Answer the questions below then check your answers

1. Oxidation is defined as:

a) Gain of electrons
b) Loss of electrons
c) Gain of oxygen
d) Loss of hydrogen

2. Reduction is defined as:

a) Gain of electrons
b) Loss of electrons
c) Gain of oxygen
d) Loss of hydrogen

3. An oxidising agent is a substance that:

a) Gains electrons
b) Loses electrons
c) Causes oxidation
d) Causes reduction

4. A reducing agent is a substance that:

a) Gains electrons
b) Loses electrons
c) Causes oxidation
d) Causes reduction

5. In the reaction:

$Zn + Cu^{2+} \rightarrow Zn^{2+} + Cu$,

which species is oxidised?

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

6. In the reaction

$Zn + Cu^{2+} \rightarrow Zn^{2+} + Cu$,

which species is reduced?

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

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

a) +3 b) +6 c) +7 d) +12

8. What is the oxidation number of manganese in MnO_4^-?

a) +4 b) +5 c) +6 d) +7

9. Which of the following is a strong oxidizing agent?

a) H_2O b) HCl c) $KMnO_4$ d) Na_2SO_3

10. Which of the following is a good reducing agent?

a) Cl_2 b) H_2SO_4 c) $K_2Cr_2O_7$ d) Fe^{2+}

11. In the reaction between acidified $KMnO_4$ and Fe^{2+}, the colour change observed is:

a) Purple to green b) Purple to colourless

c) Orange to green d) No colour change

12. In the reaction between acidified $K_2Cr_2O_7$ and Fe^{2+}, the colour change observed is:

a) Purple to green b) Purple to colourless

c) Orange to green d) No colour change

13. Which of the following is a redox reaction?

a) $NaCl_{(aq)} + AgNO_{3(aq)} \rightarrow AgCl_{(s)} + NaNO_{3(aq)}$

b) $HCl_{(aq)} + NaOH_{(aq)} \rightarrow NaCl_{(aq)} + H_2O_{(aq)}$

c) $2H_2O_{2\ (aq)} \rightarrow 2H_2O_{(l)} + O_{2(g)}$

d) $NH_4Cl_{(s)} \rightarrow NH_{3(g)} + HCl(g)$

14. When zinc reacts with dilute sulfuric acid, the products are:

a) $ZnSO_4$ and H_2 b) $ZnSO_4$ and O_2

c) ZnO and H_2 d) ZnO and O_2

15. The oxidation number of chlorine in $HClO$ is:

a) -1 b) +1 c) +3 d) +5

16. The oxidation number of sulfur in H_2SO_4 is:

a) +2 b) +4 c) +6 d) +8

17. Which of the following is NOT a redox reaction?

a) Displacement of copper from copper(II) sulfate solution by zinc

b) Combustion of methane

c) Neutralization of hydrochloric acid with sodium hydroxide

d) Corrosion of iron

18. Which of the following is the strongest oxidising agent?

a) F_2 b) Cl_2 c) Br_2 d) I_2

19. Which of the following is the strongest reducing agent?

a) Li b) Na c) K d) Rb

20. In the reaction between acidified $KMnO_4$ and sulfur dioxide (SO_2), the oxidation product of sulfur dioxide is:

a) SO_3 b) H_2SO_4 c) H_2S d) S

21. The oxidation number of nitrogen in HNO_3 is:

a) +1 b) +3 c) +5 d) +7

22. The oxidation number of carbon in CO_2 is:

a) +1 b) +2 c) +3 d) +4

Answers

1. Oxidation is defined as:

a) Gain of electrons b) Loss of electrons

c) Gain of oxygen d) Loss of hydrogen

Answer: b) Loss of electrons

2. Reduction is defined as:

a) Gain of electrons b) Loss of electrons

c) Gain of oxygen d) Loss of hydrogen

Answer: a) Gain of electrons

3. An oxidising agent is a substance that:

a) Gains electrons b) Loses electrons

c) Causes oxidation d) Causes reduction

Answer: c) causes oxidation

4. A reducing agent is a substance that:

a) Gains electrons b) Loses electrons

c) Causes oxidation d) Causes reduction

Answer: d) causes reduction

5. In the reaction:

$$Zn + Cu^{2+} \rightarrow Zn^{2+} + Cu,$$

which species is oxidised?

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

Answer: a) Zn

6. In the reaction

$$Zn + Cu^{2+} \rightarrow Zn^{2+} + Cu,$$

which species is reduced?

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

Answer: b) Cu^{2+}

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

a) +3 b) +6 c) +7 d) +12

Answer: c) +6

8. What is the oxidation number of manganese in MnO_4^-?

a) +4 b) +5 c) +6 d) +7

Answer: d) +7

9. Which of the following is a strong oxidizing agent?

a) H_2O b) HCl c) $KMnO_4$ d) Na_2SO_3

Answer: c) $KMnO_4$

10. Which of the following is a good reducing agent?

a) Cl_2 b) H_2SO_4 c) $K_2Cr_2O_7$ d) Fe^{2+}

Answer: d) Fe^{2+}

11. In the reaction between acidified $KMnO_4$ and Fe^{2+}, the colour change observed is:

a) Purple to green b) Purple to colourless

c) Orange to green d) No colour change

Answer: b) Purple to colourless

12. In the reaction between acidified $K_2Cr_2O_7$ and Fe^{2+}, the colour change observed is:

a) Purple to green b) Purple to colourless

c) Orange to green d) No colour change

Answer: c) Orange to green

13. Which of the following is a redox reaction?

a) $NaCl_{(aq)} + AgNO_{3(aq)} \rightarrow AgCl_{(s)} + NaNO_{3(aq)}$

b) $HCl_{(aq)} + NaOH_{(aq)} \rightarrow NaCl_{(aq)} + H_2O_{(aq)}$

c) $2H_2O_{2\ (aq)} \rightarrow 2H_2O_{(l)} + O_{2(g)}$

d) $NH_4Cl_{(s)} \rightarrow NH_{3(g)} + HCl(g)$

Answer : c) $2H_2O_{2\ (aq)} \rightarrow 2H_2O_{(l)} + O_{2(g)}$

14. When zinc reacts with dilute sulfuric acid, the products are:

a) $ZnSO_4$ and H_2 b) $ZnSO_4$ and O_2

c) ZnO and H_2 d) ZnO and O_2

Answer: a) $ZnSO_4$ and H_2

15. The oxidation number of chlorine in HClO is:

a) -1 b) +1 c) +3 d) +5

Answer: b) +1

16. The oxidation number of sulfur in H_2SO_4 is:

a) +2 b) +4 c) +6 d) +8

Answer: c) +6

17. Which of the following is not a redox reaction?

a) Displacement of copper from copper(II) sulfate solution by zinc

b) Combustion of methane

c) Neutralization of hydrochloric acid with sodium hydroxide

d) Corrosion of iron

Answer: c) Neutralization of hydrochloric acid with sodium hydroxide, no change in oxidation number for any reactant.

18. Which of the following is the strongest oxidising agent?

a) F_2 b) Cl_2 c) Br_2 d) I_2

Answer: a) F_2

19. Which of the following is the strongest reducing agent?

a) Li b) Na c) K d) Rb

Answer: a) Li

20. In the reaction between acidified $KMnO_4$ and sulfur dioxide (SO_2), the oxidation product of sulfur dioxide is:

a) SO_3 b) H_2SO_4 c) H_2S d) S

Answer: a) SO_3

21. The oxidation number of nitrogen in HNO_3 is:

a) +1 b) +3 c) +5 d) +7

Answer: c) +5

22. The oxidation number of carbon in CO_2 is:

a) +1 b) +2 c) +3 d) +4

Answer: d) +4