Name: Section:

|  |  |  |
| --- | --- | --- |
| EXP E8(206)7 October 2024 | Data  | mark |
| *Quantities used or found:* | Mass or vol (g or mL) | MW(g.mol-1) | # moles |   |
| synthesis  | cobalt sulfate heptahydrateCoSO4⋅7H2O |  | 281.09 |  |  |
| hydrogen peroxide30 wt % H2O2(density = 1.1 g.mL-1) |  | 34.01 |  |
| barium chloride dihydrateBaCl2.2H2O |  | 244.26 |  |
| potassium tartrate K2C4O6H4 (check which hydrate you used) |  | 226.28 (anhydrous)235.28(hemihydrate)244.28(monohydrate) |  |
| ethylenediamineC2H8N2(density = 0.899 g.ml-1) |  | 60.12 |  |
| sodium iodideNaI |  | 149.89 |  |
| (+)[Co(en)3]I3⋅H2O |  |  |  |
| observations |  |  |
| *Balanced equations for:* |  |  |
| synthesis of racemic Co(III) complex |  | /1 |
| synthesis of the resolving agent |  | /1 |
| preparation of the diastereomers |  | /1 |
| conversion of the diastereomers to final product |  | /1 |
| opticalmeasurement | student(circle your letter) | A | B | C | D | E |  |
| αmeasured |  |  |  |  |  |  |
| mass solid (g) dissolved in 25 mL |  |  |  |  |  |  |

|  |  |  |
| --- | --- | --- |
|  | Calculations  | mark |
| % Yields of final product for the group:(show calculation for your value) | Your calc: | /2 |
| Your % yield:  | Group members’ % yields: | Average: | /1 |
| [αD] for group(show calc for your value)**ATTACH GRAPH** | Your calc: | /1 |
| Your value: | [αD] for group from the graph: | /2 |
| Optical purity or enantiomeric excess(show calc for your value)[αD] for pure (+)[Co(en)3]I3⋅H2O is 89o | Your calc: | /1 |

|  |  |  |
| --- | --- | --- |
|  | Your value:The ee found using the group’s value of [αD] :  | /1 |
| Comment on the relationship between your yield and your optical purity.  |  | /2 |
| Comment on the validity of the values of the enantiomeric excesses calculated. Discuss the assumptions that have been made. |  | /1 |
| total | out of a max 15 |  |