

K. L. INTERNATIONAL SCHOOL

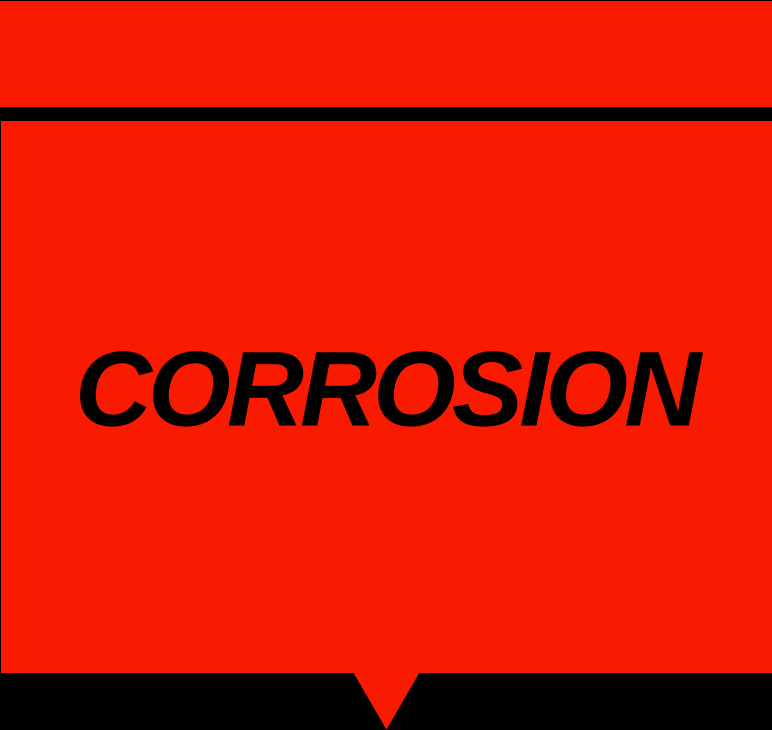




CORROSION OF METALS

CONTENTS

- Corrosion
- Rusting of iron
- Activity 1: Conditions for rusting
- Activity 2: Testing the nature of rust
- Corrosion of copper
- Corrosion of silver
- Corrosion of aluminium
- Disadvantages of corrosion
- Prevention of corrosion



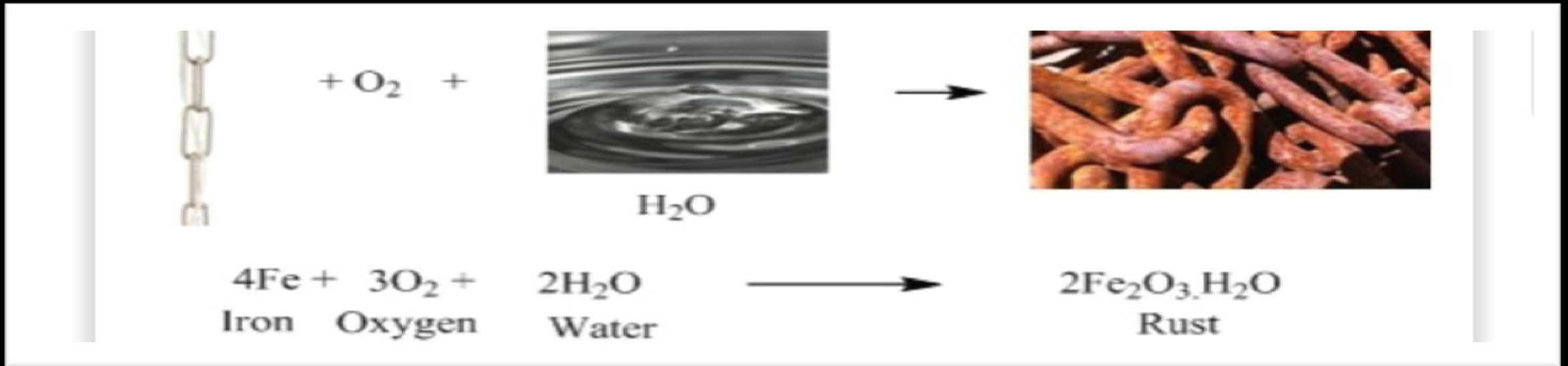
CORROSION

- Corrosion is the process by which materials, such as metals, are slowly eaten away when exposed to air and moisture.
- Rusting of iron, conversion of copper surface into a greenish powder, turning black of silver ornaments, are all examples of corrosion of metals.

***RUSTING
OF
IRON***

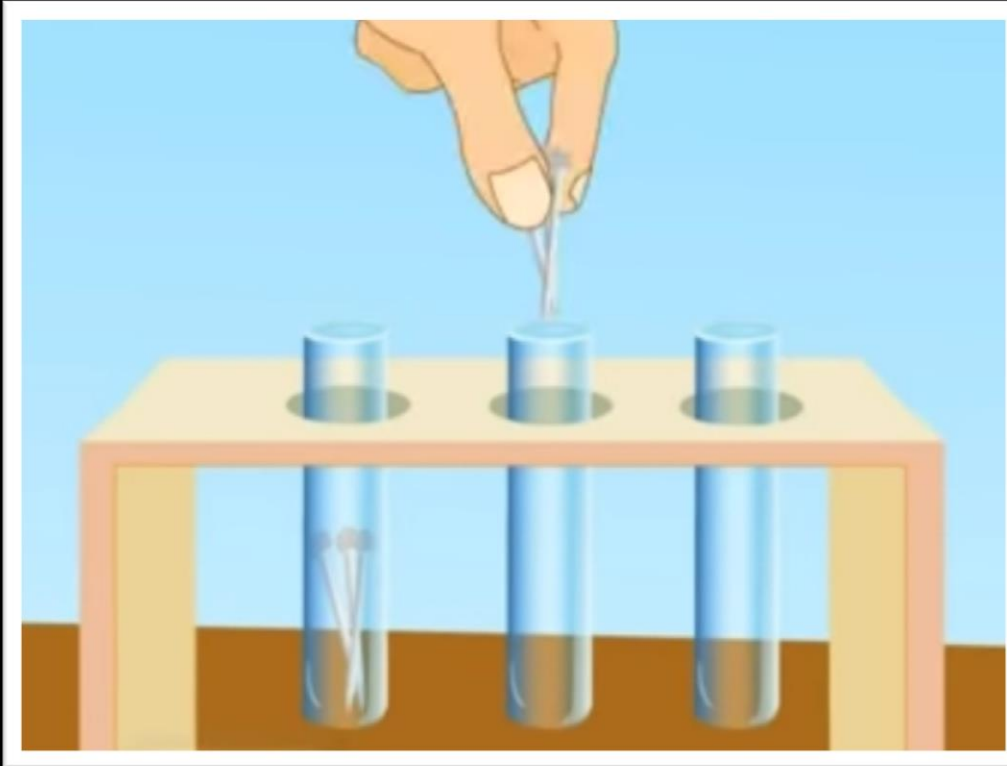


- Rusting of iron refers to the formation of rust, a mixture of iron oxides, on the surface of iron objects or structures.
- It is characterized by the formation of a layer of a red, flaky substance (rust) that easily crumbles into a powder.
- This rust is formed from a reaction between oxygen and iron in an environment containing water (such as air containing high levels of moisture).

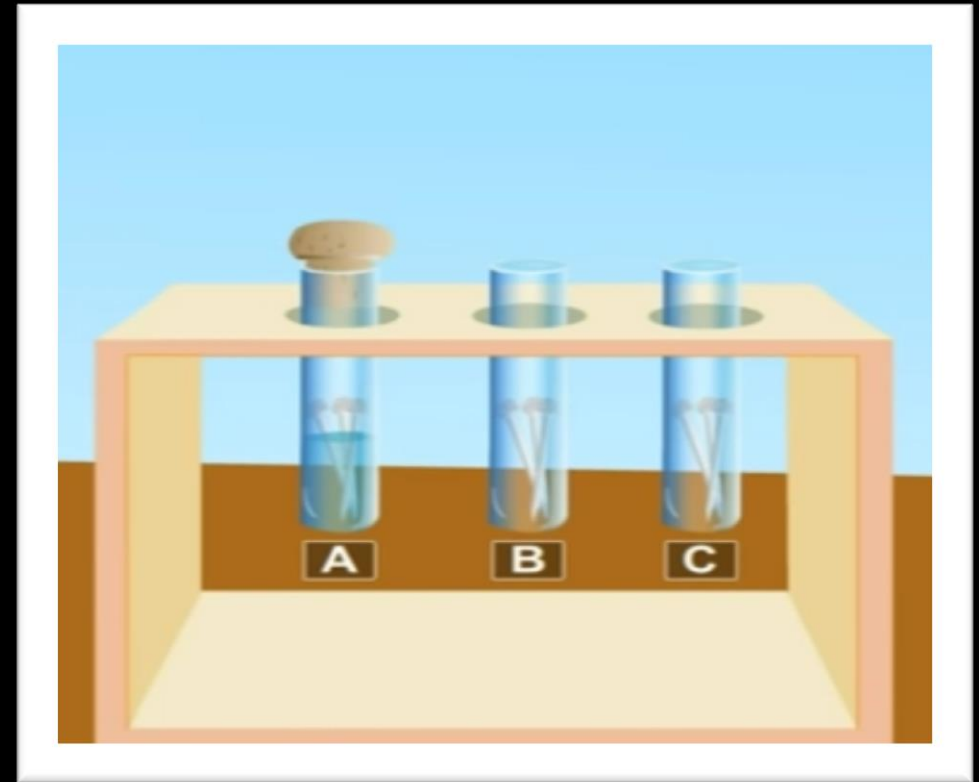
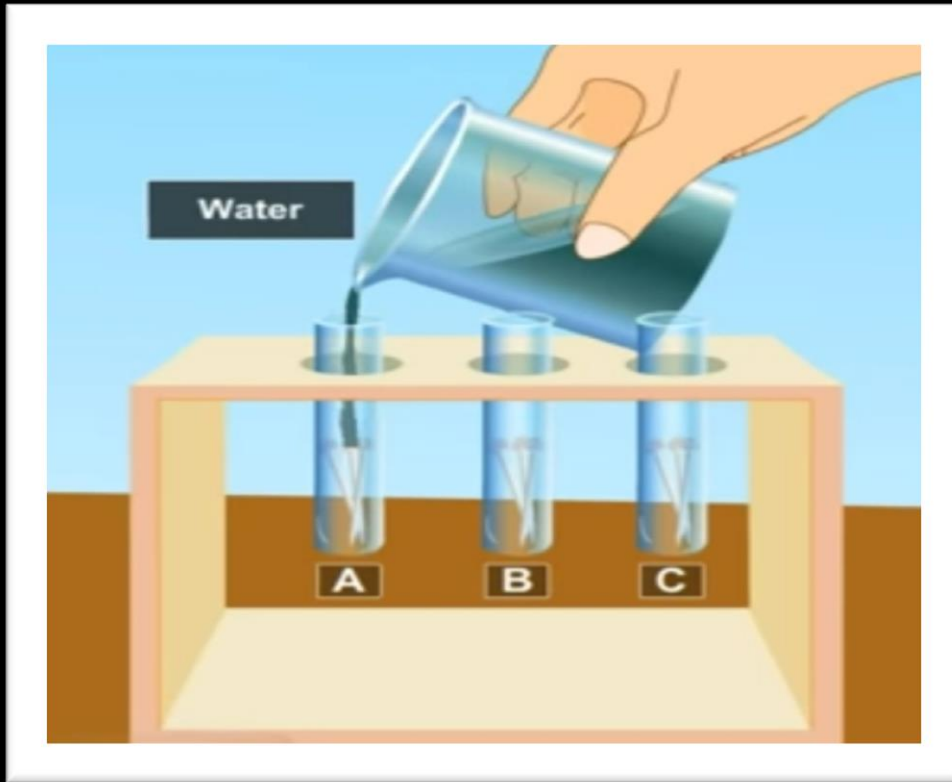


Activity 1

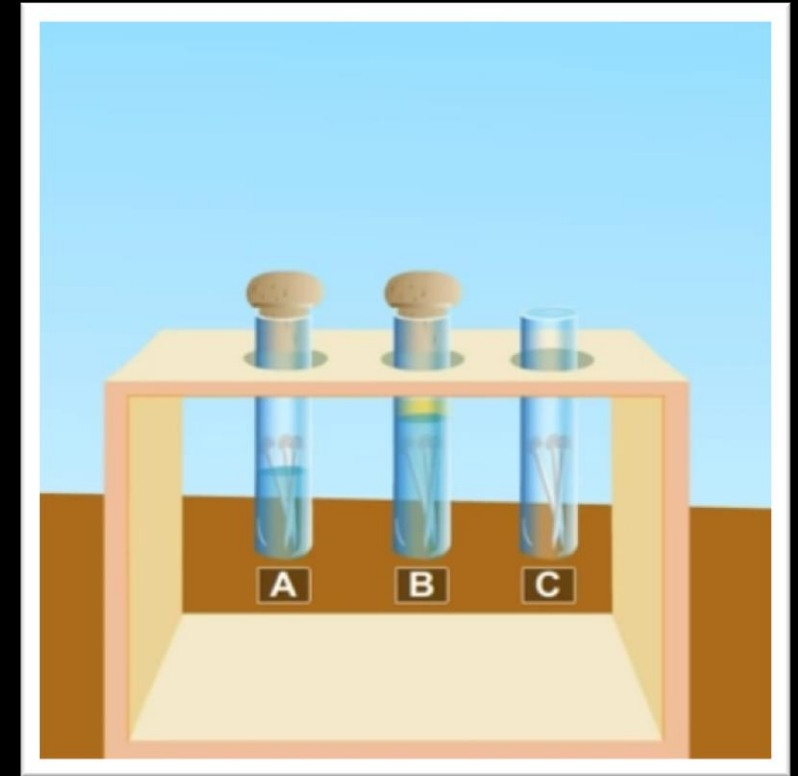
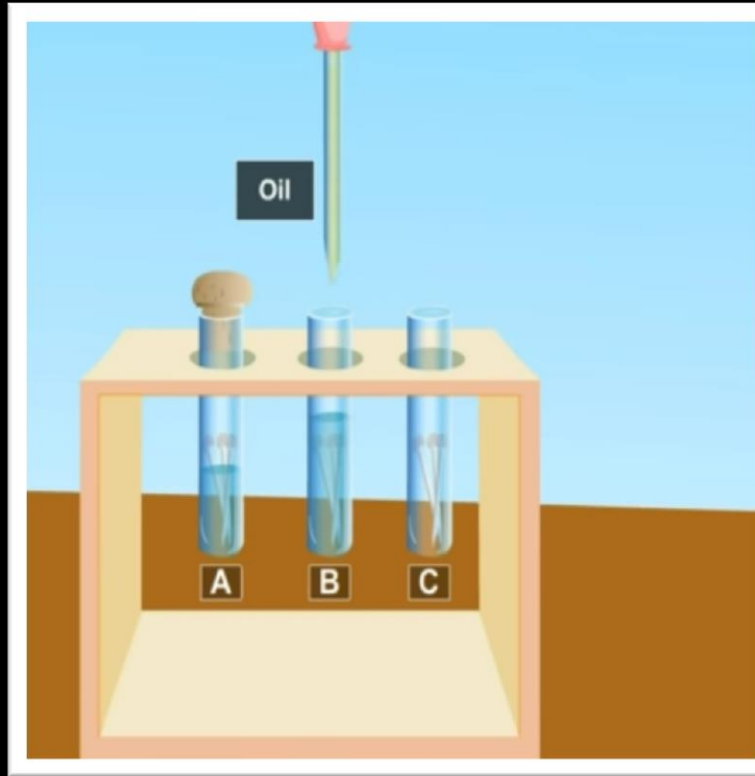
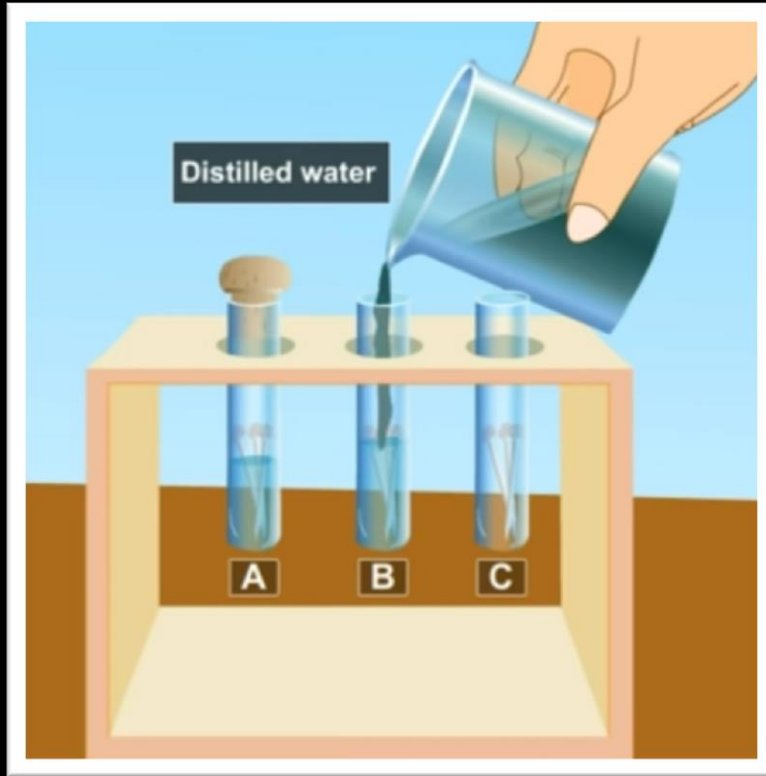
Conditions for rusting



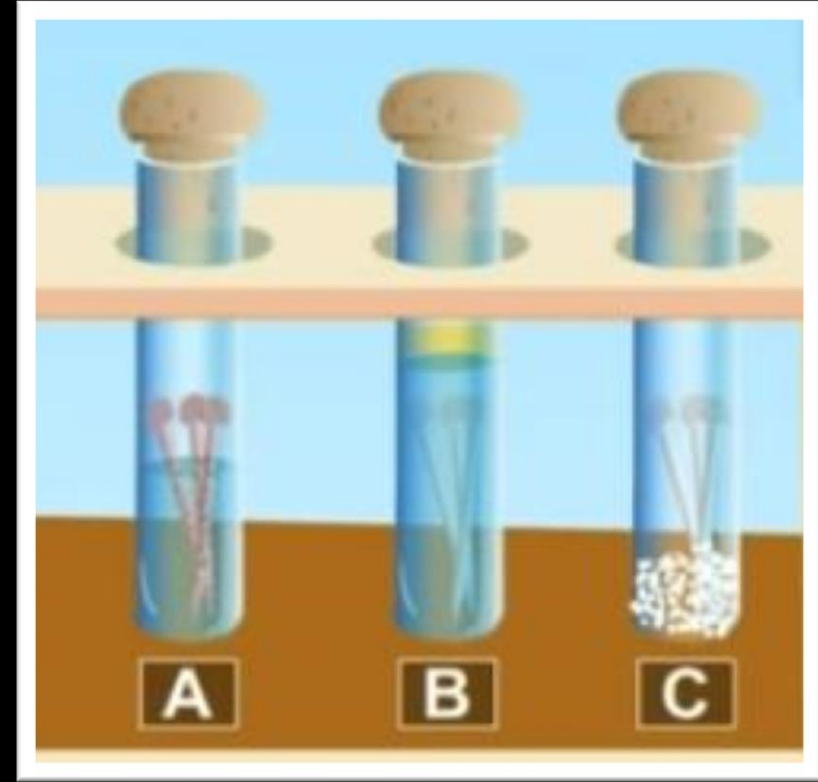
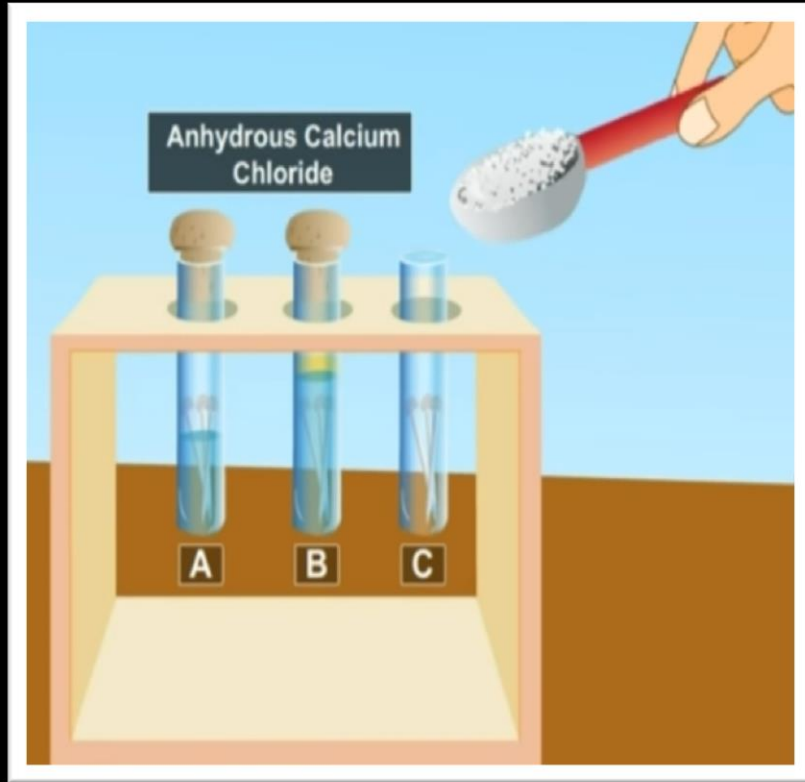
Step I: Take three clean test-tubes and put clean iron nails in each of them.



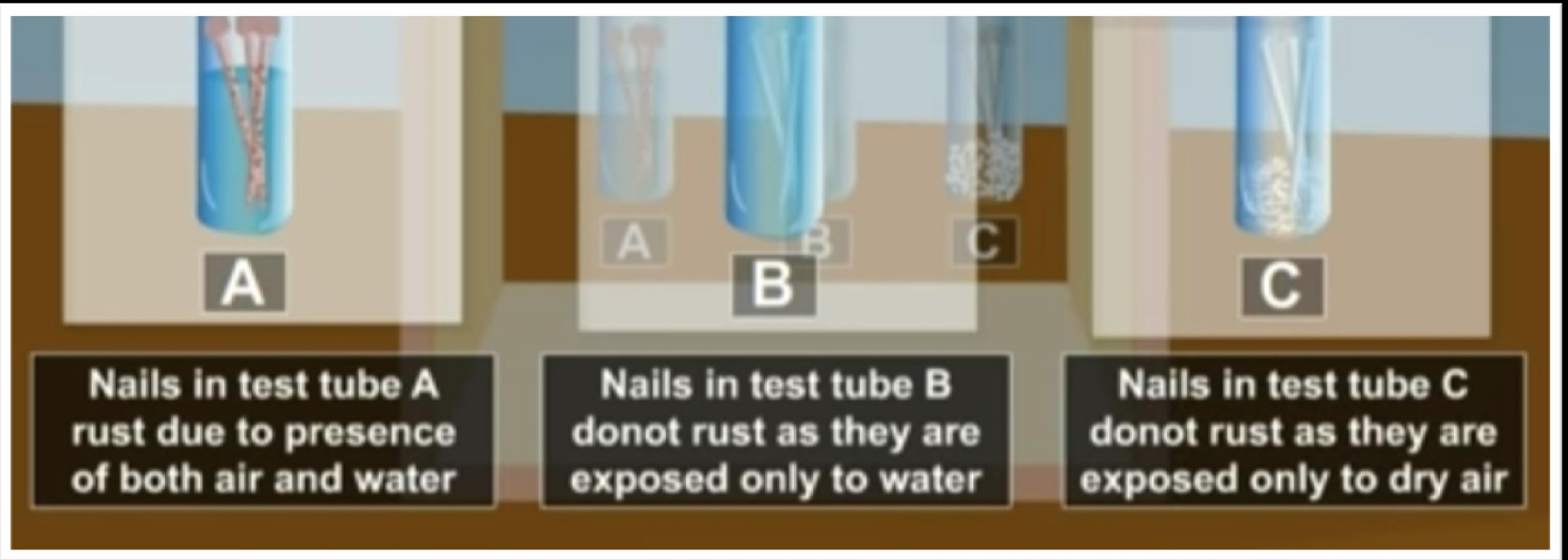
Step II: Pour normal tap water in test-tube A and cover it with a cork.



Step III: Pour boiled distilled water in test-tube B then put few drops of oil and cover it with a cork.



Step III: Put some anhydrous calcium chloride in test-tube C and cover it with a cork. Leave the three test-tubes undisturbed for few days and observe the change.

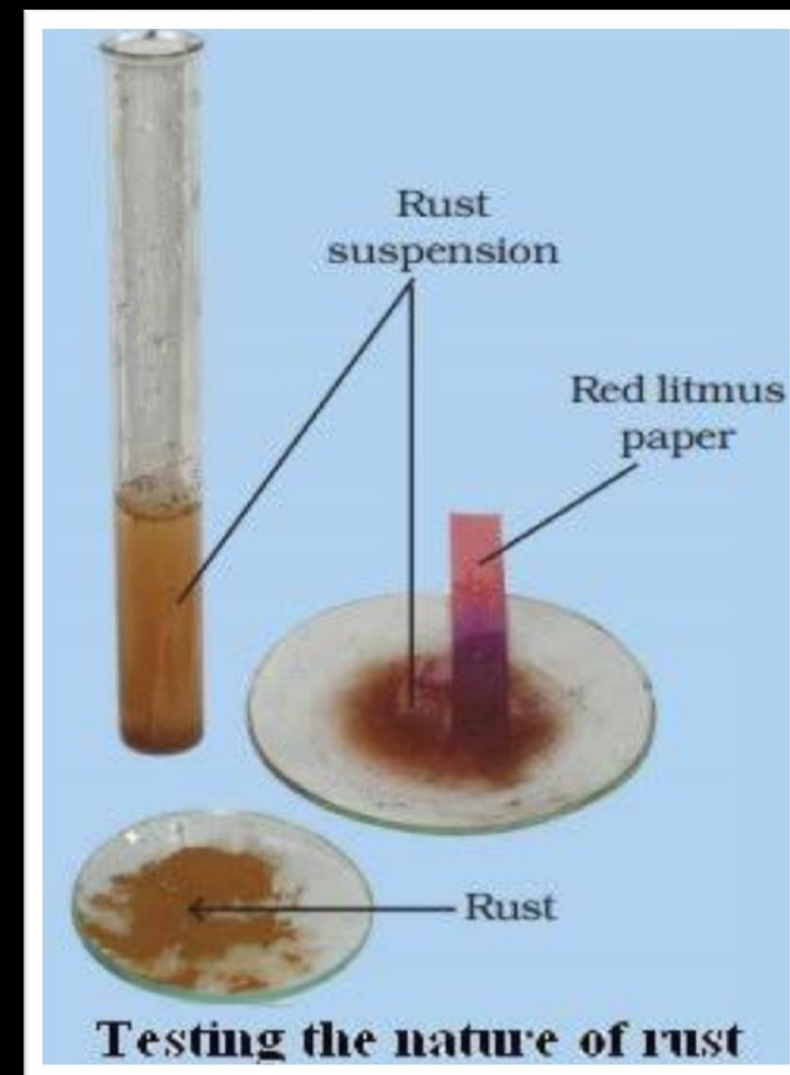


Observation: Rusting will be observed only in the iron nails in test-tube A.

ACTIVITY 2

Testing the nature of rust

- Collect rust in a watch glass from any rusted iron piece
- Make a rust suspension in test-tube by adding water in rust
- Take few drops of this suspension in watch glass and test it with litmus paper
- You will observe that red litmus paper will turn blue showing that rust is basic in nature



***CORROSION
OF
COPPER***



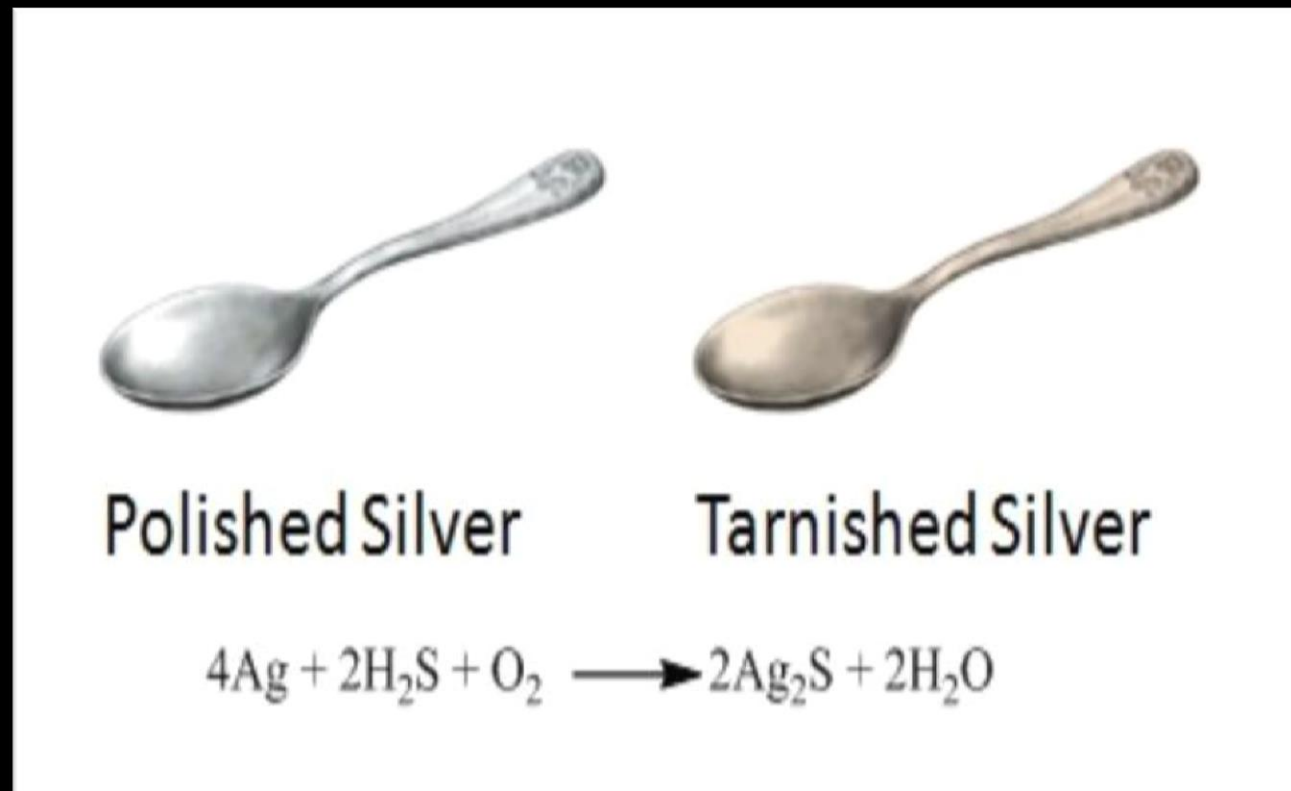
- Copper gets corroded in the presence of moist air.
- It first tarnishes, then gradually changes to dark brown or black, and finally to green.
- The green coating is a mixture of copper compounds- copper hydroxide and copper carbonate.



CORROSION OF SILVER



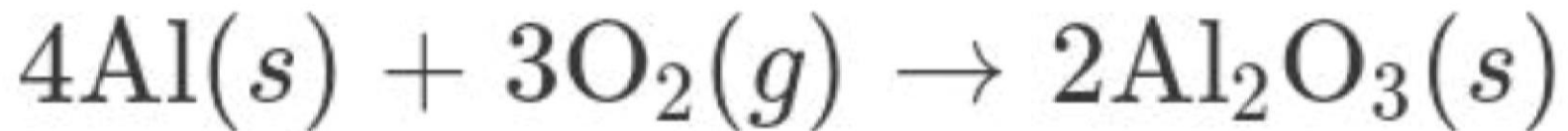
- If the air is polluted with sulphur compounds such as hydrogen sulphide, silver reacts with it to form a black coating of silver sulphide.



CORROSION OF ALUMINIUM



- Corrosion of aluminium is an example of useful corrosion.
- On exposure to air, aluminium reacts with oxygen to form a layer of aluminium oxide on its surface.
- This protective layer prevents further corrosion.



An orange speech bubble with a black outline and a black drop shadow, pointing downwards. It contains the text "DISADVANTAGES OF CORROSION" in bold, italicized, black capital letters.

***DISADVANTAGES
OF
CORROSION***

Corrosion is troublesome and causes heavy losses. Some disadvantages of corrosion of metals are:

- Change in the physical appearance of a metal object.
- Change in chemical properties of metal.
- Lose of the efficiency of metallic machines.
- A decrease in the life span of metallic objects.



Corroded car body



Corroded bridge

A red speech bubble graphic with a black outline, pointing downwards. The text is centered within the bubble.

PREVENTION OF CORROSION

Corrosion of metals can be prevented by the following methods:

- 1. Painting or applying oil-** Paint and oil layer keeps air away from the metal surface and thus prevents corrosion.
- 2. Covering with another metal-** Covering a metal with another corrosion resistant metal prevents the metal from getting corroded. This can be done by the following ways:
 - Galvanizing
 - Electroplating
 - Anodizing of aluminium
 - Alloying



**Electroplated
tin cans**



**Galvanized
iron pipes**