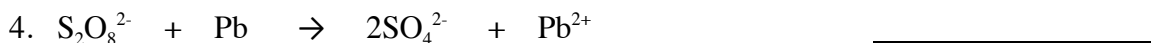
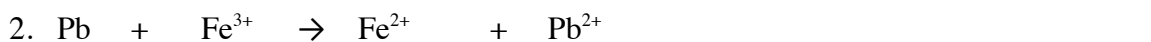
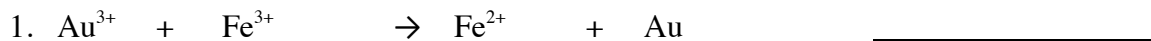


Name _____ Block: _____ Date: _____

Chemistry 12

SPONTANEOUS & NON-SPONTANEOUS REDOX REACTIONS

Describe each reaction as spontaneous or non-spontaneous.

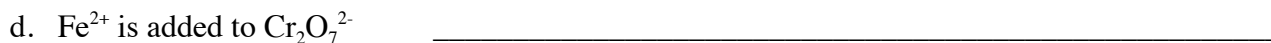
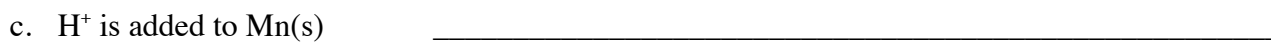
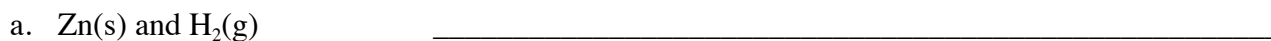
8. Which member of each of the following pairs is the **stronger oxidizing agent**?

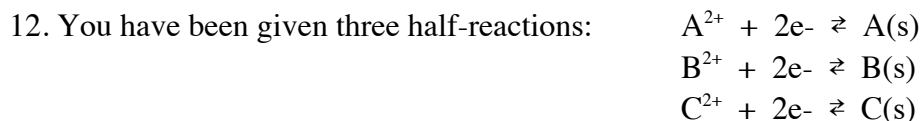
- a)
- Zn^{2+}
- or
- Ca^{2+}
- b)
- Cr^{3+}
- or
- Cu^{2+}
- c)
- Br_2
- or
- I_2

9. Which member of each of the following pairs is the **stronger reducing agent**?

- a) Mn or Pb b)
- Cu^+
- or
- Sn^{2+}
- c)
- Cr^{2+}
- or
- Fe^{2+}

10. Predict whether a spontaneous reaction is expected when the following are mixed, and state the product of any spontaneous reactions.

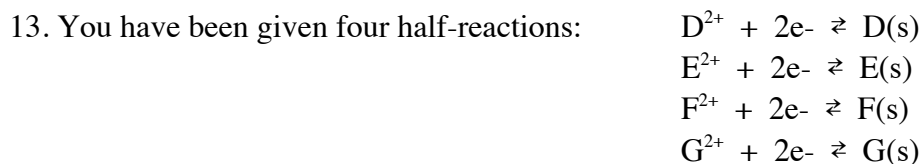
11. An electrochemical cell was made by joining a half-cell containing 1 M $\text{Pb(NO}_3)_2$ and a lead electrode to half cell consisting of 1 M $\text{Zn(NO}_3)_2$ and a zinc electrode. As the cell continues to operate, what happens to the $[\text{Pb}^{2+}]$? What happens to the $[\text{Zn}^{2+}]$?



The reactions are not in any order of tendency to reduce. The following experimental data is found:

A^{2+} reacts with $C(s)$ but not with $B(s)$

Arrange the half-reactions in decreasing order of tendency to reduce (greatest tendency first).



Experimentally, it was found that: F^{2+} reacts with $D(s)$, $E(s)$ and $G(s)$

no reaction occurs between D^{2+} and any of the metals

G^{2+} only reacts with $D(s)$

Arrange the half-reactions in decreasing strength of oxidizing agents (greatest strength first).

14. Determine the oxidation number for the element underlined.

