Chapter 5 Pre-Test Answer Key

- 1. b
- 2. c
- 3. c
- 4. b
- 5. b
- 6. a
- 7. b
- 8. b
- 9. d
- 10. a
- 11. ion channel, enzyme
- 12. Calvin cycle
- 13. mitochondria
- 14. photosynthesis
- 15. chemical
- 16. glycolysis
- 17. pyruvate
- 18. Krebs cycle
- 19. aerobic
- 20. pitments, thylakoids
- 21. Heterotrophs must consume food sources to get the energy to power their metabolism. Autotrophs power their metabolism with energy from sunlight or inorganic substances. Both heterotrophs and autotrophs use cellular respiration to harvest the energy in organic molecultes. However, only autotrophs are able to synthesize organic molecules using energy from the sun (photosynthesis) or from inorganic substance.
- 22. When the bonds between the phosphate groups of an ATP molecule are broken, energy is released. This energy can be used by the cell to power chemical reactions.
- 23. Excited electrons lose some energy as they pass through electron transport chains. This energy is used to pump hydrogen ions, produced when water molecules are split, into the thylakoid. Special carrier proteins that function as both ion channels and as enzymes transport the now-concentrated hydrogen ions out of the thylakoid. As hydrogen ions pass through the ion channel part of the carrier protein, a phosphate group is added to a molecule of ADP, making ATP.
- 24. The rate of photosynthesis increases as light intensity increases, until the light saturation point is reached. Likewise, the rate of photosynthesis increases as the concentration of carbon dioxide increases, until a certain concentration of that gas is reached. In addition, photosynthesis operates best within a certain range of temperatures.
- 25. Fermentation enables cells to continue making ATP, though in limited amounts through glycolysis when oxygen is no longer available. Lactic acid fermentation is used in the production of foods such as yogurt and some cheeses. Alcoholic fermentation is used commercially in the preparation of bread, wine, and beer.

Concept Mapping

1. glucose	2. glycolysis	3. anaerobic process	4. fermentation
5. NAD^+	6. pyruvate	7. Krebs cycle	8. electron transport chain

- 6. pyruvate 5. NAD⁺
- 8. electron transport chain