Oxidizing Agents and Reducing Agents

1. In the reaction Cu(s) + 2Ag+(aq) 🡪 Cu2+(aq) + 2Ag(s)

|  |  |
| --- | --- |
| a | Cu(s) is reduced by the oxidizing agent |
| b | Ag+(aq) is the reducing agent and Cu(s) is reduced.  |
| c | Cu(s) is the reducing agent and Ag+(aq) is reduced |
| d | Cu(s) is the oxidizing agent and Ag+(aq) is oxidized |

1. The oxidizing agent in a redox equation\_\_\_\_\_\_\_\_\_\_\_\_\_\_ electrons and undergoes the process of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

|  |  |
| --- | --- |
| a | loses electrons and is reduced |
| b | gains electrons and is reduced |
| c | loses electrons and is oxidized |
| d | gains electrons and is oxidized |

1. Aaron and Gerald are asked to balance the following reaction in an acidic solution.

ClO3-(aq) + Cl2(g) 🡪 ClO-(aq)

They find that \_\_\_\_\_\_ is the reducing agent and it changes its oxidation number from \_\_\_\_ to \_\_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a | ClO3-(aq) | -5 | -1 |
| b | ClO3-(aq) | +5 | +1 |
| c | Cl2(g) | 0 | +1 |
| d | Cl2(g) | 0 | -1 |

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|  |  |  |  |
| --- | --- | --- | --- |
| a | ClO3-(aq) | -5 | -1 |
| b | ClO3-(aq) | +5 | +1 |
| c | Cl2(g) | 0 | +1 |
| d | Cl2(g) | 0 | -1 |

1. Silver compounds, such as AgNO3(aq), can act as strong oxidizing agents because

|  |  |
| --- | --- |
| a | silver metal can easily be oxidized to silver ions |
| b | silver metal can easily be reduced to silver ions |
| c | silver ions can easily be oxidized to silver metal |
| d | silver ions can easily be reduced to silver metal |

1. An aluminum strip is placed into aqueous copper (II) nitrate. The oxidizing agent for the reaction that occurs is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |
| --- | --- |
| a | Al(s) |
| b | Al3+(aq) |
| c | Cu(s) |
| d | Cu2+(aq) |

1. The strongest reducing agent listed below is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

|  |  |
| --- | --- |
| a | Fe(s) |
| b | Cd2+(aq) |
| c | F-(aq) |
| d | I2(s) |

1. The strongest oxidizing agent \_\_\_\_\_\_\_\_\_\_\_\_\_\_.

|  |  |
| --- | --- |
| a | Br2(l) |
| b | Cl2(g) |
| c | Cl-(aq) |
| d | Br-(aq) |

1. Consider the reaction given below.

**2Sn2+(aq) 🡪 Sn(s) + Sn4+(aq)**

A correct statement is for this reaction is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |
| --- | --- |
| a | The reaction is spontaneous |
| b | The reaction involves a decrease in potential energy |
| c | Sn2+(aq) undergoes disproportionation |
| d | Sn(s) is the oxidizing agent.  |

1. In the reaction **2Ag+(aq) + Cu(s) 🡪 2Ag(s) + Cu2+(aq),** the silver ion is \_\_\_\_\_\_\_\_\_\_\_\_\_ and is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ agent.

|  |  |  |
| --- | --- | --- |
| a | Oxidized | Reducing |
| b | Oxidized | Oxidizing |
| c | Reduced  | Oxidizing |
| d | Reduced | reducing |

1. Which oxidizing agent **cannot** be used to spontaneously oxidize **Sn2+(aq)?**

|  |  |
| --- | --- |
| a | Fe3+(aq) |
| b | Fe2+(aq) |
| c | Cu2+(aq) |
| d | Br2(l) |

Solutions:

1. C
2. B
3. C
4. B
5. D
6. D
7. A
8. B
9. C
10. C
11. B