Yr 11 CHEMISTRY

Electrical Conductivity of Acids

Name: _____

Part A – In class experiment

Acids are electrolytes that conduct an electric current when in aqueous solution. For acids electrolyte strength is also referred to as acid strength. Strong acids exist essentially as ions in aqueous solution. Weak acids are those in which only a small proportion of the molecules or ions react with water to form hydronium ions (H_3O^+).

In this experiment you will investigate the electrical conductivity of two acids of different strengths and concentrations.

You will be starting with a concentrated solution of HCl and CH_3COOH. You will need to create a method in which you test the conductivity of four different concentrations of each acid as well as distilled water. You will need to dilute the solutions accurately and precisely and include uncertainty in your calculations.

Equipment:

- Power supply — 6V
- Plate electrode system
- Switch
- Ammeter
- Electrical leads (four) 2 x BB ×20
- Beakers (two 100mL) 2 x AB ×20
- Volumetric flasks (four 100mL)
- Pipette (10mL and 20mL)
- Distilled water
- HCl solution (2 mol L^{-1}) → 0.1, 0.5, 1, 2 mol L^{-1} (300mL ×2)
- CH_3COOH solution (2 mol L^{-1}) → 0.1, 0.5, 1, 2 (300mL ×2)

Method:

1. Use the circuit and electrodes as shown in Figure 29.2 and 29.3 on page 68 of the Exploring Chemistry textbook

Results:

Create your results table here (make sure to include your uncertainty for each measurement).