

**Part 1. Distillation and GC.**

- (a) Completed data sheet (p. 28 from Lab Manual: Experiment #2).
- (b) Graphs of temperature (Y axis) vs. volume collected for both simple and fractional distillations, drawn on lab notebook pages. For each, you should reference the lab notebook page number (e.g., Smith Lab Notebook, p. 13) where the original data (experimental observations during the lab) are found.
- (c) Attach a copy of the referenced notebook pages of your lab partner.
- (d) Attach all of the gas chromatograms (including copies of those obtained by your lab partner)
- (e) Discussion: *No more than one page, handwritten, using your lab notebook.* Compare the efficiency of separation by simple and fractional distillation techniques based on percent recovery and purity. Be sure to clearly explain how and why you reached these conclusions. Explain when you might use each technique.

**Part 2. Chromatography**

- (a) Completed data sheet (p. 29 from Lab Manual: Experiment #2).
- (b) Discussion: *No more than one page, handwritten, using your lab notebook.* For Part A, identify the components of the commercial food dyes by comparison of their  $R_f$  values with those of the F, D, & C dyes. For Part B, note the order in which the compounds came off the column, and identify the components of the mixture. Discuss the relationship between polarity and  $R_f$  value as it applies to your results. Be sure to clearly explain how and why you reached these conclusions.

**Part 3. Extraction.**

- (a) Completed data sheet (p. 30 from Lab Manual: Experiment #2).
- (b) Spectra. Attach IR spectra for each component. Label the peaks with the functional group of the compound. Only label those which are diagnostic (normally this will be 2-3 peaks).
- (c) Discussion: *No more than one page, handwritten, using your lab notebook.* Make a statement as to how well the separation and recrystallization worked based on (i) percent recovery of the three components, and (ii) melting points of the three components, and (iii) IR spectra of *p*-toluic acid and *p*-*tert*-butylphenol.

**Submission Instructions**

- Compile all pages *in the order shown above*, and staple. If the pages are out of order there will be a 3-point deduction (20% of the total score).
- Do not include the prelab or experimental observation notebook pages which were previously collected in the lab. Those will be attached by the TA after you submit your report.
- Submit your report to your TA.