

REDOX REVIEW

Define or explain

1. oxidation number _____
2. redox reaction _____
3. oxidation Loss of electrons
4. reduction gain of electrons
5. ion element w/ a charge
6. polyatomic ion more than one element bonded together w/ a charge
7. free element single element
8. oxidizing agent element that is gaining electrons
9. reduction agent element that is losing electrons

Assign oxidation numbers to each element in the following compounds.

- | | | | |
|--|--|---|---|
| $\begin{matrix} +2 & -1 \\ 10. & \text{MgCl}_2 \end{matrix}$ | $\begin{matrix} +1 & +6 & -2 \\ 11. & \text{Na}_2\text{SO}_3 \\ \boxed{+2} \end{matrix}$ | $\begin{matrix} +1 & +7 & -2 \\ 12. & \text{KMnO}_4 \end{matrix}$ | $\begin{matrix} +3 & -1 \\ 13. & \text{FeBr}_3 \end{matrix}$ |
| $\begin{matrix} +3 & +6 & -2 \\ 14. & \text{Al}_2(\text{SO}_4)_3 \\ +6 & +18 & -24 \end{matrix}$ | $\begin{matrix} +1 & +1 & +6 & -2 \\ 15. & \text{KHSO}_4 \end{matrix}$ | $\begin{matrix} +2 & -2 \\ 16. & \text{PbO} \end{matrix}$ | $\begin{matrix} +1 & +6 & -2 \\ 17. & \text{K}_2\text{Cr}_2\text{O}_7 \\ +2 & & -14 \end{matrix}$ |

Identify as oxidation or reduction.

- | | |
|---|--|
| $18. 2\text{Cl}^- \rightarrow \text{Cl}_2^0$ <u>R</u> | $19. \text{Cr}^{3+} \rightarrow \text{Cr}^{0+}$ <u><input checked="" type="radio"/> O </u> |
| $20. \text{Mn}^{7+} \rightarrow \text{Mn}^{2+}$ <u>R</u> | $21. \text{NO}_2 \rightarrow \text{NO}_3^-$ <u><input checked="" type="radio"/> O </u> |
| $22. \text{ClO}_3^- \rightarrow \text{Cl}^-$ <u><input checked="" type="radio"/> O </u> | $23. \text{Al}^{3+} \rightarrow \text{Al}^0$ <u><input checked="" type="radio"/> R </u> |

24. In most reactions, metal atoms are most easily (**oxidized, reduced**) while nonmetals are most easily (**oxidized, reduced**). Metal ions have a (**positive, negative**) sign and nonmetal ions have a (**positive, negative**) sign. Metal ions can be (**oxidized, reduced**) to form atoms and nonmetals ions can be (**oxidized, reduced**) to form atoms. Metal atoms are good (**oxidizing, reducing**) agents and nonmetal ions are good (**oxidizing, reducing**) agents.

Balance charges by adding the correct number of electrons.

25. $2\text{Br}^- \rightarrow \text{Br}_2 + 2e^-$ 26. $\text{Fe}^{2+} \rightarrow \text{Fe}^{3+} + 1e^-$ 27. $\text{Zn} \rightarrow \text{Zn}^{2+} + 2e^-$

For each of the following

- | | |
|---|--|
| 1. Assign oxidation numbers. | 3. Write the oxid/reduction half reactions |
| 2. Identify the substances oxidized/reduced | 4. Identify the oxidizing/reducing agent |

28. $3\text{Al} + \text{I}_2 \rightarrow \text{Al}^{3+} + 2\text{I}^-$
29. $\text{Mn}^{4+} + 2\text{F}^- \rightarrow \text{Mn}^{2+} + \text{F}_2$
30. $\text{Zn} + 2\text{HBr} \rightarrow \text{ZnBr}_2 + \text{H}_2$

28. $\text{Bi}_2\text{S}_3 + \text{HNO}_3 \rightarrow \text{Bi}(\text{NO}_3)_3 + \text{NO} + \text{S} + \text{H}_2\text{O}$
29. $\text{K}_2\text{Cr}_2\text{O}_7 + \text{HCl} + \text{H}_2\text{S} \rightarrow \text{KCl} + \text{CrCl}_3 + \text{H}_2\text{O} + \text{S}$
30. $\text{HNO}_3 + \text{I}_2 \rightarrow \text{NO} + \text{HIO}_3 + \text{H}_2\text{O}$
31. $\text{KMnO}_4 + \text{H}_2\text{SO}_3 \rightarrow \text{K}_2\text{SO}_4 + \text{MnSO}_4 + \text{H}_2\text{SO}_4 + \text{H}_2\text{O}$