

Chemistry Practical Class 10 Types of Reaction Displacement Reaction - Iron Nails Kept In Copper Sulphate Solution Viva Questions with Answers

Q1. What is Displacement Reaction?

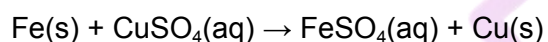
Answer: Displacement reaction is a type of chemical reaction in which an element is replaced or displaced by another element in a compound. .

Q2. Write a general equation for the displacement reaction.

Answer: $A + BC \rightarrow AC + B$ is the general equation for displacement reaction.

Q3. What is the balanced equation for the reaction between iron and copper sulphate?

Answer: The balanced equation is:



Q4. Which element is displaced by iron in the above reaction?

Answer: Copper is displaced by iron in the reaction.

Q5. Why is copper displaced by iron?

Answer: Iron is more reactive than copper. Therefore iron displaces copper from its salt solution.

Q6. Is the above displacement reaction an example of a redox reaction?

Answer: Yes, the above reaction is an example of redox reaction.

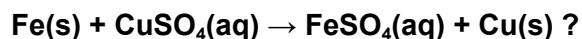
Q7. What is the oxidation state of iron in FeSO_4 ?

Answer: The oxidation state of iron in FeSO_4 is +2.

Q8. What is the oxidation state of copper in CuSO_4 solution?

Answer: The oxidation state of copper in CuSO_4 solution is +2.

Q9. What are the oxidation state of elemental copper and elemental iron in



Answer: The oxidation state of elemental copper and elemental iron is zero (0).

Q10. What is the colour of the CuSO_4 solution?

Answer: CuSO_4 solution is blue in colour.

Q11. What is the physical observation when the above displacement reaction occurs?

Answer: The colour of CuSO_4 solution changes from blue to pale green and a brown coating of copper is observed on the iron nail.

Q12. What is the colour of ferrous sulphate solution?

Answer: The colour of ferrous sulphate solution is green.

Q13. What changes in concentration of solutions occur during the above displacement reaction?

Answer: The concentration of ferrous sulphate solution increases and the concentration of copper sulphate solution decreases.

Q14. Is there any requirement for heat for the reaction to take place?

Answer: No, the reaction takes place at room temperature.

Q15. What is the atomic mass of iron and copper?

Answer: The atomic mass of iron is 56 g/mol and the atomic mass of copper is 63.5 g/mol.

Q16. What is the molecular mass of FeSO_4 and CuSO_4 ?

Answer: Atomic mass of FeSO_4 is :

Atomic mass of iron = 56 g/mol

Atomic mass of sulphur = 32 g/mol

Atomic mass of oxygen = 16 g/mol

Atomic mass of copper = 63.5 g/mol.

Molecular mass of FeSO_4 = $56 + 32 + (16 \times 4)$ = 152 g/mol

Molecular mass of CuSO_4 = $63.5 + 32 + (16 \times 4)$ = 159.5 g/mol

Q17. What precautions should be taken while performing this experiment?

Answer:

- 1) Do not touch copper sulphate solution as it is poisonous.
- 2) Rub the iron nail with sand to remove any rust or grease.

Q18. What is the reactivity series of metals?

Answer: The reactivity series of metals is an arrangement of different metals in a descending order of reactivity.

