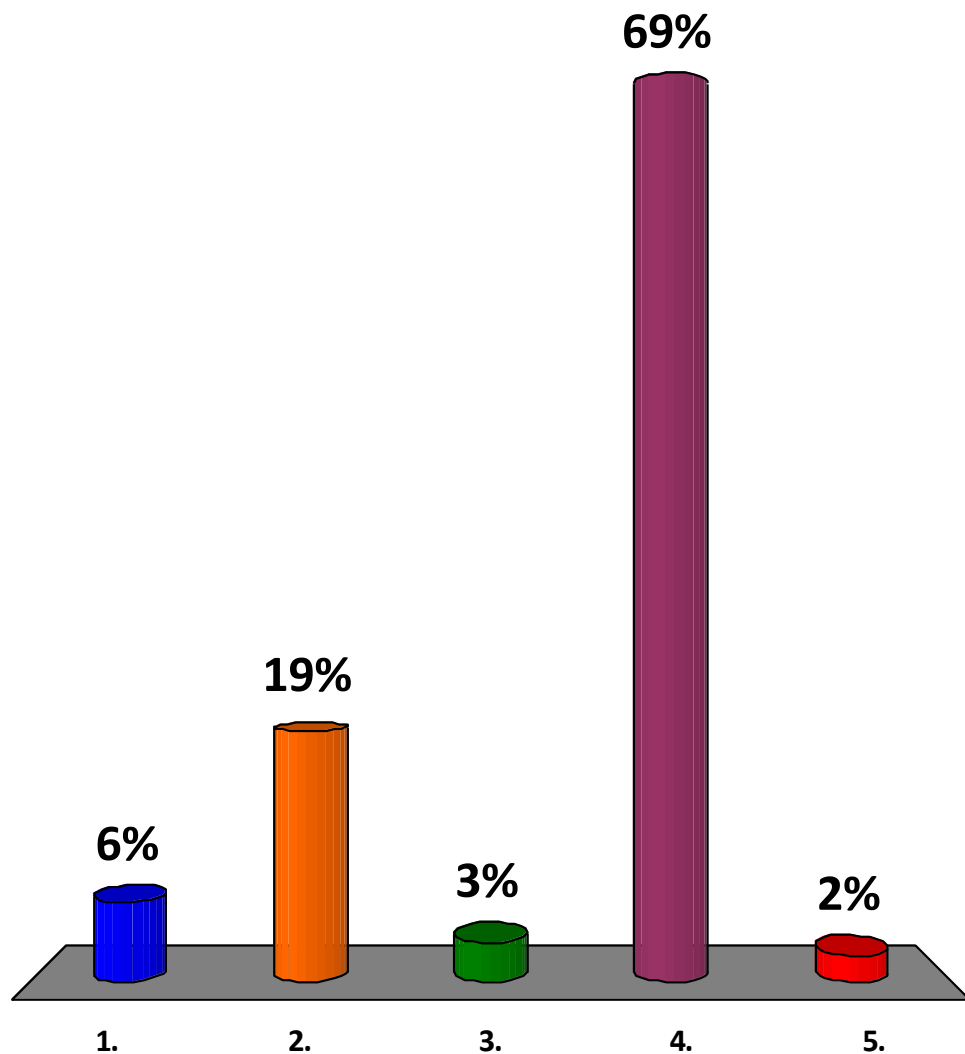


Determine the oxidation number of Cl
in hypochlorous acid, HOCl.

1. -2
2. -1
3. 0
4. +1
5. +2

Determine the oxidation number of Cl
in hypochlorous acid, HOCl.

1. -2
2. -1
3. 0
- ✓ 4. +1
5. +2



What must be happening when
 $\text{Pt (s)} \mid \text{H}_2 \text{ (g)} \mid \text{H}^+ \text{ (aq)}$ acts as an anode?

1. Pt (s) is oxidized
2. H₂ (g) is oxidized
3. H⁺ (aq) is oxidized
4. Pt (s) is reduced
5. H₂ (g) is reduced
6. H⁺ (aq) is reduced

What must be happening when
 $\text{Pt (s)} \mid \text{H}_2 \text{ (g)} \mid \text{H}^+ \text{ (aq)}$ acts as an anode?

10%

1. Pt (s) is oxidized

60%



2. $\text{H}_2 \text{ (g)}$ is oxidized

15%

3. $\text{H}^+ \text{ (aq)}$ is oxidized

8%

4. Pt (s) is reduced

2%

5. $\text{H}_2 \text{ (g)}$ is reduced

4%

6. $\text{H}^+ \text{ (aq)}$ is reduced

Which is the correct $\Delta E(\text{cell})$?

Standard Reduction Potentials



$$1. = (+0.3402 \text{ V}) - (-0.7628 \text{ V}) = +1.1030 \text{ V}$$

$$2. = (-0.3402 \text{ V}) - (+0.7628 \text{ V}) = -1.1030 \text{ V}$$

$$3. = (+0.3402 \text{ V}) - (+0.7628 \text{ V}) = -0.4226 \text{ V}$$

$$4. = (-0.3402 \text{ V}) - (-0.7628 \text{ V}) = +0.4226 \text{ V}$$

Which is the correct $\Delta E(\text{cell})$?

Standard Reduction Potentials



81%  1. = $(+0.3402 \text{ V}) - (-0.7628 \text{ V}) = +1.1030 \text{ V}$

5% 2. = $(-0.3402 \text{ V}) - (+0.7628 \text{ V}) = -1.1030 \text{ V}$

11% 3. = $(+0.3402 \text{ V}) - (+0.7628 \text{ V}) = -0.4226 \text{ V}$

3% 4. = $(-0.3402 \text{ V}) - (-0.7628 \text{ V}) = +0.4226 \text{ V}$

Which statement is correct?

1. A galvanic cell uses a spontaneous chemical reaction to generate an electric current.
2. A galvanic uses electrical energy to carry out a nonspontaneous reaction.
3. An electromagnetic cell uses electrical energy to carry out a nonspontaneous reaction.
4. An electromagnetic cell uses a spontaneous chemical reaction to generate an electric current.
5. 1 and 3
6. 2 and 4

Which statement is correct?

- 18% ✓ 1. A galvanic cell uses a spontaneous chemical reaction to generate an electric current.
- 2% 2. A galvanic uses electrical energy to carry out a nonspontaneous reaction.
- 2% 3. An electromagnetic cell uses electrical energy to carry out a nonspontaneous reaction.
- 2% 4. An electromagnetic cell uses a spontaneous chemical reaction to generate an electric current.
- 65% 5. 1 and 3
- 11% 6. 2 and 4

Is F_2 a good oxidizing agent?

1. No. It is hard to oxidize.
2. Yes. It is easy to oxidize.
3. No. It is hard to reduce.
4. Yes. It is easy to reduce.

Is F_2 a good oxidizing agent?

12% 1. No. It is hard to oxidize.

13% 2. Yes. It is easy to oxidize.

6% 3. No. It is hard to reduce.

69%  4. Yes. It is easy to reduce.

Calculate Q for $\text{Cu}^{2+}(\text{aq}) + \text{Zn}(\text{s}) \rightleftharpoons \text{Zn}^{2+}(\text{aq}) + \text{Cu}(\text{s})$.

The concentration of Zn^{2+} ions is 0.10 M and the concentration of Cu^{2+} ions is 0.0010 M.

1. Not enough information is given.
2. 1.0×10^2
3. 1.0×10^{-2}
4. 1.0×10^{-4}

Calculate Q for $\text{Cu}^{2+}(\text{aq}) + \text{Zn}(\text{s}) \rightleftharpoons \text{Zn}^{2+}(\text{aq}) + \text{Cu}(\text{s})$.

The concentration of Zn^{2+} ions is 0.10 M and the concentration of Cu^{2+} ions is 0.0010 M.

7% 1. Not enough information is given.

75%  2. 1.0×10^2

13% 3. 1.0×10^{-2}

5% 4. 1.0×10^{-4}

Which is a better reducing agent?

E° for vitamin B₁₂ is -0.526 V.

E° for flavodoxin is -0.230 V.

1. Neither one is better. Both have negative standard reduction potentials.
2. flavodoxin
3. vitamin B12



Which is a better reducing agent?

E° for vitamin B₁₂ is -0.526 V.

E° for flavodoxin is -0.230 V.

- 33% 1. Neither one is better. Both have negative standard reduction potentials.
- 33% 2. flavodoxin
- 33% ★ 3. vitamin B12

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5.111 Principles of Chemical Science
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