

# Rusting

- Rusting of iron is a chemical process that occurs when iron is exposed to \_\_\_\_\_ and \_\_\_\_\_, and undergoes a \_\_\_\_\_ reaction.
- Corrosion of metal is a \_\_\_\_\_ reaction where the \_\_\_\_\_ is oxidised spontaneously when the metal atoms \_\_\_\_\_ electrons to form metal ions.
- \_\_\_\_\_ electropositive the metal is, the easier it is for the metal to corrode. For example, corrosion of iron, Fe is faster than copper, Cu.

Iron rusting as a redox reaction

Drag the word in the box to the diagram

$\text{Fe}_2\text{O}_3 \cdot x\text{H}_2\text{O}$  (rust)

Water droplets

anode

cathode

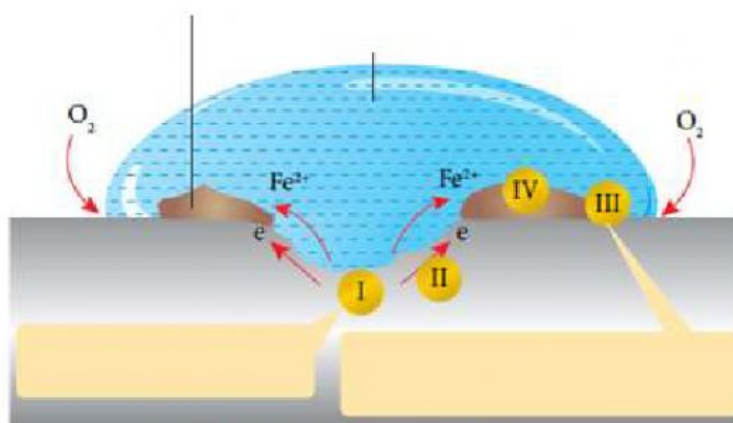


Figure 1.41 Mechanism of rusting

- Rusting of iron occurs with the presence of \_\_\_\_\_ and \_\_\_\_\_
- The surface of the iron in the middle of the water droplet where the concentration of oxygen is low serves as the \_\_\_\_\_ (negative terminal). Iron atom, \_\_\_\_\_ electrons and undergoes \_\_\_\_\_
- Electrons flow to the \_\_\_\_\_ of the water droplet where the concentration of oxygen is \_\_\_\_\_. The iron, Fe surface at that part becomes the \_\_\_\_\_ (positive terminal), where \_\_\_\_\_ occurs.
- Oxygen,  $O_2$  that dissolves in water \_\_\_\_\_ electrons and undergoes \_\_\_\_\_ to form hydroxide ion,  $OH^-$ .
- The iron(II) ion,  $Fe^{2+}$  produced reacts with hydroxide ion,  $OH^-$  to form iron(II) hydroxide,  $Fe(OH)_2$ .
- Rusting of iron occurs faster in the presence of \_\_\_\_\_ or \_\_\_\_\_
- When iron comes into contact with a \_\_\_\_\_ metal such as zinc, Zn, rusting of iron \_\_\_\_\_. Zinc atoms, Zn release electrons more easily than iron, Fe. Zinc, Zn \_\_\_\_\_ and undergoes \_\_\_\_\_.
- When iron comes into contact with less electropositive metals, such as lead, the rusting of iron becomes \_\_\_\_\_. Iron atoms, Fe \_\_\_\_\_ electrons, forming iron(II) ions,  $Fe^{2+}$ . Thus, iron rusts and is \_\_\_\_\_.

Drag the sentence in the box into the diagram below:

rusting iron speed up when  
into contact with this metal

rusting iron slows down when  
into contact with this metal

more tendency to  
release electron

