Grading Rubric for n-butyl bromide synthesis Lab Report

***SN2 mechanism of reaction of n-butanol with Br - to form n-butyl bromide***

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| **Section** | **Description** | **Score** | **Section**  **Total** |
| **Theory** | step 0 Protonation of alcohol   * protonation is equilibrium * shifts right with reflux, H+ * H+ is from H2SO4 which forms HBr * H+ consumed and is formally from HBr   ….protonated alcohol is what `attracts’ Br- | \_\_\_\_\_/2  \_\_\_\_\_/3  \_\_\_\_\_/3  \_\_\_\_\_/3 | \_\_\_\_\_/11 |
| step 1 formation of 5-coordinate complex and ejection of H2O   * which is nucleophile ? (Br-) and why ? * explain notion of rate limiting * bimolecularity (why SN2) * electron motion (curved arrow pix with lone pairs)   + - * 5-coordinate activation state pix & description (inversion       * 5 coordination is non-lewis and accounts for high barrier * leaving group and role of solvent   + - * rearrangements ? (none…why not ?) | \_\_\_\_\_/2  \_\_\_\_\_/3  \_\_\_\_\_/4  \_\_\_\_\_/4  \_\_\_\_\_/3  \_\_\_\_\_/3  \_\_\_\_\_/3  \_\_\_\_\_/3 | \_\_\_\_\_/25 |
| text and diagrams are closely linked/ diagrams well-labeled | \_\_\_\_\_/4 | \_\_\_\_\_/4 |
| **Workmanship** | neatness, English (grammar, spelling, tense…) aptness of phrasing and description, evidence of effort | \_\_\_\_\_/5 | \_\_\_\_\_/5 |
| **Total** |  |  | \_\_\_\_\_/45 |