Name: Section:

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| --- | --- | --- | --- | --- | --- | --- | --- |
| 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 heptahydrate  CoSO4⋅7H2O |  | 281.09 |  | | |  |
| hydrogen peroxide  30 wt % H2O2  (density = 1.1 g.mL-1) |  | 34.01 |  | | |
| barium chloride dihydrate  BaCl2.2H2O |  | 244.26 |  | | |
| potassium tartrate K2C4O6H4  (check which hydrate you used) |  | 226.28 (anhydrous)  235.28  (hemihydrate)  244.28  (monohydrate) |  | | |
| ethylenediamine  C2H8N2  (density = 0.899 g.ml-1) |  | 60.12 |  | | |
| sodium iodide  NaI |  | 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 |
| optical  measurement | 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 |  |