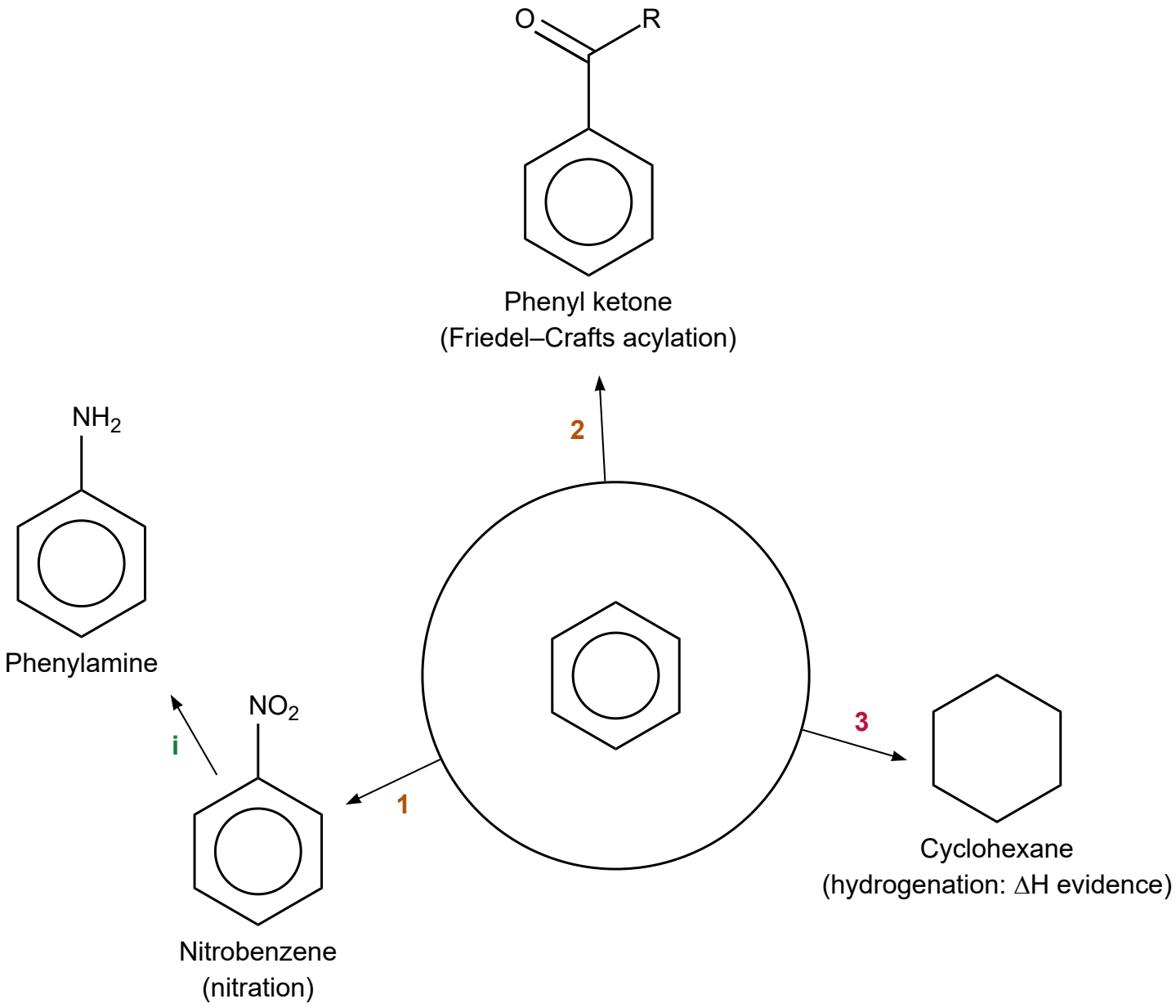
Benzene Map

AQA A Level Chemistry · 3.3.10 Aromatic chemistry



1 substitution (electrophilic): conc. HNO_3 and conc. H_2SO_4, about 50 °C (NO_2^+ electrophile)
i reduction: Sn and conc. HCl, then NaOH(aq), heat under reflux

2 substitution (electrophilic): acyl chloride, RCOCl, $AlCl_3$ catalyst, anhydrous, heat under reflux

3 addition: H_2, Ni catalyst, heat

ΔH hydrogenation of benzene (–208 kJ mol^{-1}) is less exothermic than 3 × cyclohexene (–360): delocalisation stabilises benzene. Substitution keeps the delocalised ring; addition would destroy it.

substitution addition reduction

Online Learning System · onlinelearningsystem.net · © 2026 Online Learning System. All rights reserved. Not for redistribution.