

4. Draw a graph of how enzymes can speed up energy. Make the Y-axis energy content and X-axis the reaction proceeding. Label the energy of activation.

5. Draw out the three steps of enzyme function. Show how it binds a substrate, allows the reaction to occur, and releases the product.

6. Explain the difference between a cofactor and coenzyme.

7. Write out the formula for aerobic respiration

8. What are the four phases of aerobic respiration? Put them in order and list two events of each phase (for example, what products are made)

9. Each DNA strand below is single stranded and represented by the base letters. Write out the complementary DNA strand for each.

ATCCCGCAATC

TCACTTTAAAC

CGACGGAATTA

10. Draw a picture of DNA replication. Start with a double-stranded line, then put in three replication bubbles (label each *replication fork*), then finally draw the two daughter DNA molecules.

11. What are the three types of RNA molecules made in transcription?

12. Use the genetic code in your book (Table 4.2) or in the powerpoint presentation to decode the following RNA molecules into protein. Write out the amino acids in the correct order.

AUGGGCAGGGCU

CAUUUUGACCCACUG

UCCCUAGGGCUUCUU

13. Transcribe the following DNA molecule into RNA (don't forget to use "U" for RNA instead of "T")

CTACCCGCTTATCGATCAC

14. Draw out the complete translation machinery! Include the ribosome, tRNA, mRNA, and amino acids. Do your best to show how each amino acid gets added on the growing protein chain.

Multiple Choice

1. What is the name of the reaction type that breaks apart a molecule and consumes water?
 - a. Anabolism
 - b. Dehydration synthesis
 - c. Endergonic
 - d. Exergonic
 - e. Hydrolysis

2. The part of the enzyme that the substrate binds to is called:
 - a. Active site
 - b. Coenzyme
 - c. Cofactor
 - d. Mineral
 - e. Product site

3. What stage of cellular respiration begins with glucose?
 - a. Acetyl-coA Formation
 - b. Citric Acid Cycle
 - c. Electron Transport
 - d. Glycolysis

4. What stage of cellular respiration uses oxygen?
 - a. Acetyl-coA Formation
 - b. Citric Acid Cycle
 - c. Electron Transport
 - d. Glycolysis

5. What kind of bond holds together the two strands of DNA?
 - a. Cohesive
 - b. Covalent
 - c. Hydrogen
 - d. Ionic
 - e. Reactionary

6. What letter is not a base of RNA?
 - a. A
 - b. C
 - c. G
 - d. T
 - e. U

7. A codon is made up of how many consecutive RNA bases?
 - a. 1
 - b. 2
 - c. 3
 - d. 4
 - e. 5

8. What part of the translation machinery brings in new amino acids to be attached to the growing protein?
 - a. DNA polymerase
 - b. Ribosome
 - c. mRNA
 - d. rRNA
 - e. tRNA

9. What is the name of the enzyme that carries on transcription?
 - a. DNA polymerase
 - b. Hydrogenase
 - c. Nucleus
 - d. RNA polymerase
 - e. Ribosome