Reference Points

1. If the reference point for electrode potentials is changed so that the reduction of Ni2+(aq) + 2e- 🡪 Ni(s) represents Eo = 0.00 V, then the electrode potential for the reduction of Br2(l) + 2e- 🡪 2Br-(aq) will be \_\_\_\_\_\_\_\_\_\_ V

|  |  |
| --- | --- |
| a | +0.26 |
| b | +0.81 |
| c | +1.07 |
| d | +1.33 |

1. If the reduction of iodine had been selected as the standard half- reaction, then the Eo for the reduction of PbSO4(s) would be \_\_\_\_\_ V

|  |  |
| --- | --- |
| a | -0.90 |
| b | +0.90 |
| c | -0.18 |
| d | +0.18 |

1. Scientists Tom and Janel rewrite the reduction table in the data booklet. They choose the half reaction I2(s) + 2e- 🡪 2I-(aq) as the new reference point.

Based on this new reference point, choose the **true** statement below is \_\_\_\_.

|  |  |  |
| --- | --- | --- |
| a | Pb2+(aq) + 2e- 🡪 Pb(s) | Eo = -0.67 V |
| b | 2F-(aq) 🡪 F2(g) + 2e- | Eo = +2.33 V |
| c | Fe2+(aq) 🡪 Fe3+(aq) + e- | Eo = +1.31 V |
| d | Cr2+(aq) + 2e- 🡪 Cr(s) | Eo = -0.37 V |

1. Eli and Grayson choose a new reference point for the reduction table.

They decide that PbsO4(s) 2e- 🡪 Pb(s) + SO42-(aq) will have an electrical potential of 0.0V

Using this new reference point they calculate the expected electrical potential for a series of reactions.

|  |  |  |
| --- | --- | --- |
|  | Reaction | Voltage |
| 1 | Ni2+(aq) + 2e- 🡪 Ni(s) | 0.20 V |
| 2 | I2(s) + Cu(s) 🡪 2I-(aq) + Cu2+(aq) | 0.20 V |
| 3 | NO(g) + 2OH- 🡪 NO2-(aq) + H2O(l) + e- | 0.20 V |
| 4 | 3N2O(g) + 6H2O(l) + 4Au3+(aq) 🡪 6HNO3(aq) + 12H+(aq) + 4Au(s) | 0.20 V |
| 5 | 2Na+(aq) + Ba(s) 🡪 Ba2+ + 2Na(s) | 0.20 V |

Which statements above are **FALSE**?

|  |  |
| --- | --- |
| a | 1,2,3 |
| b | 2,4,5 |
| c | 3,5 |
| d | 1,3 |

1. Eli and Grayson choose a new reference point for the reduction table.

They decide that PbsO4(s) 2e- 🡪 Pb(s) + SO42-(aq) will have an electrical potential of 0.0V

Using this new reference point they calculate the expected electrical potential for a series of reactions.

|  |  |  |
| --- | --- | --- |
|  | Reaction | Voltage |
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| 3 | NO(g) + 2OH- 🡪 NO2-(aq) + H2O(l) + e- | 0.20 V |
| 4 | 3N2O(g) + 6H2O(l) + 4Au3+(aq) 🡪 6HNO3(aq) + 12H+(aq) + 4Au(s) | 0.20 V |
| 5 | 2Na+(aq) + Ba(s) 🡪 Ba2+ + 2Na(s) | 0.20 V |

The number of true statements above is \_\_\_\_\_\_\_\_\_\_\_\_\_\_ .

|  |  |
| --- | --- |
| a | 5 |
| b | 4 |
| c | 3 |
| d | 2 |

Solutions:

1. D
2. A
3. A
4. D
5. C