

- ☐ 9. A _____ is the heat required to raise the temperature of 1 g of liquid water by 1°C.
a. joule c. calorie
b. Calorie d. kilocalorie
- ☐ 10. If a reaction results in increased energy and increased entropy, will the reaction be spontaneous?
a. yes c. yes, if the temperature is high
b. no d. yes, if the temperature is low
- ☐ 11. In a(n) _____ reaction, the products are at a higher energy level than are the reactants.
a. catalytic c. exothermic
b. endothermic d. activation
- ☐ 12. An example of a process in which entropy decreases is _____.
a. vaporization c. freezing
b. melting d. boiling
- ☐ 13. The energy value of foods is measured in units of _____.
a. joules c. Calories
b. nutrients d. calories

- _____ 14. The major product formed during the process of photosynthesis is _____.
a. carbon dioxide c. sugar
b. water d. DNA
- _____ 15. The burning of gasoline in an automobile engine is an example of a(n) _____.
a. photosynthesis reaction c. exothermic reaction
b. reversible reaction d. endothermic reaction
- _____ 16. The most common form of energy encountered in chemical reactions is _____.
a. light energy c. electrical energy
b. nuclear energy d. heat
- _____ 17. The energy involved in endothermic and exothermic reactions is _____.
a. chemical c. heat
b. light d. electrical
- _____ 18. When bowling pins at the end of an alley are hit by a bowling ball, the entropy of the pins _____.
a. decreases c. is spontaneous
b. increases d. stays the same
- _____ 19. How can industrial processes be as efficient as photosynthesis?
a. decrease entropy by a decrease of waste heat
b. increase entropy by an increase of waste heat
c. increase entropy by a decrease of waste heat
d. decrease entropy by an increase of waste heat
- _____ 20. If the energy graphs of a reaction, catalyzed and uncatalyzed, are examined, the peak representing activation energy is _____ for the catalyzed reaction.
a. unchanged c. equal
b. lower d. higher
- _____ 21. The two terms below that are identical in meaning are _____.
a. Calorie and joule c. calorie and Calorie
b. calorie and joule d. kilocalorie and Calorie
- _____ 22. Even in an exothermic reaction, _____ is needed to get the reaction started.
a. an inhibitor c. an endothermic reaction
b. activation energy d. a catalyst
- _____ 23. If 16 cans are produced from aluminum made from ore, how many cans can be made from recycled aluminum for the same cost?
a. 8 c. 16
b. 32 d. 48
- _____ 24. The energy released in the formation of a compound from its elements is always _____ the energy required to decompose that compound into its elements.
a. identical to c. greater than
b. less than d. similar to
- _____ 25. The ultimate source of energy in the food web is _____.
a. light reactions c. the sun
b. the Calvin cycle d. photosynthesis
- _____ 26. When photosynthesis is compared to the burning of fossil fuels, photosynthesis is a(n) _____ efficient process.
a. less
b. equally
c. more

- ____ 27. A cake is placed in a heated oven and baked. The reactions that take place during this process are ____.
- a. exothermic
 - b. catalyzed
 - c. endothermic
 - d. inhibited
- ____ 28. Why is the natural process of photosynthesis far more efficient than electricity production by industrial processes?
- a. Industrial processes that produce electricity increase entropy through the combustion of carbon dioxide and water.
 - b. Photosynthesis builds complex high-energy molecules in a process in which entropy decreases.
 - c. Industrial processes that produce electricity convert energy from one form to another yet maintain low-entropy systems.
 - d. Photosynthesis releases waste heat and increases the entropy of the environment.
- ____ 29. Spontaneous reactions occur if energy ____ and disorder ____.
- a. decreases, decreases
 - b. increases, increases
 - c. decreases, increases
 - d. increases, decreases
- ____ 30. The process that uses carbon dioxide and water, in the presence of sunlight and chlorophyll, to form simple sugar and oxygen is ____.
- a. capillary action
 - b. photosynthesis
 - c. digestion
 - d. respiration
- ____ 31. In processes that produce electricity, some of the energy used is wasted as ____ energy.
- a. light
 - b. kinetic
 - c. chemical
 - d. heat
- ____ 32. In a chemical change, energy can be ____.
- a. neither created nor destroyed
 - b. either created or destroyed
 - c. created, but not destroyed
 - d. destroyed, but not created
- ____ 33. If the heat of reaction is negative, the reaction is ____.
- a. exothermic
 - b. positive
 - c. negative
 - d. endothermic
- ____ 34. The main source of energy for living things on Earth is ____.
- a. solar energy
 - b. combustion of fossil fuels
 - c. oxidation of dead organisms
 - d. geothermal energy

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