Enzymes Practice

Choose one answer per question. Circle A, B, C, or D.

1. A diagram shows an enzyme binding the starting molecule M before converting it to N. What is M called in this diagram?
   A. The substrate
   B. The product
   C. The active site
   D. The catalyst

2. Which part of an enzyme is the site where the substrate binds and the reaction takes place?
   A. The entire cell membrane
   B. Its product
   C. Its active site
   D. The substrate itself

3. On a classroom energy diagram, which quantity is the gap from the starting energy level to the top of the hill?
   A. The total mass of the product
   B. Activation energy
   C. The number of substrate molecules
   D. The amount of enzyme used up

4. An enzyme releases a product after completing one reaction. What usually happens to that enzyme molecule in this model?
   A. It must permanently stop binding substrates.
   B. It becomes the product it just released.
   C. It is counted as an extra product.
   D. It can act on another substrate.

5. Why might two starting molecules of the same size differ in how well they fit an enzyme’s active site?
   A. Every molecule of that size must fit equally well.
   B. The site depends on chemical properties and shape as well as size.
   C. Only the molecule’s starting color determines if it fits.
   D. An enzyme recognizes all molecules before releasing any product.

6. A figure shows an active site making a small shape adjustment as a substrate binds. Which idea does this illustrate?

A. Induced fit
B. A permanently rigid fit
C. Enzyme consumption
D. The product setting the substrate’s mass

7. Two paths on a fictional energy diagram start at 20 energy units. The taller peak is 70 and the shorter is 45. How much lower is the shorter path’s activation barrier?

A. 50 energy units
B. 20 energy units
C. 45 energy units
D. 25 energy units

8. In a short fictional chart interval, the amount of product rises by 18 units in 3 minutes. What is the average rate over the interval?

A. 21 units per minute
B. 15 units per minute
C. 6 units per minute
D. 54 units per minute

9. In a classroom diagram, the first enzyme helps change A to B. The second helps change B to C. What is B’s role?

A. Product of the first step and substrate for the second
B. Substrate for the first step and product of the second
C. The same enzyme for both steps
D. A substance outside both steps

10. A fictional chart keeps enzyme amount fixed. As the amount of substrate rises, the rate first rises and then levels off. What can explain that pattern?

A. At the plateau the substrate and product must have the same energy.
B. At the plateau the reaction has to produce new enzyme molecules.
C. At the plateau the active sites have never bound substrate.
D. At the plateau the available enzyme molecules are mostly occupied.

11. An enzyme lowers the peak in a fictional reaction from 85 to 55 energy units. Both paths begin at 25 and end at 10. Which values changed?

A. The activation barrier stayed the same, and the end moved 30 lower.
B. The activation barrier fell by 15, and the end is still 30 below the start.
C. The activation barrier fell by 30, and the end is still 15 below the start.
D. The activation barrier rose by 30, and the end moved above the start.

12. A fictional record shows product totals of 4, 16, and 22 at minutes 0, 2, and 4. Which statement compares the average rates in the two intervals?

A. The first interval averages 3 units per minute and the second 6.
B. The first interval averages 6 units per minute and the second 3.
C. Both intervals average 6 units per minute.
D. The first interval averages 8 units per minute and the second 11.

13. In a simplified pathway chart, an early step makes five units of B per minute. The next removes two units of B per minute, and these are the only changes to B. What happens after four minutes at those rates?

A. The amount of B stays the same.
B. The amount of B increases by 20 units.
C. The amount of B decreases by 8 units.
D. The amount of B increases by 12 units.

14. Two model enzymes both level off at 12 product units per minute. The graph shows complete agreement only on that plateau. What can you infer from the plateau alone?

A. Their maximum plotted rates match. Their rates at lower substrate amounts could differ.
B. Their rates must match at every substrate amount.
C. One enzyme must be using a different starting molecule.
D. The two model enzymes must have identical active sites.

15. Two fictional diagrams show the same reversible reaction at the same temperature. One has a catalyst. What difference would you expect if both begin with the same amounts?

A. The catalyst changes the final equilibrium constant.
B. The catalyst makes the final mixture contain only product.
C. The catalyst can reach the same equilibrium mixture sooner.
D. The catalyst stops the reverse reaction at equilibrium.