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 _______ CH$_3$COOH (acetic acid) _______ NH$_3$ _______

(e). Arrange the following 0.1 M aqueous solutions in order of increasing conductivity:
   NH$_4$Cl and NH$_3$: 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 _______ CH$_3$COONa (sodium acetate) _______

(h). The molar conductivity of OH$^-$ is much greater, equal to, less than the molar conductivity of CH$_3$COO$^-$ (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:
   NH$_4$Cl _______ HCl _______ CH$_3$COOH (acetic acid) _______

(k). The molar conductivity of OH$^-$ is much greater, equal to, less than the molar conductivity of Cl$^-$. (select one answer)

(l). (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 NH$_3$ 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 NH$_3$ 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