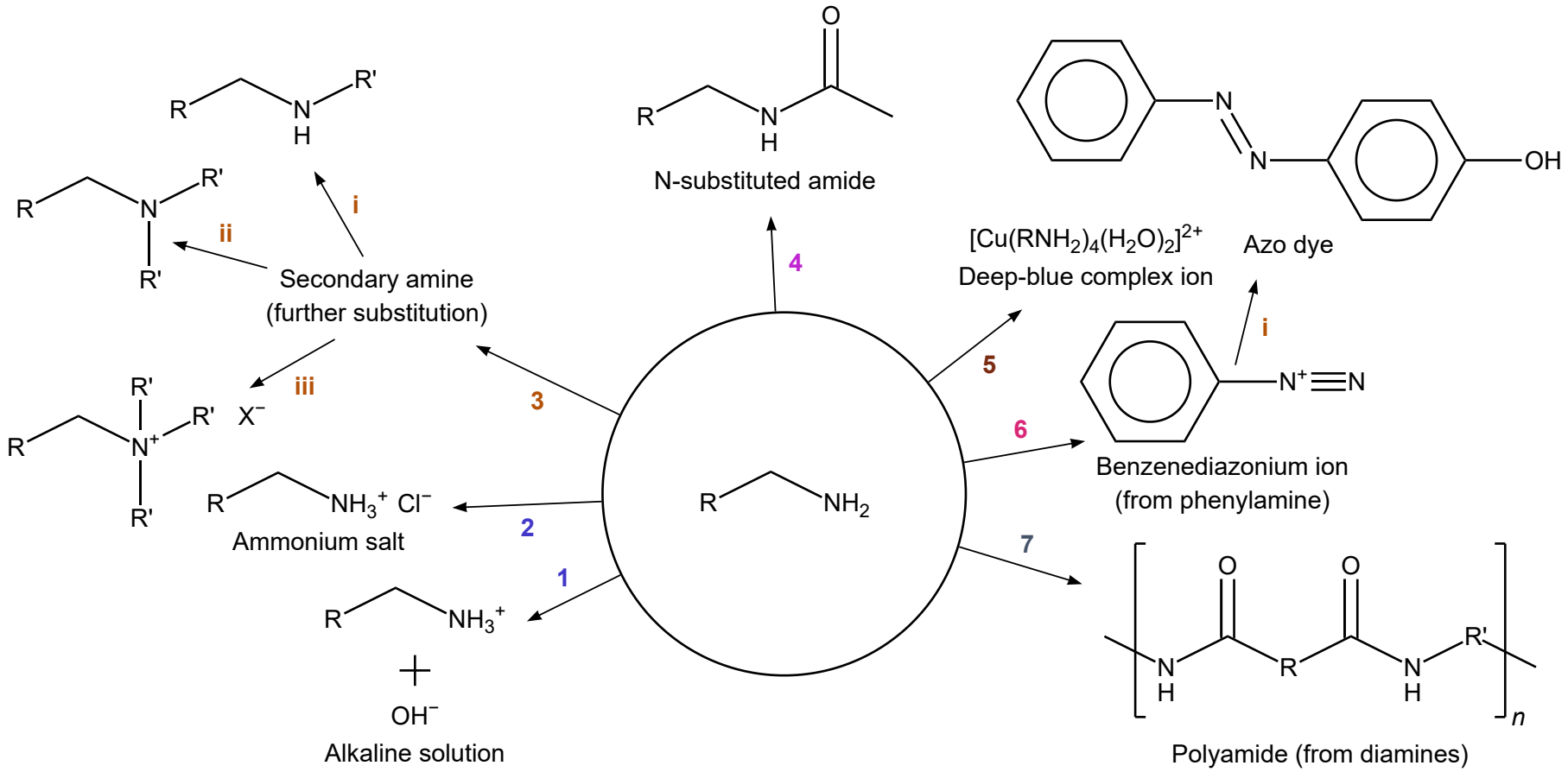
Amines Map

Edexcel International A Level Chemistry · Unit 5 · Topic 19



1 acid-base: water, room temperature

2 acid-base: HCl(aq), room temperature

3 substitution: halogenoalkane, R'X, heat in ethanol
i R'X → secondary amine
ii more R'X → tertiary amine
iii excess R'X → quaternary ammonium salt

4 addition-elimination: ethanoyl chloride, CH_3COCl, room temperature

5 complex formation: $Cu^{2+}(aq)$, room temperature

6 diazotisation: HNO_2 ($NaNO_2$ + HCl), below 10 °C
i substitution (coupling): phenol in NaOH(aq), below 10 °C

7 polymerisation (condensation): dicarboxylic acid or dioyl chloride (e.g. nylon)

Base strength: butylamine > ammonia > phenylamine (lone pair availability).
Made from halogenoalkanes (excess ethanolic NH_3, under pressure), nitriles ($LiAlH_4$ in dry ether, then water; or H_2/Ni, heat and pressure) or nitrobenzene (Sn + conc. HCl).

acid-base · substitution · addition-elimination · complex formation · diazotisation · polymerisation

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