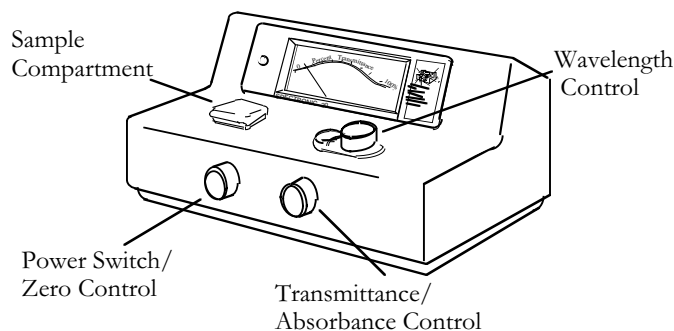## Appendix #3 Spectrometer, Spectronic-20

Operating the Spectronic-20
1. If the device is not on, plug it in and rotate the *Power Switch/Zero Control knob* clockwise so that the red light glows. Allow a 15-minute warm-up.

2. Set the wavelength to desired wavelength, (this will be given in the experiment), using the *Wavelength Control* knob.
Note: Below 350 nm and above 700 nm the glass itself absorbs.

3. First compensate the "dark current" of the cell, i.e., the current produced in total darkness. To do this, leave the sample compartment empty and the lid closed. (If the sample compartment is empty, the photoelectric cell is automatically closed from the light source.) Adjust the *Zero Control* knob until the needle is directly over % T. The needle should also cover its own reflection in the mirror of the scale.

4. Next you want to compensate the light absorption of your solvent at the preset wavelength. (Even the clearest looking solvent absorbs some light at any wavelength.) Insert a tube with blank solution (water) into the sample compartment so that the vertical frosted line on the top of the cuvette is aligned with the raised plastic mark on the sample compartment. Close the lid. (The tube automatically opens the window through which the light gets to the photoelectric cell.)
Note: The B&L tubes, called cuvettes or cells have an accurately known path length of 1.00 cm. If you substitute an ordinary test tube, you must measure its diameter.
CAUTION: Make sure the tube is free of droplets, dust, fingerprints, or bubbles attached to the tube wall, all of which would scatter light thus increasing apparent absorbance.

5. Adjust the *Transmittance/Absorbance Control* knob to 100% T. The needle should cover its own reflection.
Note: The meter has two different scales: absorbance (A) and percent transmittance (%T). It is easier to read % transmittance rather than absorbance, so we record the %T values and convert them to A using the expression: $A = \log (100\% / \% T)$