1. Lithium has two naturally occurring isotopes, ^6Li and ^7Li, with isotopic masses of 6.0151amu and 7.0160 amu respectively. The atomic mass of lithium is 6.9409 amu. What is percentage abundance of ^6Li?

   A. 92.5   C. 14.3

   B. 85.7   D. 7.5

2. Calculate the concentration by mass percentage (%w/w) of 14.9g of sodium chloride in 94.1g of water.

   A. 6.3%   C. 15.8%

   B. 13.7%   D. 86.3%

3. The composition of oxalic acid is 2.27 % H, 26.65 % carbon and 71.08 % oxygen. The molar mass of oxalic acid is 90 g/mol. What is its molecular formula?

   A. CHO   C. $C_2H_2O_4$

   B. $C_2H_4O_2$ D. CH_3O

4. Calculate the mole fraction of benzene (C_6H_6) in a solution of 46.8 g benzene and 36.8 g of toluene (C_7H_8)

   A. 0.4   C. 0.7

   B. 0.6   D. 0.5

5. Balance the following redox reaction in acidic solution.

   $ClO_4^-(aq) + SO_3^{2-} \longrightarrow SO_4^{2-}(aq) + Cl^-(aq)$

   The sum of coefficients is

   A. 5   C. 12

   B. 6   D. 10

6. A sulphuric acid solution contains 66.0% H_2SO_4 by weight and has a density of 1.58 g/mL. How many moles of the acid are present in 1.00 L of the solution?

   A. 10.64   C. 9.05

   C. 1.02   D. 0.67

7. A 25.0 mL potassium oxalate, $K_2C_2O_4$ solution is titrated with 50.0 mL of potassium permanganate, KMnO4 with concentration 0.42 M solution in acidic medium according to the following equation:

   $2MnO_4^- + 5C_2O_4^{2-} + 16H^+ \longrightarrow 2Mn^{2+} + 10CO_2 + 8 H_2O$
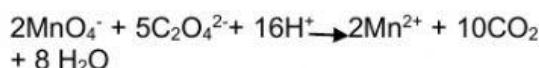
   Calculate the concentration of $K_2C_2O_4$ solution used in the titration

   A. 1.3 M   C. 2.1 M

   B. 1.6 M   D. 2.5 M

8. Calculate the mole fraction of $CuCl_2$ in a solution by dissolving 0.30 mol $CuCl_2$ in 100 g of water.

   A. 0. 50   C. 1.5

   B. 0.080   D. 0.051

9. How much energy would be released as an electron of a hydrogen atom moves from $n = 4$ to $n = 3$?

   A. 1.53×10^{-17} J

   B. 1.74×10^{-19} J

   C. 2.18×10^{-18} J

   D. 1.06×10^{-19} J

10. According to the Bohr model for hydrogen atom, the energy required to excite an electron from $n= 2$ to $n= 3$ is _____ the energy required to excite an electron from $n=1$ to $n= 2$.

    A. equal to

    B. less than

    C. greater than

    D. greater than or equal to

11. Select the velence electronic configuration that violates the Hund's Rule for an atom in its ground state.