Catalysts in Industrial Reactions

A12.4.1–A12.4.2

Name: _____ Date: _____

1. Recall

1.1 Define a catalyst. 1.2 Define Ea. 1.3 What happens to ΔH when a catalyst is added?

2. Industrial chain

Write the chain from catalyst to reduced costs. Then state one cost that may still remain.

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3. Calculations

3.1 Stage time 8.0 h → 3.0 h. Calculate the time saved and the percentage time saved.

3.2 10 h → 4 h. State the time reduction.

3.3 Process X: 12 → 18 batches/week; £900 → £700 per batch. State both changes.

4. Profile

Complete: uncatalysed vs catalysed for Ea, reactant H, product H, ΔH, expected rate.

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5. Molecular link

At the same T, why does a lower barrier increase rate? What must you not say?

6. Errors

Correct: catalyst gives particles more KE; catalyst changes ΔH; catalyst is used up; faster means zero cost.

7. Examination-style

(a) Industrial advantage [3]. (b) How catalyst increases rate via Ea [3]. (c) 10 h → 4 h [1]. (d) Why ΔH unchanged [2].

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8. Extended

A plant manager says ‘the catalyst makes the whole factory cheaper’. Write a balanced response using the lesson chain and remaining costs.

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Source note

From A12.4 markdown extracts. Original PDF binaries were not supplied.