Chemistry 20
Red Cabbage Lab

Name _____ Date _____ Score ____/ 32

Purpose of this lab

- To find the pH range for red cabbage
- To develop technique in testing mini-samples

Part 1: Extraction of acid-base indicator from Red Cabbage

1. Shred about 2 leaves of red cabbage and place them in a 250 – 400 mL beaker
2. Add enough water to cover the red cabbage
3. Simmer the mixture on a hot plate. (Remember that protective eyewear MUST be worn while you are heating any glassware)
4. When the red dye has released itself, remove the beaker from the hot plate and let the solution cool. (The leaves can be discarded)

Part 2: Prepare buffer solutions.

1. Dissolve the capsule you are given in 50 mL of distilled water.
2. Transfer and rinse into a 100 mL volumetric flask
3. Fill the flask to the 100 mL line.
4. Pour the solution out into a clean beaker.
5. Label your beaker with the appropriate pH. _____

Part 3: Testing with red cabbage indicator

1. Use a spot plate and put samples of known pH in each divot
   a. Put them in order from low pH to high. Be careful not to overfill the holes because then you may have contamination from one spot to the other.
2. Add three drops of the red cabbage indicator to each known pH sample.
3. Make an observation table for your observations. (2 marks)

Part 4

Now use the red Cabbage indicator to identify the pH of three unknown substances. Make a table of values to support your conclusions. (6 marks)

Analysis

1. Develop a pH scale for this indicator. Use the pH scale for thymol blue indicator as a guideline. Remember that ranges normally show changes between primary colour. (4 marks)

2. For each of the following solutions, find the pH, and the expected color in HOr, HBg, HPh and red cabbage. Put this information into a table. Be sure to write the dissociation reaction for each substance
   Be very careful of your significant digits!! (2 marks each)

   a) 0.0000040 mol/L nitric acid
   b) 0.00237 mol/L barium hydroxide solution
   c) 0.0025 mol/L lithium hydroxide solution
   d) 0.00081 mol/L hydrochloric acid
   e) 0.000074 mol/L perchloric acid
   f) 0.000093 mol/L strontium hydroxide solution
   g) 0.35 mol/L hydroiodic acid acid
   h) 0.0014 mol/L hydrobromic acid
   i) 0.174 mol/L ammonium hydroxide solution
   j) 0.00000027 mol/L calcium hydroxide solution