**Name: Period: Seat#:**

**Worksheet #2**

**Review if needed:** You were supposed to cover this during the AP Summer Assignment and we have occasionally touched on Redox during the year, but since it has been a while here are a few quick things to jog your memory if needed ☺

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| Quick PowerPoint  <https://tinyurl.com/63m6psps> | Some Worksheets  <https://tinyurl.com/43xn2kce> | Tyler Dewitt Electrochem Videos  <https://tinyurl.com/kc8py9k7> |

**Assigning Oxidation Numbers**

Determine the oxidation number of the underlined element.

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| --- | --- | --- | --- |
| 1. BeCl2 | 1. NO | 1. Na2SO3 | 1. H2O2 |
| 1. AgBr | 1. AuCl3 | 1. HNO3 | 1. H2SnO3 |
| 1. SO3 | 1. UF6 | 1. BaCrO4 | 1. CaSeO4 |
| 1. HI | 1. H2Se | 1. K2PtCl6 | 1. NiSO4 |
| 1. NH3 | 1. HClO | 1. NH4Cl | 1. (NH4)2Te |

**The Half Reaction Method**

1. Write the two half-reactions. Include the atoms/ions/molecules that are involved in change of oxidation state.
2. Balance each half-reaction with respect to atoms and charges.
   1. First balance atoms other than H and O
   2. Then balance O by adding H2O
   3. Next balance H by adding H+   
      *(if in basic solution, you have to add OH- to each side for each of the H+. Remember, H+ + OH- 🡪 H2O)*
   4. Last, balance the charge by adding electrons e-.
3. Equalize the number of electrons lost in the oxidation half-reaction with the number of electrons gained in the reduction half-reaction by multiplying one or both of the reactions by a whole number. You are looking for that “least common multiple” between the two reactions.
4. Add the two half-reactions to form a balanced net ionic equation. Don’t forget to combine like terms on each side and to cancel out things that show up on both sides.

*\*Use binder paper if you need to work through each more stepwise! These can be tough! Lots to keep track of!*

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| --- | --- | --- | --- |
| 1. HCl + K2Cr2O7 🡪 KCl + CrCl3 + Cl2 | *\*Its ok if you did compounds in a different order! 14, 1, 2, 2, 3, 7H2O* | | |
| Reduction Half-Reaction | | Oxidation Half-Reaction | |
|  | |  | |
| Overall finished balanced redox reaction: | | | |
|  | | | |
| 1. FeCl2 + KMnO4 + HCl 🡪 FeCl3 + KCl + MnCl2 + H2O | | | *5, 1, 8, 5, 1, 1, 4H2O* |
| Reduction Half-Reaction | | Oxidation Half-Reaction | |
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| Overall finished balanced redox reaction: | | | |
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| --- | --- | --- |
| 1. CuS + NO3- 🡪 Cu2+ + S + NO | | *3, 2, 8H+, 3, 3, 2, 4H2O* |
| Reduction Half-Reaction | Oxidation Half-Reaction | |
|  |  | |
| Overall finished balanced redox reaction: | | |
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| --- | --- |
| 1. HNO3 + S 🡪 NO2 + H2SO4 + H2O | *6, 1, 6, 1, 2H2O* |
| Overall finished balanced redox reaction: | |
|  | |

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| --- | --- |
| 1. KMnO4 + HCl + H2S 🡪 KCl + MnCl2 + S | *2, 6, 5, 2, 2, 5, 8H2O* |
| Overall finished balanced redox reaction: | |
|  | |

|  |  |
| --- | --- |
| 1. FeCl3 + H2S 🡪 FeCl2 + HCl + S | *2, 1, 2, 2, 1* |
| Overall finished balanced redox reaction: | |
|  | |

|  |  |
| --- | --- |
| 1. Cu + HNO3 🡪 Cu(NO3)2 + NO2 | *1, 4, 1, 2, 2H2O* |
| Overall finished balanced redox reaction: | |
|  | |