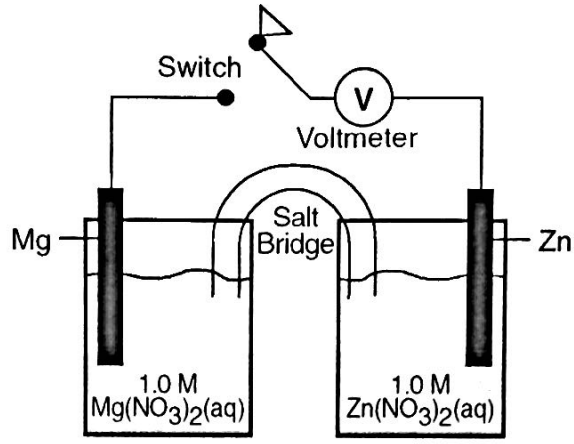
ELECTROCHEMISTRY REVIEW SHEET

Questions 1 - 8 refer to the following chemical cell.



1) Does the chemical cell diagram represent a voltaic or an electrolytic cell? [*Give one reason to support your answer.*]

2) According to the Activity Series reference table, which element undergoes reduction? [*Explain why.*]

3) Label the anode and the cathode on the above diagram.

4) Write the oxidation half-reaction that occurs.

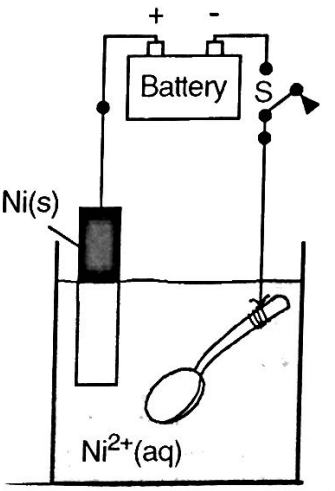
5) Write the reduction half-reaction that occurs.

6) Write the overall redox reaction.

7) Which electrode will decrease in mass over time?

8) What is the direction of electron flow?

Questions 9 - 12 refer to the diagram below where a spoon will be electroplated with nickel metal.



9) Write the correct half-reaction for the deposition of Ni (s) on the surface of the spoon.

10) Does the chemical cell diagram represent a voltaic or an electrolytic cell?
[*Give one reason to support your answer.*]

11) Does the spoon represent the anode or the cathode?
[*Give one reason to support your answer.*]

12) Why does the cell require a battery?

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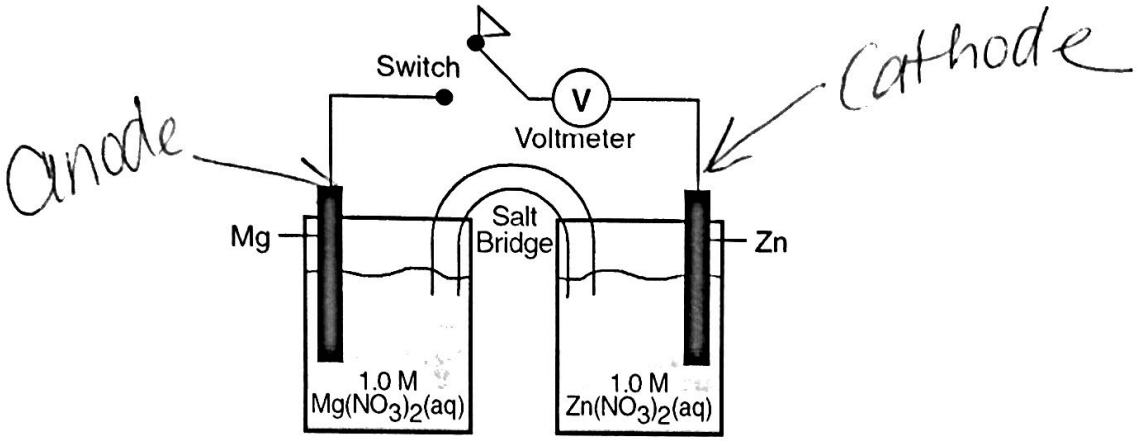
Questions 1 – 8 refer to the following chemical cell.



1) Does the chemical cell diagram represent a voltaic or an electrolytic cell? [*Give one reason to support your answer.*]

Voltaic cell because it produces energy has two containers

2) According to the Activity Series reference table, which element undergoes reduction? [*Explain why.*]

Zn^{2+} undergoes reduction because Mg is more likely to oxidize than Zn

3) Label the anode and the cathode on the above diagram.

4) Write the oxidation half-reaction that occurs.

$Mg \rightarrow Mg^{2+} + 2e^-$

5) Write the reduction half-reaction that occurs.

$Zn^{2+} + 2e^- \rightarrow Zn$

6) Write the overall redox reaction.

$Mg + Zn^{2+} \rightarrow Mg^{2+} + Zn$

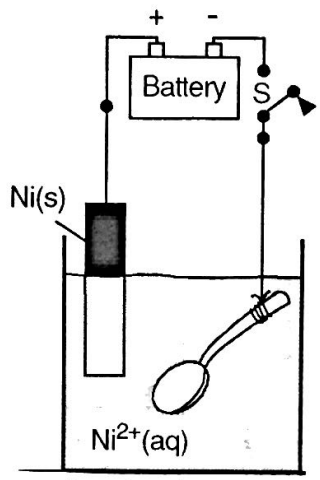
7) Which electrode will decrease in mass over time?

Mg

8) What is the direction of electron flow?

Mg to Zn

Questions 9 - 12 refer to the diagram below where a spoon will be electroplated with nickel metal.



9) Write the correct half-reaction for the deposition of Ni (s) on the surface of the spoon.

$Ni^{2+} + 2e^- \rightarrow Ni$

10) Does the chemical cell diagram represent a voltaic or an electrolytic cell?
[*Give one reason to support your answer.*]

electrolytic
- one cell (nonspontaneous)
- has a battery.

11) Does the spoon represent the anode or the cathode?
[*Give one reason to support your answer.*]

Cathode b/c it is connected to the negative terminal of the battery.

12) Why does the cell require a battery?

It is a nonspontaneous process so the electrical energy is used to bring about the chemical change.