Name:_____ Block_____ Dates: _____
Reading Quiz Chapter 6 p.92-120 Topic 2

Multiple Choice
Identify the letter of the choice that best completes the statement or answers the question.

____ 1. In the fractionation of homogenized cells using centrifugation, the primary factor that determines whether a specific cellular component ends up in the supernatant or the pellet is
   a. the relative solubility of the component.
   b. the size and weight of the component.
   c. the percentage of carbohydrates in the component.
   d. the number of enzymes in the fraction.
   e. the presence or absence of lipids in the component.

____ 2. Which of the following *correctly* lists the order in which cellular components will be found in the pellet when homogenized cells are treated with increasingly rapid spins in a centrifuge?
   a. ribosomes, nucleus, mitochondria
   b. chloroplasts, ribosomes, vacuoles
   c. nucleus, ribosomes, chloroplasts
   d. vacuoles, ribosomes, nucleus
   e. nucleus, mitochondria, ribosomes

____ 3. Which of the following are prokaryotic cells?
   a. plants
   b. fungi
   c. bacteria
   d. animals
   e. B and C only

____ 4. All of the following are part of a prokaryotic cell *except*
   a. DNA.
   b. a cell wall.
   c. a plasma membrane.
   d. ribosomes.
   e. an endoplasmic reticulum.

____ 5. Which of the following comparisons between prokaryotic and eukaryotic cells is *incorrect*?
   a. The lack of organelles in prokaryotes means that they are structurally less complex than eukaryotes.
   b. The lack of internal membranes means that prokaryotes cannot compartmentalize function to the same extent as eukaryotes.
   c. All membrane function in prokaryotes is accomplished in the plasma membrane, while in eukaryotes, these functions are more distributed among the organelles.
   d. The specialization of function in organelles suggests that eukaryotes will contain a wider variety of phospholipids than prokaryotes.
   e. The lack of organelles in prokaryotes means that the basic cellular functions are different in prokaryotes than in eukaryotes.

For the following questions, use the lettered answers to match the structure to its proper cell type. Choose the most inclusive category. Each answer may be used once, more than once, or not at all.

A. a feature of all cells

B. found in prokaryotic cells only
C. found in eukaryotic cells only
D. found in plant cells only
E. found in animal cells only

____ 6. plasma membrane
a. A
b. B
c. C
d. D
e. E

____ 7. Which of the following does *not* contain functional ribosomes?
a. a prokaryotic cell
b. a plant mitochondrion
c. a chloroplast
d. an animal mitochondrion
e. a nucleolus

____ 8. Large numbers of ribosomes are present in cells that specialize in producing which of the following molecules?
a. lipids
b. starches
c. proteins
d. steroids
e. glucose

____ 9. Which of the following compounds require the presence of the nuclear pores to move between the cytoplasm and the interior of the nucleus?
a. ribosomal RNA
b. messenger RNA
c. proteins synthesized in the cytoplasm that are part of ribosomes
d. A and B only
e. A, B, and C

____ 10. Which of the following organelles is not a common destination for small vesicles that bud off the Golgi apparatus?
a. plasma membrane
b. lysosomes
c. vacuole
d. endoplasmic reticulum
e. all of the above

____ 11. Under which of the following conditions would you expect to find a cell with a predominance of free ribosomes?
a. a cell that is secreting proteins
b. a cell that is producing cytoplasmic enzymes
c. a cell that is constructing its cell wall or extracellular matrix
d. a cell that is digesting food particles
e. a cell that is enlarging its vacuole

____ 12. Which type of organelle is primarily involved in the synthesis of oils, phospholipids, and steroids?
a. ribosome
b. lysosome
c. smooth endoplasmic reticulum
d. mitochondrion

e. contractile vacuole

____ 13. Which structure is the site of the synthesis of proteins that may be exported from the cell?
a. rough ER
b. lysosomes
c. plasmodesmata
d. Golgi vesicles
e. tight junctions

____ 14. Of the following, which is probably the most common route for membrane flow in the endomembrane system?
a. Golgi → lysosome → ER → plasma membrane
b. tonoplast → plasma membrane → nuclear envelope → smooth ER
c. nuclear envelope → lysosome → Golgi → plasma membrane
d. rough ER → vesicles → Golgi → plasma membrane
e. ER →chloroplasts → mitochondrion → cell membrane

____ 15. Which of the following cell components is *not directly involved in synthesis or secretion?*
a. ribosome
b. rough endoplasmic reticulum
c. Golgi body
d. smooth endoplasmic reticulum
e. lysosome

____ 16. The fact that the outer membrane of the nuclear envelope has bound ribosomes allows one to *most reliably* conclude that
a. at least some of the proteins that function in the nuclear envelope are made by the ribosomes on the nuclear envelope.
b. the nuclear envelope is not part of the endomembrane system.
c. the nuclear envelope is physically continuous with the endoplasmic reticulum.
d. small vesicles from the Golgi fuse with the nuclear envelope.
e. nuclear pore complexes contain proteins.

____ 17. In animal cells, hydrolytic enzymes are packaged to prevent general destruction of cellular components. Which of the following organelles functions in this compartmentalization?
a. chloroplast
b. lysosome
c. central vacuole
d. peroxisome
e. glyoxysome

Refer to the following five terms to answer the following questions. Choose the most appropriate term for each phrase. Each term may be used once, more than once, or not at all.

A. lysosome
B. vacuole
C. mitochondrion
D. Golgi apparatus
E. peroxisome

____ 18. helps to recycle the cell's organic material
a. A
b. B
c. C
d. D

e. E

____ 19. one of the main energy transformers of cells
a. A
b. B
c. C
d. D
e. E

____ 20. a compartment that often takes up much of the volume of a plant cell
a. A
b. B
c. C
d. D
e. E

____ 21. contains enzymes that transfer hydrogen from various substrates to oxygen, producing H_2O_2
a. A
b. B
c. C
d. D
e. E

____ 22. Organelles other than the nucleus that contain DNA include
a. ribosomes.
b. mitochondria.
c. chloroplasts.
d. B and C only
e. A, B, and C

____ 23. The chemical reactions involved in respiration are virtually identical between prokaryotic and eukaryotic cells. In eukaryotic cells, ATP is synthesized primarily on the inner membrane of the mitochondria. Where are the corresponding reactions likely to occur in prokaryotic respiration?
a. in the cytoplasm
b. on the inner mitochondrial membrane
c. on the endoplasmic reticulum
d. on the plasma membrane
e. on the nuclear envelope

____ 24. Which of the following is a place where both DNA and ribosomes are *unlikely* to be found in *any* type of cell?
a. stroma of chloroplasts
b. mitochondrial matrix
c. nucleus
d. cytoplasm
e. Golgi apparatus

____ 25. All of the following are correct matches of the location of a protein and the location of its synthesis *except*
a. plasma membrane protein-rough ER.
b. mitochondrial membrane protein-free cytoplasmic ribosomes.
c. cytoplasmic proteins-free cytoplasmic ribosomes.
d. chloroplast stromal protein-chloroplast ribosomes.
e. mitochondrial matrix protein-rough ER.

____ 26. 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, but not an animal.
d. a plant or an animal.
e. any kind of organism.

____ 27. Which of the following is *not* a known function of the cytoskeleton?
a. to maintain a critical limit on cell size
b. to provide mechanical support to the cell
c. to maintain the characteristic shape of the cell
d. to hold mitochondria and other organelles in place within the cytosol
e. to assist in cell motility by interacting with specialized motor proteins

____ 28. Motor proteins provide for molecular motion in cells by interacting with what types of cellular structures?
a. sites of energy production in cellular respiration
b. membrane proteins
c. ribosomes
d. cytoskeletons
e. cellulose fibers in the cell wall

____ 29. Cells can be described as having a cytoskeleton of internal structures that contribute to the shape, organization, and movement of the cell. All of the following are part of the cytoskeleton *except*
a. the nuclear envelope.
b. microtubules.
c. microfilaments.
d. intermediate filaments.
e. actin.

____ 30. Of the following, which cell structure would most likely be visible with a light microscope that has been manufactured to the maximum resolving power possible?
a. mitochondrion
b. microtubule
c. ribosome
d. largest microfilament
e. nuclear pore

____ 31. Which of the following contain the 9 + 2 arrangement of microtubules?
a. cilia
b. centrioles
c. flagella
d. A and C only
e. A, B, and C

____ 32. Cells would be unable to form cilia or flagella if they did not have
a. centrosomes.
b. ribosomes.
c. actin.
d. A and B only
e. A, B, and C

____ 33. Microfilaments are well known for their role in which of the following?
a. ameboid movement
b. formation of cleavage furrows
c. contracting of muscle cells
d. A and B only
e. A, B, and C

____ 34. All of the following structures and proteins are directly associated with movement in cells or by cells *except*
a. cilia.

b. dynein.
c. actin.
d. flagella.
e. centrosomes.

____ 35. The cell walls of bacteria, fungi, and plant cells and the extracellular matrix of animal cells are all external to the plasma membrane. Which of the following is *not* a characteristic of all of these extracellular structures?
a. They must be highly permeable to water and small molecules in order to allow cells to exchange matter and energy with their environment.
b. They must permit information transfer between the cell's external environment and the cytoplasm.
c. They must provide a rigid structure that maintains an appropriate ratio of cell surface area to volume.
d. They are constructed of materials that are largely synthesized in the cytoplasm and then transported out of the cell.
e. They are composed of a mixture of proteins and carbohydrates.

____ 36. When a potassium ion (K^+) moves from the soil into the vacuole of a cell on the surface of a root, it must pass through several cellular structures. Which of the following correctly describes the order in which these structures will be encountered by the ion?
a. plasma membrane → primary cell wall → cytoplasm → tonoplast
b. secondary cell wall → plasma membrane → primary cell wall → cytoplasm → tonoplast
c. primary cell wall → plasma membrane → cytoplasm → tonoplast
d. primary cell wall → plasma membrane → tonoplast → cytoplasm → vacuole
e. tonoplast → primary cell wall → plasma membrane → cytoplasm

____ 37. A cell lacking the ability to make and secrete glycoproteins would most likely be deficient in its
a. nuclear DNA.
b. extracellular matrix.
c. Golgi apparatus.
d. B and C only
e. A, B, and C

____ 38. The extracellular matrix is thought to participate in the regulation of animal cell behavior by communicating information from the outside to the inside of the cell via
a. gap junctions.
b. the nucleus.
c. DNA and RNA.
d. integrins.
e. plasmodesmata.

____ 39. Plasmodesmata in plant cells are *most* similar in function to which of the following structures in animal cells?
a. peroxisomes
b. desmosomes
c. gap junctions
d. extracellular matrix
e. tight junctions

____ 40. Ions can travel directly from the cytoplasm of one animal cell to the cytoplasm of an adjacent cell through
a. plasmodesmata.
b. intermediate filaments.
c. tight junctions.
d. desmosomes.
e. gap junctions.