

3 Enzymes — Part 2 — Answers

Answers

Work through these after trying the questions yourself.

3.1 The molecules gain more kinetic energy and collide more often (with enough energy), so more enzyme–substrate complexes form per second.

3.2 The enzyme’s shape (and active site) is permanently changed, so the substrate no longer fits and it stops working.

3.3 To keep the pH constant, so only temperature is changed (a fair test).

3.4 At high substrate concentration every active site is already busy (saturated), so adding more substrate cannot increase the rate.

3.5 The substrate concentration that gives half of the maximum rate ($V_{\max}$).

3.6 (a) in the active site \ (b) at a different site (away from the active site).

3.7 A competitive inhibitor binds *in* the active site, competing with the substrate — so adding more substrate makes it more likely the substrate binds instead, reversing the effect. A non-competitive inhibitor binds *elsewhere* and changes the active-site shape, so extra substrate cannot restore the fit and the effect is not reversed.