Chemistry Mechanism Study Template

Reaction

Write the full reaction or process name

Reaction:

Steps | Mechanism

Steps

Break into clear, logical steps.

Identify:

- Bond breaking/ forming & intermediates
- Rate-determining steps

Mechanism

- Draw structures & intermediates
- Show electron movement (curly arrows)
- Include charges & lone pairs
- Show bond breaking/forming

Catalysts

Catalysts

State reaction conditions:

- Catalysts
- Temperature
- Pressure
- Reagents/Solvents

Notes

Notes

Important concepts:

- Reaction type (e.g., addition)
- Rules (e.g., Markovnikov's rule)
- Stability (e.g., carbocations)

Key definitions:

- Electrophile/Nucleophile etc.

Identify:

- Slow vs. fast steps
- Common patterns or trends

Summary

Summary

Write 2–3 sentences explaining the reaction:

- What happens overall
- Why it proceeds that way
- Key idea linking everything together

CRICOS 00103D | RTO 4909 | TEQSA PRV12151 (Aust)

Reaction: Addition of hydrogen halides

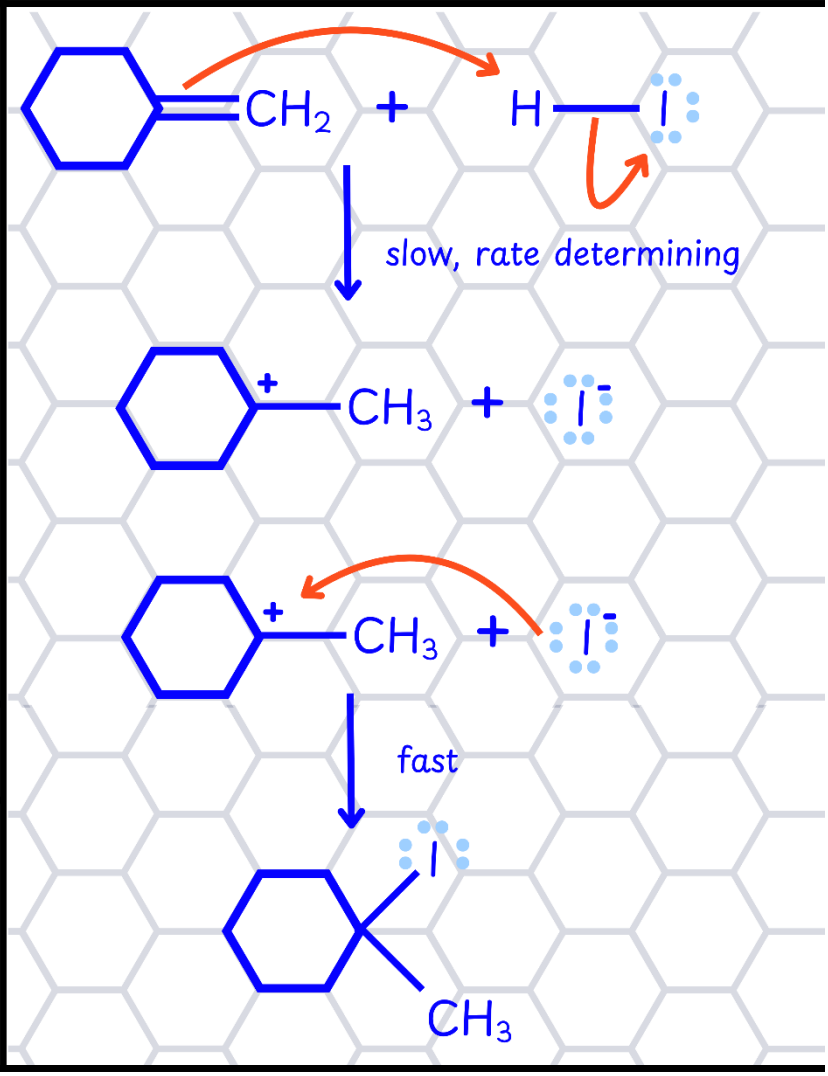
Steps

- π bond attacks H^+ (from HI); H–I breaks → I^- forms
- H^+ adds to less substituted C → 3° carbocation forms (slow, RDS)
- I^- attacks carbocation (fast)
- Forms 1-iodo-1-methylcyclohexane

Catalysts

- HI = reagent
- No catalyst required
- Typical conditions for electrophilic addition

Mechanism



- Markovnikov's rule: H → less substituted C, I → more substituted C
- Forms 3° carbocation (most stable)
- Rate-determining step = carbocation formation (slow)
- Carbocation = Lewis acid (electron pair acceptor)
- I^- = Lewis base (electron pair donor)

HI adds across the C=C via electrophilic addition.
A stable 3° carbocation (Lewis acid) forms first (slow), then I^- (Lewis base) rapidly attacks to form the Markovnikov product.

Maths & Science Skills
CRICOS 00103D | RTO 4909 | TEQSA PRV12151 (Aust)
Federation University