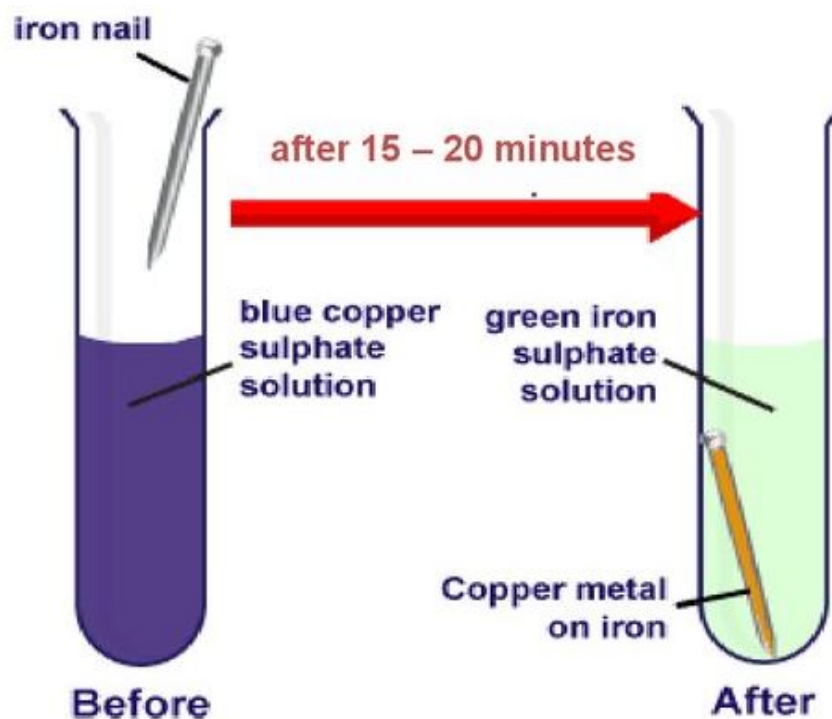


## CASE STUDY QUESTION 28

**Read the following and answer any four questions from (i) to (v)**

In the below experiment, when an iron nail is dipped in copper sulphate solution, a brown coating of copper is formed in the surface of iron and the colour of copper sulphate solution changes from blue to pale green. The reaction shows that iron is more reactive than copper because it displaces copper from the copper sulphate solution.



(i) The equation  $\text{Cu} + x\text{HNO}_3 \rightarrow \text{Cu}(\text{NO}_3)_2 + y\text{NO}_2 + 2\text{H}_2\text{O}$ .

The values of x and y are

- (a) 3 and 5      (b) 8 and 6      (c) 4 and 2      (d) 7 and 1

**Ans: (c) 4 and 2**

(ii) What happens when copper rod is dipped in iron sulphate solution :

- (a) Copper displaces iron  
(b) Blue colour of copper sulphate solution is obtained  
(c) No reaction takes place  
(d) Reaction is exothermic

**Ans: (c) No reaction takes place**

(iii) A substance which oxidised itself and reduces other is known as :

(a) Oxidising agent (b) Reducing agent (c) Both (a) and (b) (d) None of these

**Ans: (b) Reducing agent**

Reducing agents reduce the other substance and in turn get oxidized.



The above reaction is an example of a :

(a) Combination reaction (b) Double displacement reaction

(c) Decomposition reaction (d) Displacement reaction

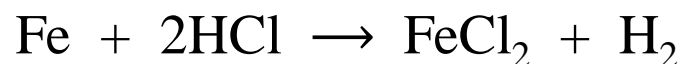
**Ans: (d) Displacement reaction**

(v) Name the products formed when iron filings are heated with dilute hydrochloric acid.

- (a) Fe (III) chloride and water
- (b) Fe (II) chloride and water
- (c) Fe (II) chloride and hydrogen gas
- (d) Fe (III) chloride and hydrogen gas

**Ans: (c) Fe (II) chloride and hydrogen gas**

When dilute Hydrochloric acid is added to iron filings, iron chloride & hydrogen gas is produced.



The iron displaces hydrogen from hydrochloric acid to form iron (II) chloride & hydrogen gas. This is a single displacement reaction.