Chapter 20 Review Answer Key

Assignments:

- Chapter Review questions 1 - 33 on pages 741-742
- Written Assessment questions 34 - 39 on page 742
- Focus on Graphing questions 43 - 48 on pages 743

Chapter Review Assignment

1. Made of carbon, hydrogen and oxygen
2. monosaccharide, disaccharide, polysaccharide
3. condensation
4. between the carboxyl group of one amino acid and the amino group of another amino acid
5.
    a. Primary - amino acids bonded together
    b. Secondary - alpha helix and beta pleated sheet
    c. Tertiary - three-dimensional structure
    d. quaternary - combination of different polypeptide chains as a larger protein
6. An enzyme is a protein that catalyzes a chemical reaction. Proteolytic enzymes break longer chains of proteins into smaller chains.
7. Genes are segments of DNA and nucleic acids are either DNA or RNA.
8. DNA fingerprinting, cloning and recombinant DNA technologies
9. Plants use sunlight in photosynthesis - the process by which sunlight, carbon dioxide and water are used to produce carbohydrates and oxygen.
10. Respiration is the oxygen - carbon dioxide cycle in organisms so that cells can produce energy.
11. ATP stands for **a**denosine **t**ri**p**hosphate and is the organic molecule that acts as the main energy source for all cell processes.
12. Starch is used to store energy and cellulose is used for support.
13. Lipids do not dissolve in water.
14. carboxyl group, amino group, single hydrogen and R-group
15. polypeptides and water
16. two cysteine units at different points on a protein molecule bond to form a disulfide bridge
17. enzymes of specific shapes fit specific reactants for catalyzing
18. DNA stands for deoxyribonucleic acid - double helix made up of nitrogenous base, sugar unit and phosphate group.
19. When G and C are lined up opposite of one another - the two are ideally placed to form three hydrogen bonds

20. The genetic code lists RNA triplets and their corresponding amino acids. Decodes RNA - amino acids
21. Using proteins that cut and reconnect DNA molecules - allowing the insertion of DNA from one species into the cells of another.
22. PCR replicates a short "targeted" sequence of double-stranded DNA
23. chlorophyll
24. $6CO_2 + 6H_2O \rightarrow C_6H_{12}O_6 + 6O_2$
25. Chlorophyll absorbs the red and blue regions of the spectrum.
26. Glycolysis is the breakdown of glucose into pyruvic acid.
27.
28.
    a. UUG UAA GGU GUG
    b. UAG AGA UGA AGU AUG
29.

a.	AUG	UGU	GCA	ACC	UAA
b.	Start	Cysteine	Alanine	Threonine	Stop

30.
    a. AUG GAU CAA UGG UGA
    b. TAC CTA GTT ACC ACT
31.
    a. aspartic acid - glutamic acid - glycine - glutamic acid
    b. answers will vary
32.
    a. answer will vary - example: $C_{12}H_{22}O_{12} + H_2O \rightarrow 2C_6H_{12}O_6$
    b. $C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O$
    c. $ATP + H_2O \rightarrow ADP + H_2PO^-_4$
33.
    a. amino acid
    b. carbohydrate
    c. nitrogenous base
34. All include hydrogen bonding
35. The tertiary and the quaternary structures are lost, but the polypeptide becomes a random tangle.
36. The carbon dioxide is left behind
37. Answers will vary, but must give at least one advantage and one disadvantage.
38. Answers will vary, but may include contamination or family relationship.
39. Answers will vary, but must explain how energy is transferred in all three cases.

43. amino acids in wool compared to silk

44. blue

45. high in glycine and no cysteine

46. keratine = 5% & fibroin = 30%

47. Answers may vary, but should explain that they are not significant.

48. Glycine and alamine make up about 75% of spider fibroin.