

QUESTION 1

You are given the following pH values:

Solution 1: 9.2

Solution 2: 4.8

Solution 3: 12.7

Solution 4: 1.1

A) Which solutions are basic?

Solutions 1 & 3 – both have pH above 7.0

B) Which solution would have the highest concentration of H_3O^+ ions when dissolved in water?

Solution 4 because it has the lowest pH. The lower the pH, the stronger the acid and the more H_3O^+ ions are dissolved in water.

QUESTION 2:

You are given three compounds: NaCl, $\text{CH}_3\text{CH}_2\text{OH}$ (ethanol), and CaCl_2 . You are asked to measure out 14.7 g of each compound into three separate 500-mL flasks and add enough water to make 500-mL of solution. A chemist comes along and measures the conductivity of each of the solutions and find that both the NaCl and CaCl_2 solutions are highly conductive and the ethanol solution isn't conductive at all. Answer the following questions.

A) Using your knowledge of the compound structures, bond types, and conductivity results, which compounds are ionic and which are not?

Any compound formed between a metal and a nonmetal will be ionic. Both NaCl and CaCl_2 will be ionic and the ethanol solution will not be ionic.

B) Determine the percent concentration of the three solutions.

**In each case, we measure out 14.7 g/500 ml. Since 500 mL ~ 500 g (using water), the concentrations are:
 $14.7 \text{ g}/500 \text{ mL} \times 100\% = 2.9\%$**

C) What are the names of the two ionic compounds used in the experiment?

Sodium chloride and Calcium chloride.