Chapter 7 practice

1. What scientist originally came up with the term "cell"?
   a. von Leeuwenhoek
   b. Hooke
   c. van der Waals
   d. Watson
   e. Virchow

2. When you wish to look at the coat of a virus on the surface of a human cell what type of microscope would you use?
   a. scanning electron microscope
   b. transmission electron microscope
   c. phase contrast light microscope
   d. compound light microscope
   e. dissecting microscope

3. What cell parts are NOT found in all living cells?
   a. cytoplasm
   b. DNA
   c. ribosomes
   d. cell wall
   e. cell membrane

4. Which of the following cell structures have two membranes surrounding them?
   a. lysosomes, chloroplasts, and nucleus
   b. central vacuole, nucleus, and chloroplasts
   c. endoplasmic reticulum, mitochondria, and nucleus
   d. mitochondria, nucleus, and chloroplast
   e. chloroplast, mitochondria, and lysosomes

5. The cells in the liver that detoxify poison substances contain lots of
   a. smooth ER b. rough ER c. Golgi apparatus d. lysosomes e. ribosomes

6. The tube-like protein fibers that the cell can assemble and disassemble are
   a. smooth ER b. actin c. microtubules d. intermediate filaments e. microfilaments

7. What the smallest part of the cytoskeleton?
   a. smooth ER b. rough ER c. microtubules d. intermediate filaments e. microfilaments

8. Where in the cell are the proteins assembled that are suspended in the cytoplasm?
   a. free ribosomes
   b. bound ribosomes
   c. nucleus
   d. smooth ER
   e. rough ER

9. What are ribosomes made out of ?
   a. lipids and proteins
   b. lipids and RNA
   c. carbohydrates and RNA
   d. proteins and RNA
   e. carbohydrates and proteins

10. What is form of energy directly used by cells?
    a. ATP b. Sugar c. Sun d. DNA e. protein

11. The part of the cell that regulates what enters and leaves the cell is the
    a. nucleus. b. cytoplasm. c. nuclear envelope. d. cell membrane. e. cell wall

12. Cells that do not have a nucleus are said to be
a. selectively permeable. b. eukaryotic. c. osmotic. d. autotroph e. prokaryotic.

13. The organelles possessed by plant and not animal cells are
a. chloroplast and mitochondria.
b. chloroplast and cell wall.
c. cell wall and centrioles
d. cell wall and vesicles.
e. mitochondria and vesicle

14. Lipids and proteins are transported around the cell by the
a. transport vesicles.
b. chloroplast
c. mitochondria.
d. central vacuole
e. endoplasmic reticulum

15. Proteins are produced at the
a. mitochondria. b. cytoskeleton. c. ribosomes d. Golgi apparatus. e. nucleus

16. The small membrane-bordered structures that contain substances necessary for the digestion of some cellular materials are
a. lysosomes. b. vacuoles. c. mitochondria. d. nucleoli. e. rough ER

17. In eukaryotic cells the chemical energy stored in food is changed into energy the cell can use by the
a. ribosomes.
b. smooth endoplasmic reticulum.
c. chloroplasts
d. mitochondria.
e. rough endoplasmic reticulum.

18. Which of the following is NOT part of the cell theory?
a. All living things are composed of cells
b. There is a high degree of cell specialization.
c. Cells are the basic unit of structure and function.
d. All cells come from other cells.

19. The basic units from which cell membranes are constructed are
a. nucleic acids
b. free-moving proteins.
c. phospholipid bilayer
d. protein pumps.
e. carbohydrate gates.

20. The organelle that helps the animal cell perform cell division is the
a. intermediate filaments
b. nucleolus.
c. chromosome.
d. centrioles
e. mitochondria.

21. If you observe cells without nuclei under the microscope, you are probably observing
a. eukaryotic cells. b. animal cells c. prokaryotic cells. d. plant cells. e. fungi cells

22. A cellular diameter of 40 micrometers is equivalent to
a. 0.4 milllimeters
b. 0.04 millimeter.
c. 4 millimeters
d. both b and c are correct
e. none of the above

23. A cell has the following molecules and structures: enzymes, DNA, ribosomes, plasma membrane, and mitochondria. It could be a cell from
a. a bacteria.
b. an animal, but not a plant.
c. a plant, but not an animal.
d. a plant or an animal.
e. any kind of organism.

24. Which of the following would be found in an animal cell, but NOT in a bacterial cell?
a. cell wall
b. plasma membrane
c. ribosomes
d. endoplasmic reticulum
e. cytoplasm

25. What are the two organelles that have their own DNA and ribosomes?
a. nucleus and nucleolus
b. nucleolus and mitochondria
c. chloroplast and mitochondria
d. nucleus and mitochondria
e. chloroplast and nucleus

26. In which cell type would you find the most mitochondria?
a. plant cells
b. heart cells
c. fat cells
d. bacteria
e. liver cells

27. Explain the path taken by an insulin molecule (a protein) from production to the blood stream and what happens at each point along the path. (4 points)

28. List the three components of the cytoskeleton. For each of the cytoskeletal components describe a function of that component. (5 points)

29. A cell has the following molecules and structures: enzymes, DNA, ribosomes, plasma membrane, and mitochondria. It could be a cell from
a. a bacterium.
b. an animal, but not a plant.
c. a plant or an animal.
d. any kind of organism.

Chapters 8 and 9 practice

1. The energy in ATP is stored in the
a. three phosphate groups.
b. nucleotide portion.
c. bonds between the phosphate groups.
d. ribose portion.

2. The dark reaction of photosynthesis can occur in a test tube supplied with
a. ATP and NADPH.
b. ATP and NADP+.
c. ADP and NADPH.
d. ADP and NADP+.

3. The process that requires oxygen and breaks down food molecules to release energy is
a. respiration.
b. glycolysis
c. lactic acid fermentation.
d. alcoholic fermentation.

4. In addition to ATP, what are the end products of glycolysis
   a. Carbon dioxide and water.
   b. Carbon dioxide and ethyl alcohol
   c. NADH and pyruvic acid.
   d. NADH and water.

5. The reactions of the Calvin cycle require all of the following molecules EXCEPT
   a. carbon dioxide.
   b. NADPH.
   c. ATP
   d. glucose

6. The products of photosynthesis are
   a. glucose and oxygen.
   b. glucose and carbon dioxide.
   c. water and carbon dioxide.
   d. hydrogen and oxygen.

7. Bread rises as the result of
   a. glycolysis.
   b. pyruvic acid production.
   c. lactic acid fermentation.
   d. alcoholic fermentation.

8. Of the following, the color of light least effective in causing photosynthesis is
   a. blue b. green. c. red. d. yellow.

9. Suppose a yeast cell uses 10 moles of glucose for energy production. No oxygen is available. What will be the maximum net yield of ATP in moles?
   a. 12 b. 15 c. 20 d. 30

10. You have just discovered a new flower species that has a unique photosynthetic pigment. The leaves of this plant appear to be reddish yellow. What wavelengths of visible light are not being absorbed by this pigment?
    a. red and yellow.
    b. blue and violet.
    c. green and yellow.
    d. blue, green, and red.

11. A total of 36 molecules of ATP are produced from 1 molecule of glucose as a result of
    a. glycolysis and respiration.
    b. glycolysis and lactic acid formation.
    c. glycolysis and alcoholic fermentation.
    d. lactic acid and alcoholic fermentation.

12. Energy is released when
    a. AMP becomes ADP.
    b. ADP becomes ATP.
    c. ATP becomes ADP.
    d. GTP becomes ATP.

13. The dark reactions of photosynthesis are also known as the
    a. Calvin cycle.
    b. citric acid cycle.
    c. Krebs cycle.
    d. carbon cycle.

14. The dark reactions use the energy stored in the
    a. light reaction to make glucose.
    b. light reaction to make carbon dioxide.
    c. dark reaction to make glucose.
    d. dark reaction to make carbon dioxide.

15. In a plant, the only pigment that processes light energy is
a. cyanin pigment. c. chlorophyll pigment.
b. betacarotene pigment. d. purple pigment.

16. Each of the following is true of photosynthesis EXCEPT that
a. oxygen is produced by the light reaction.
b. water is broken down in the dark reaction.
c. Carbon dioxide is used by the dark reaction.
d. ATP is produced by the light reaction.

17. In both plants and animals, glucose molecules are broken down and carbon dioxide is released by
a. cellular respiration. c. the carbon cycle. b. glycolysis. d. breathing.

18. Both anaerobic and aerobic respiration begin with the process of
a. fermentation. c. glycolysis. b. Kreb's cycle. d. Calvin cycle.

19. Cellular respiration occurs in
a. the cytoplasm. c. the photosynthetic membrane
b. the nucleus. d. the mitochondria.

20. Each time a molecule of glucose is completely oxidized (broken down), how many oxygen (O_2) molecules are required?
a. 1. b. 2. c. 6. d. 12.

21. Chemisomotic creation of ATP is driven by
a. phosphate transfer through the plasma membrane
b. sodium, potassium pump
c. a difference in H^+ concentration on the two sides of a membrane
d. osmosis of macromolecules

22. Which part of the chloroplasts contain the Calvin-cycle enzymes?
a. stroma b. thylakoids c. grana d. envelope

Fill In the Blank

25. The photosynthetic membrane is located inside the _____ (cell organelle).

26. If oxygen is not present in our cells, a molecule of glucose produces only _____ net molecules of ATP.

27. Fermentation converts NADH back to NAD+ so that _____ can continue.

28. In photosynthesis, carbon dioxide is a reactant in the _____ reaction.

29. Organisms that can make their own food are _____.

30. A lack of oxygen in the muscles of a runner results in the production of _____.

Short Essay:

27. Describe the relationship between the chemical equations for photosynthesis and respiration. (3 points)

28. Why is a lack of oxygen fatal to an individual? (3 points)

29. Why can a wine not have an alcoholic content of more than 12 %? (2 points)