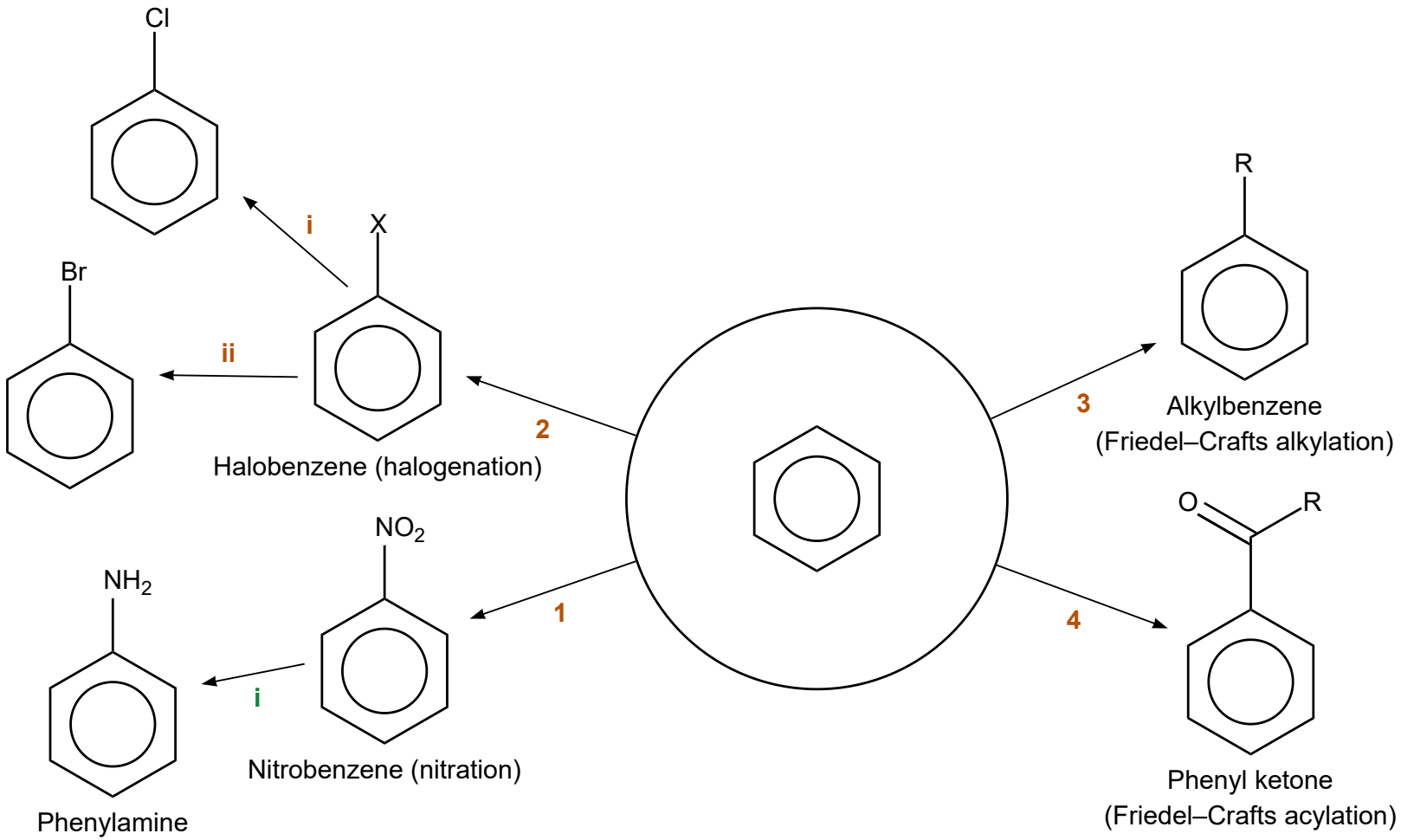
Benzene Map

OCR A Level Chemistry A · 6.1.1 Aromatic compounds



1 substitution (electrophilic): conc. HNO_3 and conc. H_2SO_4, about 50 °C
i reduction: Sn and conc. HCl, then NaOH(aq), heat under reflux

2 substitution (electrophilic): room temperature
i Cl_2, $AlCl_3$ (or $FeCl_3$, Fe) → chlorobenzene
ii Br_2, $FeBr_3$ (or $AlBr_3$, Fe) → bromobenzene

3 substitution (electrophilic): haloalkane, R–Cl, halogen carrier ($AlCl_3$), anhydrous

4 substitution (electrophilic): acyl chloride, RCOCl, halogen carrier ($AlCl_3$), anhydrous

Benzene resists bromination without a halogen carrier: the delocalised π-system has lower electron density than an alkene π-bond.
Directing effects: –OH and $–NH_2$ direct to 2- and 4-; $–NO_2$ directs to 3-.

substitution reduction

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