

Name _____

Ch.6 Quiz

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

- 1) The most common energy carrier molecule of living organisms is 1) _____
A) ATP.
B) DNA.
C) glucose.
D) inorganic phosphate.
E) NADPH.
- 2) What is the *ultimate* source of energy for most forms of life on Earth? 2) _____
A) solar energy
B) heat energy
C) nuclear energy
D) thermal energy
E) chemical energy
- 3) An _____ chemical reaction releases energy while an _____ reactions requires an input of energy. 3) _____
A) exergonic; endergonic
B) endergonic; enzymatic
C) endergonic; exergonic
D) enzymatic; endergonic
E) equilibrium; exergonic
- 4) Energy that is not converted to useful energy is usually given off as 4) _____
A) heat.
B) electricity.
C) radioactivity.
D) entropy.
E) light.
- 5) In an isolated system, all the following are true of the SECOND law of thermodynamics EXCEPT 5) _____
A) all chemical reactions are exergonic.
B) there is a natural tendency toward greater disorder of the organization of matter.
C) useful energy decreases.
D) spontaneous changes result in a more uniform distribution of energy.
E) All are true of the second law.
- 6) Place the steps of enzyme catalysis in the correct order. 6) _____
1. Substrate and enzyme change shape
2. Substrate enters the active site
3. Enzyme reverts to original configuration
4. Product is expelled
A) 1, 3, 4, 2 B) 2, 3, 1, 4 C) 1, 2, 3, 4 D) 2, 1, 4, 3 E) 2, 1, 3, 4

- 7) Which of the following functions as a biological catalyst? 7) _____
A) steroids
B) energy carrier molecule
C) enzyme
D) substrate
E) amino acid
- 8) Which of the following has potential energy? 8) _____
A) glucose molecule
B) diver on a springboard
C) water droplet on top of a waterfall
D) 9V battery
E) all of the above
- 9) All the following statements are true of the FIRST law of thermodynamics EXCEPT 9) _____
A) one form of energy may be converted to a different form of energy.
B) the amount of useful energy decreases.
C) the first law of thermodynamics is often called the law of the conservation of energy.
D) the total amount of energy within an isolated system remains the same.
E) All are true of the first law.
- 10) Imagine you are conducting an experiment on a yeast enzyme known as sucrase. This enzyme is used by yeast cells to break sucrose into glucose and fructose. What type of reaction is this? 10) _____
A) spontaneous reaction
B) exergonic reaction
C) metergonic reaction
D) endergonic reaction
- 11) The BEST description of a coupled reaction is 11) _____
A) two reactions that occur in the same organelle.
B) two reactions that involve one providing energy for the other.
C) reactions that occur during sexual reproduction.
D) two reactions that occur simultaneously.
E) a reaction that occurs right after another reaction.
- 12) Entropy is a measure of 12) _____
A) increase in randomness.
B) increase in orderliness.
C) gain of high-level energy.
D) increase in kinetic energy.
E) increase in potential energy.
- 13) The reactant in an enzyme catalyzed reaction is the 13) _____
A) substrate.
B) product.
C) active site.
D) inhibitor.
E) activation energy.

- 14) Which of the following has the greatest amount of kinetic energy? 14) _____
A) hot car engine
B) an unlit firecracker
C) moving car
D) tank of gasoline
E) cool air surrounding the engine
- 15) Which of the following is part of the first law of thermodynamics? 15) _____
A) Potential energy equals kinetic energy in a reaction.
B) Energy cannot be created or destroyed.
C) Kinetic energy is stored energy.
D) Exergonic reactions are coupled with endergonic reactions.
E) Energy cannot be transferred or transformed.
- 16) In exergonic chemical reactions 16) _____
A) energy is stored by the reactions.
B) reactants have more energy than products.
C) reactants and products possess equal amounts of energy.
D) reactants have less energy than products.
E) Both A and B are correct.
- 17) Why is photosynthesis considered an endergonic reaction in an isolated plant? 17) _____
A) Activation energy is not required.
B) Protein catalysts are not needed.
C) because sugar has less energy than the sun
D) Low-energy reactants are converted into high-energy products.
E) Photosynthesis does not comply with the physical laws of the universe.

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

- 18) Kinetic energy is like sitting at the top of a hill and potential energy is coasting down that hill on your bike. True or False? 18) _____
- 19) The photosynthetic reaction is considered to be an endergonic reaction. True or False? 19) _____
- 20) The burning of sugar is an example of an endergonic reaction and photosynthesis is an example of an exergonic reaction. True or False? 20) _____