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) O

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) $Zn + HCl \rightarrow ZnCl_2 + H_2$
b) $Fe + CuSO_4 \rightarrow FeSO_4 + Cu$
c) $H_2O_2 \rightarrow H_2O + O_2$
d) $2H_2 + O_2 \rightarrow 2H_2O$

13. What is the oxidation number of chromium in $Cr_2O_7^{2-}$?

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^-?

a) $Fe^{2+} + e^- \rightarrow Fe^{3+}$
b) $Fe^{3+} \rightarrow Fe^{2+} + e^-$
c) $MnO_4^- \rightarrow Mn^{2+} + 5e^-$
d) $Fe^{2+} \rightarrow Fe^{3+} + e^-$

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) O

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) $Zn + HCl \rightarrow ZnCl_2 + H_2$
b) $Fe + CuSO_4 \rightarrow FeSO_4 + Cu$
c) $H_2O_2 \rightarrow H_2O + O_2$
d) $2H_2 + O_2 \rightarrow 2H_2O$

Answer: a) $Zn + HCl \rightarrow ZnCl_2 + H_2$

13. What is the oxidation number of chromium in $Cr_2O_7^{2-}$?

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) $Fe^{2+} + e^- \rightarrow Fe^{3+}$
b) $Fe^{3+} \rightarrow Fe^{2+} + e^-$
c) $MnO_4^- \rightarrow Mn^{2+} + 5e^-$
d) $Fe^{2+} \rightarrow Fe^{3+} + e^-$

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

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