take two ..... test tubes.
- 2) Trap a lump of new ..... in one of the tubes.
- 3) Keep the two tubes ..... on a basin of ..... for one .....
- 4) ..... has .....
- 5) The ..... level of the test tube having ..... has ..... up to its ..... level.
- 6) The ..... level of the test tube without ..... as not .....
- 7) Therefore ..... of ..... has been used during .....
- 8) ..... or ..... of air is .....
- 9) Therefore ..... is necessary for .....

### How to prove that water is necessary for rusting

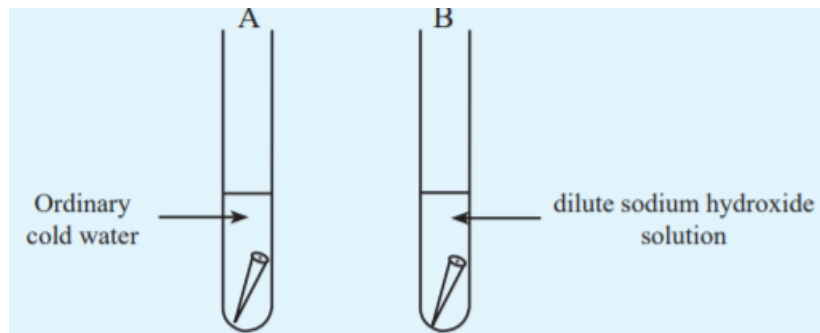


- 1) Take two ..... and four ..... identical ..... nails.
- 2) Fix two ..... nails to each ..... (one nail pointing ..... and the other nail pointing .....)
- 3) Take two ..... test tubes and ..... to one test tube.
- 4) Fix one ..... with two ..... nails to the test tube having ..... and fix the other ..... with two nails to the ..... test tube.
- 5) The ..... will not allow ..... to enter the test tubes.
- 6) ..... absorbs .....
- 7) Therefore the test tube which contains ..... will not have ..... inside the test tube.
- 8) The test tube without ..... will have ..... inside the test tube.
- 9) The four ..... parts which are exposed to ..... will also have .....
- 10) Keep two test tubes for one ..... and observe.
- 11) The two nail parts inside the test tube having ..... will not rust.
- 12) The two nail parts which are inside the ..... test tube will .....
- 13) All the four nail parts which are ..... the test tubes will also .....
- 14) Therefore ..... is necessary for .....

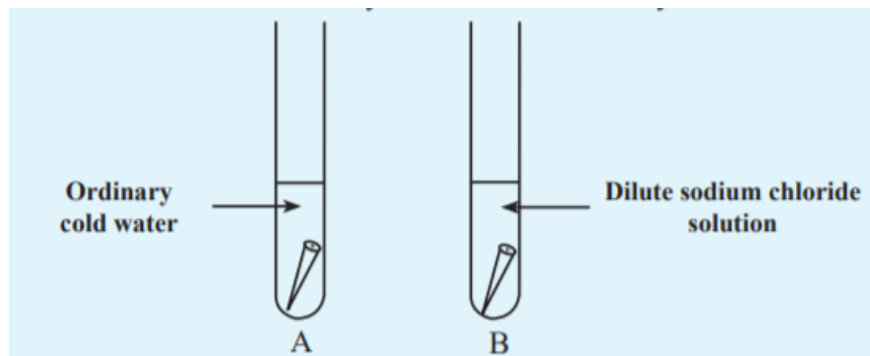
### How to prove that acids increase the rusting



- 1) Take 3 ..... identical ..... nails and 3 identical test tubes.
- 2) Add ..... to one test tube and add ..... mixed with ..... into another test tube and add ..... mixed ..... into the other test tube.
- 3) ..... is neutral, the ..... mixed with ..... is slightly ..... and the ..... mixed with ..... is highly .....
- 4) Place one ..... nail in each test tube.
- 5) Observe the ..... nails after one .....
- 6) The nail in ..... has ..... least, the nail in ..... mixed with ..... has ..... more and the nail in the ..... mixed with ..... has ..... the most.
- 7) Therefore the ..... increase .....

**How to prove that bases reduce rusting**

- 1) Take 2 ..... identical ..... nails and 2 identical test tubes.
- 2) Add ..... to one test tube and diluted ..... solution into the other test tube.
- 3) ..... is ..... and the diluted ..... solution is .....
- 4) Place one ..... nail in each test tube.
- 5) Observe the ..... nails after one .....
- 6) The nail in diluted ..... Solution has ..... less than the nail in .....
- 7) Therefore the ..... reduce .....

**How to prove that salts increase the rusting**

- 1) Take 2 ..... identical ..... nails and 2 identical test tubes.
- 2) Add ..... to one test tube and add ..... solution into the other test tube.
- 3) Place one ..... nail in each test tube.
- 4) Observe the ..... nails after one .....
- 5) The nail in the ..... solution has ..... more than the nail in .....
- 6) Therefore ..... increase .....

**Chemical reactions in rusting**

1) ..... will give out ..... and become .....

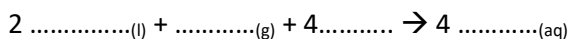


2) The reactions which give out ..... are called ..... reactions.

3) ..... reactions happen at .....

4) Therefore .....(s)  $\rightarrow$  .....(aq) + ..... is the ..... reaction

5) The ..... given out by ..... will be accepted by ..... and ..... and produce .....

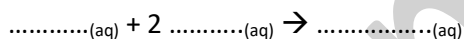


6) The reactions which ..... electrons are called ..... reactions

7) ..... reactions happen at .....

8) Therefore 2 .....(l) + .....(g) + .....  $\rightarrow$  4 .....(aq) is the ..... reaction.

9) The ..... and ..... will get together and form .....



10) ..... will react with ..... and form ..... (hydrated ferric oxide) – the ..... which is ..... colour and .....



11) Since the number of ..... molecules in hydrate ferric oxide vary and therefore the it is written as (.....)



**Prevent rusting**

1. .... protection – Apply ....., ....., ..... on .....
2. .... protection – Connect ..... to a ..... reactive metal than .... Eg – Mg, Zn
3. ....., ..... and ..... prevent ..... and ..... coming into contact with .....
4. Therefore ..... and ..... is not there to accept ..... and produce .....
5. Therefore .....(s)  $\rightarrow$  .....(aq) + ..... reaction will not occur.
6. Therefore the ..... reaction does not occur.
7. This is called .....protection.
8. When ..... is connected to a ..... reactive metal than ....., the ..... reactive metal will give out ..... and send it to .....
9. Therefore the ..... reactive metal becomes the ..... and the ..... will become the .....
10. This is called the ..... protection.
11. Coating ..... on ..... will prevent iron getting exposed to ..... and ....., Therefore it is an ..... protection.
12. .... metal are made by mixing ..... with .....
13. .... is ..... reactive than ..... Therefore it is an ..... protection