YUKON CHEMISTRY 12 (MCH--12) · UNIT D · 25 QUESTIONS

Electrochemistry — Practice Test

This practice test was made by AI and there may be mistakes. If a question or answer looks wrong, use the Flag a mistake button to let Brett know so he can fix it.

1 **Oxidation is the process in which a species**

- A gains electrons
- B gains protons
- C loses electrons
- D loses neutrons

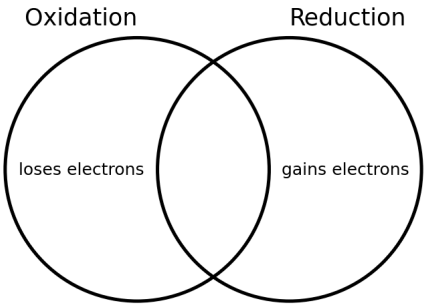
Understand It with Pulse | Flag a mistake

2 **Reduction is the process in which a species**

- A loses electrons
- B gains electrons
- C loses protons
- D gains neutrons

Understand It with Pulse | Flag a mistake

3 **The diagram shows two sets: oxidation and reduction. Which statement belongs in the overlap of both sets**



A electrons are lost

B electrons are gained

C no electrons are transferred

D they occur together in every redox reaction

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4 **In the reaction $Zn \rightarrow Zn^{2+} + 2e^-$, zinc is**

A oxidized

B reduced

C neither oxidized nor reduced

D a catalyst

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5 **In the reaction $Cu^{2+} + 2e^- \rightarrow Cu$, copper ions are**

A reduced

B oxidized

C neither oxidized nor reduced

D a catalyst

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6 **In a redox reaction, the oxidizing agent is the species that**

- A is oxidized and causes another species to be reduced
- B gains no electrons
- C is reduced and causes another species to be oxidized
- D loses no electrons

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7 **In the reaction $Zn + Cu^{2+} \rightarrow Zn^{2+} + Cu$, the reducing agent is**

- A Cu^{2+}
- B Zn
- C Zn^{2+}
- D Cu

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8 **In a galvanic cell, oxidation occurs at the**

A cathode

B salt bridge

C voltmeter

D anode

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9 **In a galvanic cell, reduction occurs at the**

A anode

B cathode

C salt bridge

D wire

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10 **In a galvanic cell, electrons flow through the external wire from the**

- A cathode to the anode
- B salt bridge to the anode
- C cathode to the salt bridge
- D anode to the cathode

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11 **The purpose of a salt bridge in a galvanic cell is to**

- A carry electrons between electrodes
- B provide the voltage of the cell
- C maintain electrical neutrality in the half-cells
- D prevent any ions from moving

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12 **A galvanic cell converts**

A chemical energy into electrical energy

B electrical energy into chemical energy

C heat energy into light energy

D mechanical energy into heat

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13 **An electrolytic cell converts**

A electrical energy into chemical energy

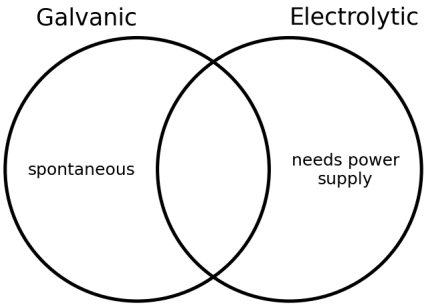
B chemical energy into electrical energy

C heat energy into light energy

D mechanical energy into heat

Understand It with Pulse | Flag a mistake

14 **The diagram shows two sets: galvanic cells and electrolytic cells. Which feature belongs in the overlap of both sets**



A spontaneous reactions only

B redox reactions with oxidation at the anode

C an external power supply

D electrical energy produced

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15 **In an electrolytic cell, oxidation still occurs at the**

A cathode

B salt bridge

C anode

D battery

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16 **Standard reduction potentials are measured relative to the**

A standard zinc electrode

B standard copper electrode

C standard silver electrode

D standard hydrogen electrode

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17 **A zinc-copper cell has E° = 1.10 V, with zinc oxidized and copper reduced. The standard cell potential, in volts, is**

A 0.42

B 0.76

C 1.10

D 1.44

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18 **Given $E°(Zn^{2+}/Zn) = -0.76$ V and $E°(Cu^{2+}/Cu) = +0.34$ V, the cell potential for $Zn + Cu^{2+} \rightarrow Zn^{2+} + Cu$, in volts, is**

A 1.10

B 0.42

C 0.76

D 1.44

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19

Given $E°(Mg^{2+}/Mg) = -2.37$ V and $E°(Ag^{+}/Ag) = +0.80$ V, the cell potential for $Mg + 2Ag^{+} \rightarrow Mg^{2+} + 2Ag$, in volts, is

A 1.57

B 3.17

C 2.37

D 3.97

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Flag a mistake

20 **Given $E°(Fe^{2+}/Fe) = -0.44$ V and $E°(Cu^{2+}/Cu) = +0.34$ V, the cell potential for $Fe + Cu^{2+} \rightarrow Fe^{2+} + Cu$, in volts, is**

- A 0.10
- B 0.34
- C 1.22
- D 0.78

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21 **A cell with a positive standard cell potential is**

- A nonspontaneous under standard conditions
- B spontaneous under standard conditions
- C at equilibrium
- D an electrolytic cell

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22 **In electroplating a spoon with silver, the spoon is the**

- A anode
- B salt bridge
- C cathode
- D power supply

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23 **In silver electroplating, silver ions in solution are**

- A oxidized to silver metal
- B unchanged in the solution
- C oxidized to silver oxide
- D reduced to silver metal on the object

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24 **In the electrolysis of molten NaCl, chlorine gas forms at the**

- **A** anode, by oxidation of chloride ions
- **B** cathode, by reduction of chloride ions
- **C** anode, by reduction of sodium ions
- **D** cathode, by oxidation of sodium ions

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25 **In the electrolysis of molten NaCl, sodium metal forms at the**

- **A** cathode, by reduction of sodium ions
- **B** anode, by oxidation of sodium ions
- **C** cathode, by oxidation of sodium ions
- **D** anode, by reduction of chloride ions

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ANSWER KEY

1. C
2. B
3. D
4. A
5. A
6. C
7. B
8. D
9. B
10. D
11. C
12. A
13. A
14. B
15. C
16. D
17. C
18. A
19. B
20. D
21. B
22. C
23. D
24. A
25. A

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