Chapter 8: Wrapping up Metabolism

Name:

Consider the diagram of the reaction on the right and answer the questions that follow below.

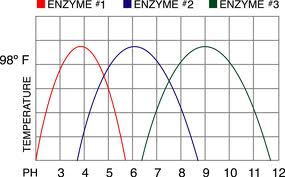
1. Which letter represents the Ea, activation energy, of the overall backward reaction?
   1. A.
   2. B.
   3. C.
   4. D.
   5. E
2. Which letter represents the Ea of the catalyzed reaction?
   1. A
   2. B
   3. C
   4. D
   5. E
3. Which letter represents the ΔG of the reaction?
   1. A
   2. B
   3. C
   4. D
   5. E
4. Which letter represents the energy barrier needed to be overcomed in absence of a catalyst?
   1. A
   2. B
   3. C
   4. D
   5. E
5. What are the corresponding signs for the above reaction?
   1. +ΔG, +ΔH, -ΔS
   2. –ΔG, +ΔH, +ΔS
   3. +ΔG, -ΔH, +ΔS
   4. –ΔG, -ΔH, +ΔS
   5. Need for information

True/False

1. The ΔG of the reaction is affected by the use of an enzyme. (false)
2. The top reaction is most likely associated with a catabolic pathway. (true)
3. The above reaction is endothermic. (false)
4. The reaction’s ΔG is spontaneous and endergonic. (false)
5. The activation energy of the backward, catalyzed reaction is B, from the graph. (false)
6. The ΔG of the reaction at equilibrium will be 0. (true)
7. At equilibrium the work done by the reaction is constant at every given time. (False)

Short answer:

1. Define allosteric regulation. How does allosteric regulation and enzyme inhibition differ? How are they similar?
2. What is a coenzyme vs a cofactor? List 1 or 2 examples of each.



1. What are the optimal pH for enzymes 1, 2, & 3 all held

At constant pressure and temperature. Which of the enzymes

Will work optimally at a pH of 5.5?