

Prelab Questions--Experiment 3: Electrical Conductivity of Aqueous Solutions

Answer **three** (3) of the following questions, based on the last digit of your student ID number.
ID ending in: 0 or 1:a,b,&c 2 or 3:d,e,&f 4 or 5:g,h,&i 6 or 7:j,k,&m 8 or 9:n,o,&p

ID ending in 0 or 1

- (a). Write a complete ionic equation for the titration of aqueous NaOH with aqueous HCl.
- (b). Arrange the following 0.1 M aqueous solutions in order of increasing conductivity:
acetic acid and HCl: smaller conductivity _____ larger conductivity _____
- (c). The titrants for these experiments are _____ and _____.

ID ending in 2 or 3

- (d). Identify the following as strong or weak electrolytes in aqueous solution:
HCl _____ CH₃COOH (acetic acid) _____ NH₃ _____
- (e). Arrange the following 0.1 M aqueous solutions in order of increasing conductivity:
NH₄Cl and NH₃: smaller conductivity _____ larger conductivity _____
- (f). (True/False) The moles of titrant added is the variable plotted on the horizontal axes of the final plots.

ID ending in 4 or 5

- (g). Identify the following as strong or weak electrolytes in aqueous solution:
NaCl _____ NaOH _____ CH₃COONa (sodium acetate) _____
- (h). The molar conductivity of OH⁻ is much greater, equal to, less than the molar conductivity of CH₃COO⁻ (acetate ion). (select one answer)
- (i). The HCl or NaOH solutions are added in _____ mL increments to the starting solutions.

ID ending in 6 or 7

- (j). Identify the following as strong or weak electrolytes in aqueous solution:
NH₄Cl _____ HCl _____ CH₃COOH (acetic acid) _____
- (k). The molar conductivity of OH⁻ is much greater, equal to, less than the molar conductivity of Cl⁻. (select one answer)
- (m). (True/False) The conductivity of the Cl⁻ and Na⁺ ions from the titrant do not contribute to the conductivity of the solutions.

ID ending in 8 or 9

- (n). Write a complete ionic equation for the titration of aqueous NH₃ with aqueous HCl.
- (o). The molar conductivity of H⁺ is much greater, equal to, less than the molar conductivity of Na⁺. (select one answer)
- (p). (True/False) For a starting solution of NH₃ the titrant is a solution of NaOH.

* The student ID number is the 6-digit number on the front of your ID card at the right-hand side