



Answer the questions below then check your answers

1. In the reaction between zinc and hydrochloric acid, what is reduced?

- a) Zn b) H^+ c) Cl d) H_2

2. The oxidation number of iron in Fe_2O_3 is:

- a) +2 b) +3 c) +4 d) 0

3. What is the product of the reduction of acidified potassium dichromate ($K_2Cr_2O_7$)?

- a) CrO_4^{2-} b) $Cr_2O_7^{2-}$ c) Cr^{3+} d) Cr

4. In the reaction between Fe^{2+} and MnO_4^- in acidic solution, what happens to Fe^{2+} ?

- a) It is oxidised to Fe^{3+} b) It is reduced to Fe
c) It remains as Fe^{2+} d) It is oxidised to FeO

5. Which species acts as an oxidising agent in the reaction between potassium permanganate and hydrogen peroxide in acidic solution?

- a) H_2O_2 b) MnO_4^- c) H^+ d) Mn^{2+}

6. What colour change is observed when Fe^{2+} ions are oxidised to Fe^{3+} ?

- a) Green to yellow b) Blue to green c) Yellow to green d) Orange to green

7. The reaction between copper and silver nitrate is an example of:

- a) Oxidation b) Reduction
c) Displacement reaction d) Precipitation reaction

8. What is the oxidation number of oxygen in hydrogen peroxide (H_2O_2)?

- a) -2 b) -1 c) 0 d) +1

9. When Zn reacts with CuSO_4 , what is reduced?

- a) Zn b) Cu^{2+} c) SO_4^{2-} d) Cu

10. In the reaction of KMnO_4 with Fe^{2+} in acidic medium, which element undergoes reduction?

- a) Mn b) Fe c) O d) H

11. What is the colour change observed when potassium permanganate is reduced in acidic solution?

- a) Purple to colourless b) Orange to green
c) Yellow to blue d) Green to purple

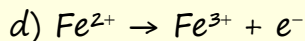
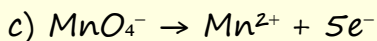
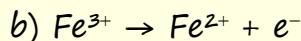
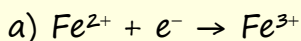
12. Which of the following reactions involves the reduction of hydrogen ions?

- a) $\text{Zn} + \text{HCl} \rightarrow \text{ZnCl}_2 + \text{H}_2$ b) $\text{Fe} + \text{CuSO}_4 \rightarrow \text{FeSO}_4 + \text{Cu}$
c) $\text{H}_2\text{O}_2 \rightarrow \text{H}_2\text{O} + \text{O}_2$ d) $2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$

13. What is the oxidation number of chromium in $\text{Cr}_2\text{O}_7^{2-}$?

- a) +2 b) +3 c) +6 d) +7

14. Which of the following is a correct oxidation half-equation for the reaction of Fe^{2+} with MnO_4^- ?



15. Which element is reduced in the reaction of zinc with copper sulfate?

a) Zn

b) Cu

c) S

d) O

16. Which of the following compounds can act as both an oxidising and a reducing agent?

a) H_2O

b) H_2O_2

c) O_2

d) CO_2

17. The oxidation state of nitrogen in NO_2 is:

a) +2

b) +3

c) +4

d) +5

18. In the reaction between magnesium and hydrochloric acid, what is oxidised?

a) Mg

b) H^+

c) Cl^-

d) H_2

19. Which ion is the oxidising agent in the reaction of Fe^{2+} with KMnO_4 in acidic solution?

a) Fe^{2+}

b) MnO_4^-

c) Fe^{3+}

d) H^+

20. When copper metal is added to a solution of silver nitrate, what is observed?

a) A colourless solution and deposition of silver

b) A blue solution and deposition of silver

c) A green solution and deposition of copper

d) No reaction

21. What is the colour change observed when potassium dichromate is reduced in acidic solution?

- a) Orange to green
- b) Green to orange
- c) Purple to colourless
- d) Blue to green

Answers

1. In the reaction between zinc and hydrochloric acid, what is reduced?

- a) Zn b) H^+ c) Cl d) H_2

Answer: b) H^+

2. The oxidation number of iron in Fe_2O_3 is:

- a) +2 b) +3 c) +4 d) 0

Answer: b) +3

3. What is the product of the reduction of acidified potassium dichromate ($K_2Cr_2O_7$)?

- a) CrO_4^{2-} b) $Cr_2O_7^{2-}$ c) Cr^{3+} d) Cr

Answer: c) Cr^{3+}

4. In the reaction between Fe^{2+} and MnO_4^- in acidic solution, what happens to Fe^{2+} ?

- a) It is oxidised to Fe^{3+} b) It is reduced to Fe
c) It remains as Fe^{2+} d) It is oxidised to FeO

Answer: a) It is oxidised to Fe^{3+}

5. Which species acts as an oxidising agent in the reaction between potassium permanganate and hydrogen peroxide in acidic solution?

- a) H_2O_2 b) MnO_4^- c) H^+ d) Mn^{2+}

Answer: b) MnO_4^-

6. What colour change is observed when Fe^{2+} ions are oxidised to Fe^{3+} ?

- a) Green to yellow b) Blue to green c) Yellow to green d) Orange to green

Answer: a) Green to yellow

7. The reaction between copper and silver nitrate is an example of:

- a) Oxidation b) Reduction
c) Displacement reaction d) Precipitation reaction

Answer: c) Displacement reaction

8. What is the oxidation number of oxygen in hydrogen peroxide (H_2O_2)?

- a) -2 b) -1 c) 0 d) +1

Answer: b) -1

9. When Zn reacts with CuSO_4 , what is reduced?

- a) Zn b) Cu^{2+} c) SO_4^{2-} d) Cu

Answer: b) Cu^{2+}

10. In the reaction of KMnO_4 with Fe^{2+} in acidic medium, which element undergoes reduction?

- a) Mn b) Fe c) O d) H

Answer: a) Mn

11. What is the colour change observed when potassium permanganate is reduced in acidic solution?

- a) Purple to colourless b) Orange to green
c) Yellow to blue d) Green to purple

Answer: a) Purple to colourless

12. Which of the following reactions involves the reduction of hydrogen ions?

- a) $\text{Zn} + \text{HCl} \rightarrow \text{ZnCl}_2 + \text{H}_2$ b) $\text{Fe} + \text{CuSO}_4 \rightarrow \text{FeSO}_4 + \text{Cu}$
c) $\text{H}_2\text{O}_2 \rightarrow \text{H}_2\text{O} + \text{O}_2$ d) $2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$

Answer: a) $\text{Zn} + \text{HCl} \rightarrow \text{ZnCl}_2 + \text{H}_2$

13. What is the oxidation number of chromium in $\text{Cr}_2\text{O}_7^{2-}$?

- a) +2 b) +3 c) +6 d) +7

Answer: c) +6

14. Which of the following is a correct oxidation half-equation for the reaction of Fe^{2+} with MnO_4^- ?

- a) $\text{Fe}^{2+} + \text{e}^- \rightarrow \text{Fe}^{3+}$ b) $\text{Fe}^{3+} \rightarrow \text{Fe}^{2+} + \text{e}^-$
c) $\text{MnO}_4^- \rightarrow \text{Mn}^{2+} + 5\text{e}^-$ d) $\text{Fe}^{2+} \rightarrow \text{Fe}^{3+} + \text{e}^-$

Answer: d) $\text{Fe}^{2+} \rightarrow \text{Fe}^{3+} + \text{e}^-$

15. Which element is reduced in the reaction of zinc with copper sulfate?

- a) Zn b) Cu c) S d) O

Answer: b) Cu

16. Which of the following compounds can act as both an oxidising and a reducing agent?

- a) H_2O b) H_2O_2 c) O_2 d) CO_2

Answer: b) H_2O_2

17. The oxidation state of nitrogen in NO_2 is:

- a) +2 b) +3 c) +4 d) +5

Answer: c) +4

18. In the reaction between magnesium and hydrochloric acid, what is oxidised?

- a) Mg b) H^+ c) Cl^- d) H_2

Answer: a) Mg

19. Which ion is the oxidising agent in the reaction of Fe^{2+} with $KMnO_4$ in acidic solution?

- a) Fe^{2+} b) MnO_4^- c) Fe^{3+} d) H^+

Answer: b) MnO_4^-

20. When copper metal is added to a solution of silver nitrate, what is observed?

- a) A colourless solution and deposition of silver
b) A blue solution and deposition of silver
c) A green solution and deposition of copper
d) No reaction

Answer: b) A blue solution and deposition of silver

21. What is the colour change observed when potassium dichromate is reduced in acidic solution?

- a) Orange to green
- b) Green to orange
- c) Purple to colourless
- d) Blue to green

Answer: a) Orange to green