

Follow instructions carefully. Final answers MUST appear in spaces provided. In answers, use correct UNITS and SIGNIFICANT DIGITS. Errors in these areas can reduce your grade as much as ten points

TASK I. SPECTROSCOPE

|  | pts | Actual value | Delta | Score |
|--|-----|--------------|-------|-------|
| 1. Observe the spectrum of _____. The <b>scale reading</b> of the line closest (above or below) to 4,000 5,000 6,000 7,000 is _____.     | 5   | .....        | ..... | ..... |
| 2. ON BACK, calculate the wavelength (nm) of this line using the information on the calibration curve provided. The wavelength is _____. | 10  | .....        | ..... | ..... |

TASK II. THIN LAYER CHROMATOGRAPHY

|   |   |       |       |       |
|---|---|-------|-------|-------|
| 1. For chromatogram # ____, the number of components in the mixture is _____.         | 3 | ..... | ..... | ..... |
| 2. For calculating R <sub>f</sub> values, the distance to the solvent front is _____. | 3 | ..... | ..... | ..... |
| 3. The R <sub>f</sub> of the _____ component is _____.                                | 4 | ..... | ..... | ..... |

TASK III. CONDUCTIVITY

|   |   |       |       |       |
|---|---|-------|-------|-------|
| 1. The conductivity of solution _____ is _____.                                   | 5 | ..... | ..... | ..... |
| 2. Dilute solution to reduce its concentration by 1/2. Conductivity now is _____. | 5 | ..... | ..... | ..... |
| 3. Is this solution a strong electrolyte? (Y/N) _____                             | 5 | ..... | ..... | ..... |

TASK IV. ELECTRONIC BALANCE & BURET

|  |   |       |       |       |
|--|---|-------|-------|-------|
| 1. The weight of empty vial (& cap) # _____ is _____.  | 5 | ..... | ..... | ..... |
| 2. Fill the buret with water. Take a precise initial reading. Deliver 8-10 mL from the buret into the vial. Take a precise final reading. Reweigh capped vial.<br>Buret - Final Reading is _____.<br>Buret - Initial Reading is _____.<br>Volume Delivered is _____. |   |       |       |       |
| 3. The weight of the filled vial (& cap) is _____.   | 5 | ..... | ..... | ..... |
| 4. The weight of the water alone is _____.   | 5 | ..... | ..... | ..... |
| 5. The density of the water (calculated from data) is _____.   | 5 | ..... | ..... | ..... |
| 5. <b>Give the filled, capped vial to your instructor.</b>   |   |       |       |       |

TASK V. VISIBLE SPECTRA

|  |   |       |       |       |
|--|---|-------|-------|-------|
| 1. Examine absorption spectra A, B, C, and D, and also the color spectrum. |   | ..... | ..... | ..... |
| 2. The spectrum of solution # _____ is (circle one) A B C D                | 5 | ..... | ..... | ..... |
| 3. Explain <b>briefly</b> how you decided which spectrum to choose.        | 5 | ..... | ..... | ..... |

TASK VI. LEWIS STRUCTURE Building a model with the kit can help you.

|   |   |       |       |       |
|---|---|-------|-------|-------|
| 1. On the back of this sheet, draw the Lewis Structure of _____. Include any non-zero formal charges on the appropriate atoms.  | 5 | ..... | ..... | ..... |
| 2. Does a molecule with this Lewis structure have a dipole moment? (Y/N) _____  | 3 | ..... | ..... | ..... |
| 3. Does it have resonance structures? (Y/N) _____   | 3 | ..... | ..... | ..... |
| <b>If so, add them to your drawing on back.</b>   |   |       |       |       |
| 4. The <b>molecular</b> geometry of this molecule or ion is _____.  | 4 | ..... | ..... | ..... |
| 5. Go to the computer and use Spartan to build an energy-minimized model of this structure. Save the model, using your last name as the file name. Save the file into the desktop folder named for your instructor. | 5 | ..... | ..... | ..... |

**CAUTION: CHECK ALL ANSWERS FOR PROPER UNITS AND SIGNIFICANT DIGITS!!!**

Units and significant figures: 10 .....  
Score (points out of 100 possible): \_\_\_\_\_