共十題， 每題十分

1. Please explain the meaning of the following suffix:

   (a) - ous, for example: ferrous ion
   (b) - ite, for example: sulfite ion
   (c) - ic, for example: ferric ion

2. Sodium lithium hydroxide is used in space vehicles to remove exhaled carbon dioxide. The lithium hydroxide reacts with gaseous carbon dioxide to form solid lithium carbonate and liquid water. How many grams of carbon dioxide can be adsorbed by 10 grams of lithium hydroxide? (Li: 6.94, C: 12, O: 16, H:1)
3. The quantity of Cl^- in a water supply is determined by titrating the sample with Ag^+. What mass of chloride ion is present in a 20 ml sample of water if 0.100M $AgNO_3$ is required to react with all the chloride in the water sample.
4. Please describe the Bohr's model of hydrogen and explain what is the "principal quantum number".
5. The periodic table are grouped into "A" and "B". Please describe the distinction between IA and IB elements. You may take a IA element and a IB element as examples for comparison purpose.
6. On the basis of molecular orbital theory, please describe the energy level diagram for the Li_2 molecule.
7. Please describe the order of the melting points and boiling points of Benzene, Chlorobenzene, and Toluene. Please explain your answer.
8. Write balanced equations for (a) the formation of a metal alkoxide by reaction of aluminum with isopropyl alcohol, and (b) the reaction of the reaction product of (a) with water to form a sol of aluminum hydroxide.
9. Please define the Lewis acid and Lewis base by giving a suitable example as an illustration.
10. Provided that,

    $Fe_{(s)} \rightarrow Fe^{2+}_{(aq)} + 2e^-$, $\quad E^\circ_{ox} = 0.44V$

    $Sn_{(s)} \rightarrow Sn^{2+}_{(aq)} + 2e^-$, $\quad E^\circ_{ox} = 0.14V$

    When a piece of iron and tin are in contact with each other, what will you expect to observe after a long period of time. Explain you observation.