可使用計算機

Atomic Weights: Na = 22.99, C = 12.01, N = 14.01, H = 1.008, O = 16.00, S = 32.06

A. Explain the following terms：(30%)
1. Hydrophobic
2. pI value
3. Free energy
4. Epimer
5. Conjugate Acids and Bases
6. Hydrogen bond
7. Ampholyte
8. Zwitterion
9. Anomer
10. Hydrolysis

B. Short Answer Questions：(70%)　10pts each
1. What is the pH of a solution containing 0.1M acetic acid (pK_a=4.7) and 1M sodium acetate ?
2. Calculate the molarity of a solution of 2.45 g of NaCN in 2.00 L of solution.
3. Balance the following equation. What is the _sum of the coefficients of the reactants_?

   $$C_6H_{10}O_5 + \_\_\_\_\ O_2 \rightarrow \_\_\_\_\ CO_2 + \_\_\_\_\ H_2O$$

4. Which of the following molecules is/are nonpolar ?
   (A)H_2O　(B) HCl　(C)C_2H_6　(D)NH_3　(E)CH_3COOH
5. Aspartame, an artificial sweetener, has the molecular formula $C_{14}H_{18}N_2O_5$. What is the weight percent of carbon?
6. Determine the number of moles of solute present in 255 mL of 1.25 M H_2SO_4.

7. A solution is prepared by dissolving 516.5 mg of oxalic acid ($C_2H_2O_4$) to make 100.0 mL of solution. A 10.00 mL portion is then diluted to 250.0 mL. What is the molarity of the final solution ?

試題完