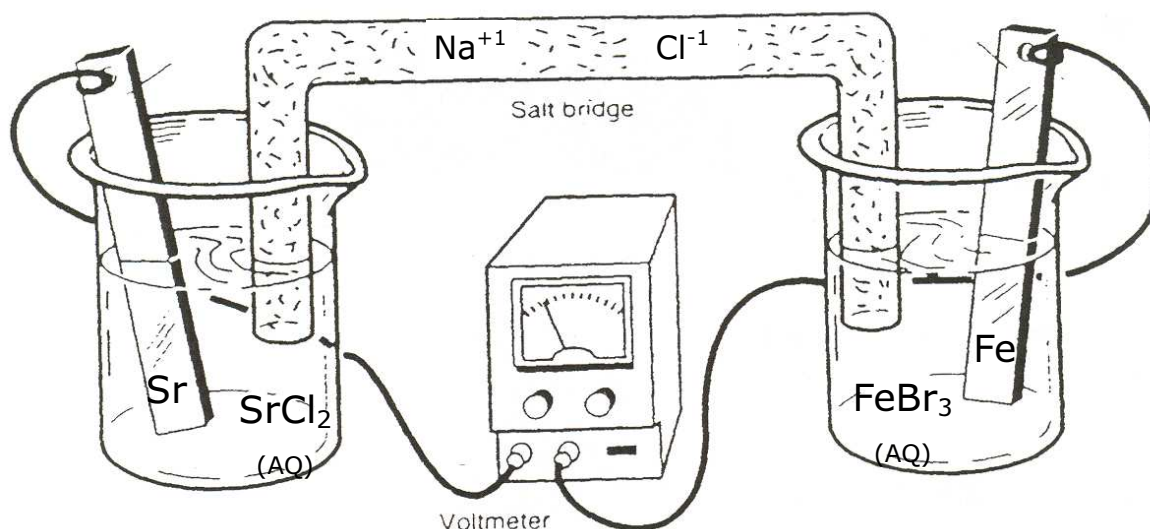


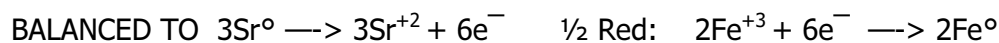
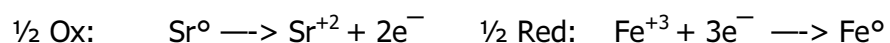
## Practice Celebration REDOX ANSWERS

1. What is the oxidation number of carbon in the hydrogen carbonate ion?  
For  $\text{HCO}_3^{-1}$  it has to be choice B. +4
2. Which of these would be an example of a NON-SPONTANEOUS redox?  
All are spontaneous except choice C. the electrolysis of water
3. We lit magnesium metal on fire and it converted to magnesium oxide.  
Which of these shows the half oxidation reaction?  
Oxidation = loss of electrons, shown only by choice A.  $\text{Mg} \rightarrow \text{Mg}^{+2} + 2\text{e}^{-}$
4. In an electrolytic cell which is true:  
only choice B. reduction happens at the cathode (true for all cells)
5. The salt bridge D. allows for the flow of ions
6. The electrode that loses mass is B. anode (cathodes get bigger)
7.  $\text{Zn}_{(\text{S})} + \text{HCl}_{(\text{AQ})} \rightarrow$  Which species is oxidized in this reaction?  
A. Zn gets oxidized into  $\text{Zn}^{+2}$  ions
8. Which is a reason that a battery would run out of "juice"?  
D. run out of anode (or run out of cathode cations, or run out of salt ions)
9. In this reaction is completed, which species is reduced?  
 $\text{Ca} + \text{HCl} \rightarrow ?$  B.  $\text{H}^{+}$  (actually  $2\text{H}^{+1}$  become  $\text{H}_2^{\circ}$ )
10. Reduction happens at the cathode is true for:  
C. voltaic and electrolytic cells (red-cat is always true)
11. The salt bridge in a voltaic cell must be: A. aqueous (otherwise the ions could not flow)

Fully label the diagram below showing strontium electrode in strontium fluoride solution at left, a salt bridge with sodium chloride solution, and on right, iron in iron (III) bromide solution.



12. Write the  $\frac{1}{2}$  reactions:



14. Write the Net Ionic Equation:  $3\text{Sr}^{\circ} + 2\text{Fe}^{+3} \longrightarrow 3\text{Sr}^{+2} + 2\text{Fe}^{\circ}$

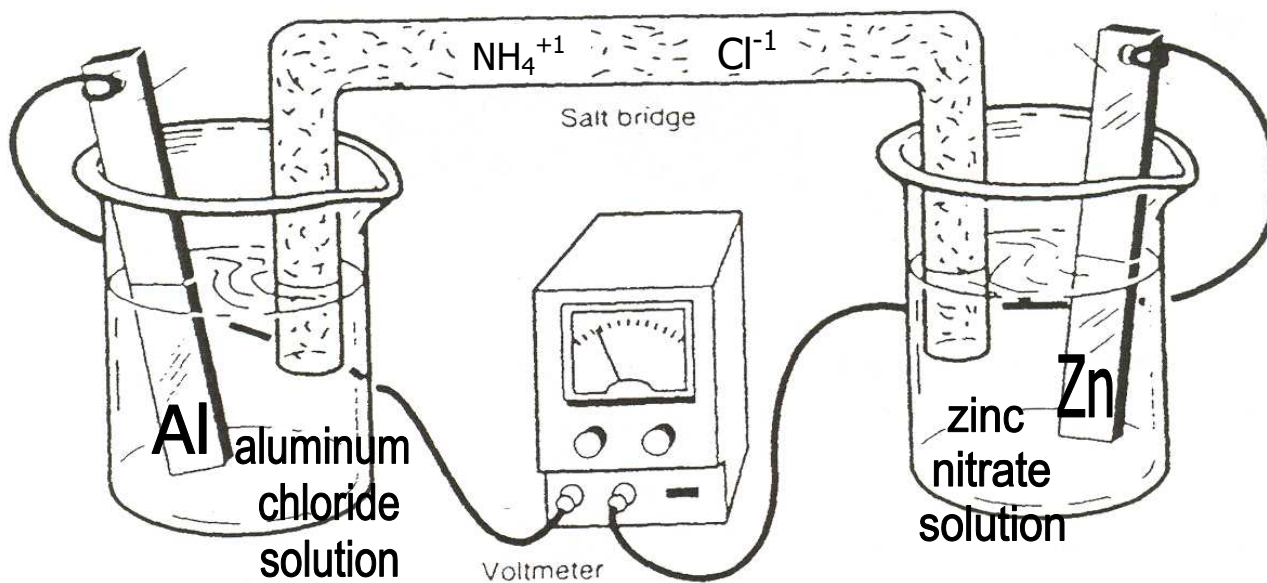
15. What is the reducing agent?  $\text{Sr}^{\circ}$  What is the oxidizing agent?  $\text{Fe}^{+3}$

16. Which electrode loses mass? The anode Sr. It goes into solution as  $\text{Sr}^{+2}$  ions.

17. This voltaic cell converts CHEMICAL ENERGY into ELECTRICAL ENERGY.

18. Describe the function of the salt bridge

THE SALT BRIDGE ALLOWS IONS TO FLOW TO OFFSET THE CHARGES THE SOLUTIONS WOULD DEVELOP, WHICH WOULD STOP THE FLOW OF ELECTRICITY.



19. Which is the anode? A. Al aluminum is higher on table J
20. The  $\text{NH}_4^{+1}$  will move towards the beaker with the B.  $\text{Zn}(\text{NO}_3)_2(\text{AQ})$
21. The flow of electrons goes from A. Al to Zn (from anode to cathode)
22. This question has six choices... This reaction: E. Both A and C  
A. is spontaneous and C. creates electric energy
23. Reduction takes place at... D. the cathode which is zinc
24. The electrode that will lose mass will be the... A. the anode which is aluminum
25. In this redox reaction:  $4\text{Al} + 3\text{O}_2 \rightarrow 2\text{Al}_2\text{O}_3$  which species is oxidized?  
A. Al, they become  $\text{Al}^{+3}$  ions
26. In this redox reaction:  $\text{Zn}^0 + \text{Pb}^{+2} \rightarrow \text{Zn}^{+2} + \text{Pb}^0$  which species is reduced?  
B.  $\text{Pb}^{+2}$  gains two electrons to become a lead atom.
- 27 & 28. An electrolytic cell converts electrical (27) energy into chemical (28) energy.
- 29 & 30. A voltaic cell converts chemical (29) energy into electrical (30) energy.