

Catalysts, Activation Energy, and Process Tradeoffs

g11_u03_w12

Original fictional paper data only. No chemical activity or process-operation instruction is requested. Catalysts change pathways/rates, not equilibrium position under the same conditions.

1. Define activation energy.

2. Define catalyst.

3. State catalyst effect on pathway.

4. State catalyst effect on forward rate.

5. State catalyst effect on reverse rate.

6. State catalyst effect on equilibrium position.

7. Explain why.

8. Compare barriers 80 and 55 kJ/mol.

9. State a rate-model boundary.

10. Interpret a supplied energy diagram.

11. Distinguish thermodynamics and kinetics.

12. Explain why faster is not higher yield.

13. Explain why lower barrier is not mechanism proof.

14. List a tradeoff in a fictional design card.

15. State one missing cost/safety datum.

16. Compare two fictional rate values.

17. State an uncertainty boundary.

18. Explain why scale-up is out of scope.

19. Identify an evidence-based next question.

20. Write bounded conclusion.
