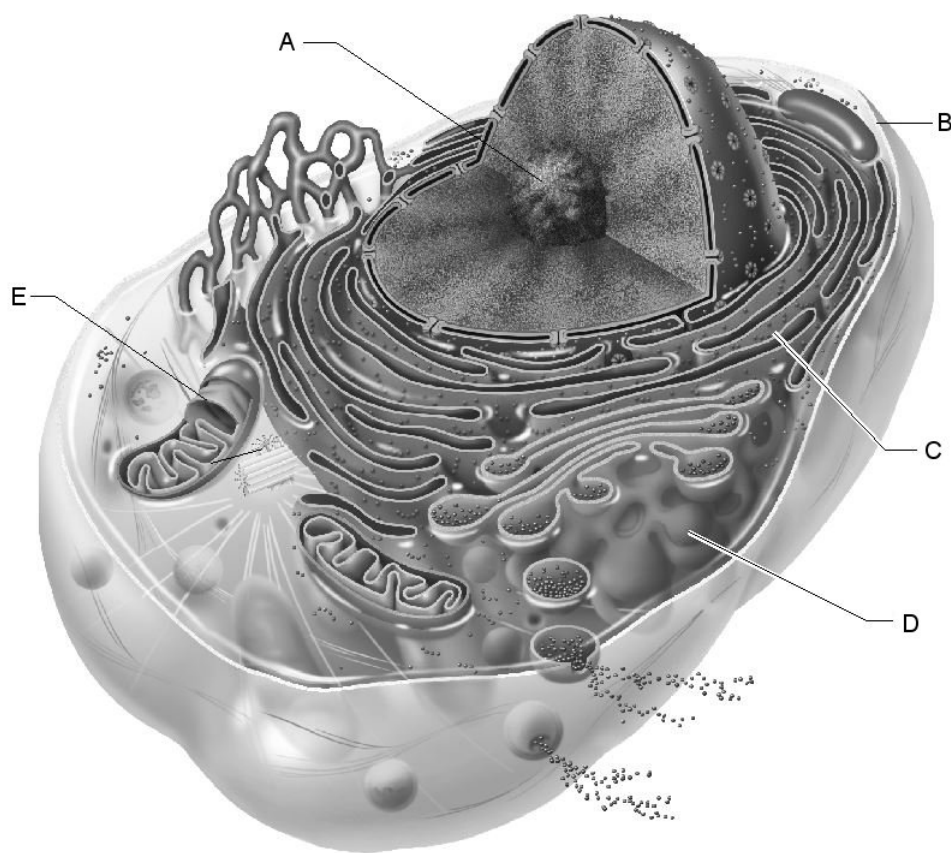


Exam

Name \_\_\_\_\_

**MULTIPLE CHOICE.** Choose the one alternative that best completes the statement or answers the question.



**Figure 2.1**

Use the diagram above to answer the following questions.

1) Which letter indicates the rough endoplasmic reticulum?

- A) A                      B) B                      C) C                      D) D                      E) E

1) \_\_\_\_\_

Answer: C

Section: 2.1

Book LO: 2.4

Global LO: G1

Bloom's Level: Remembering/Understanding

2) Which letter indicates the nucleolus?

- A) A                      B) B                      C) C                      D) D                      E) E

2) \_\_\_\_\_

Answer: A

Section: 2.1

Book LO: 2.4

Global LO: G1

Bloom's Level: Remembering/Understanding

3) Which letter indicates the plasma membrane? 3) \_\_\_\_\_  
A) A                      B) B                      C) C                      D) D                      E) E

Answer: B

Section: 2.1

Book LO: 2.4

Global LO: G1

Bloom's Level: Remembering/Understanding

4) Which letter indicates the mitochondrion? 4) \_\_\_\_\_  
A) A                      B) B                      C) C                      D) D                      E) E

Answer: E

Section: 2.1

Book LO: 2.4

Global LO: G1

Bloom's Level: Remembering/Understanding

5) Which letter indicates the Golgi apparatus? 5) \_\_\_\_\_  
A) A                      B) B                      C) C                      D) D                      E) E

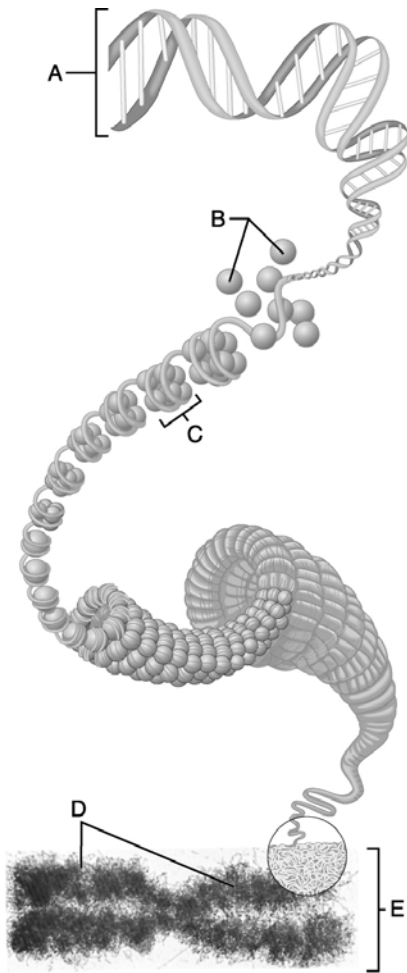
Answer: D

Section: 2.1

Book LO: 2.4

Global LO: G1

Bloom's Level: Remembering/Understanding



**Figure 2.2**

Use the diagram above to answer the following questions.

6) Which letter indicates the DNA molecule?

A) A

B) B

C) C

D) D

E) E

6) \_\_\_\_\_

Answer: A

Section: 2.4

Book LO: 2.6

Global LO: G1

Bloom's Level: Remembering/Understanding

7) Which letter indicates the chromatid?

A) A

B) B

C) C

D) D

E) E

7) \_\_\_\_\_

Answer: D

Section: 2.4

Book LO: 2.6

Global LO: G1

Bloom's Level: Remembering/Understanding

- 8) Which letter indicates a nucleosome? 8) \_\_\_\_\_  
A) A                      B) B                      C) C                      D) D                      E) E  
Answer: C  
Section: 2.4  
Book LO: 2.6  
Global LO: G1  
Bloom's Level: Remembering/Understanding
- 9) Which letter indicates histones? 9) \_\_\_\_\_  
A) A                      B) B                      C) C                      D) D                      E) E  
Answer: B  
Section: 2.4  
Book LO: 2.6  
Global LO: G1  
Bloom's Level: Remembering/Understanding
- 10) Which letter indicates the metaphase chromosome? 10) \_\_\_\_\_  
A) A                      B) B                      C) C                      D) D                      E) E  
Answer: E  
Section: 2.4  
Book LO: 2.6  
Global LO: G1  
Bloom's Level: Remembering/Understanding
- 11) This organelle is involved in production of cellular energy. 11) \_\_\_\_\_  
A) Golgi apparatus  
B) lysosome  
C) rough endoplasmic reticulum  
D) mitochondria  
E) peroxisome  
Answer: D  
Section: 2.3  
Book LO: 2.4  
Global LO: G2  
Bloom's Level: Remembering/Understanding
- 12) This organelle is characterized by folded membranes called cristae. 12) \_\_\_\_\_  
A) Golgi apparatus  
B) lysosome  
C) rough endoplasmic reticulum  
D) mitochondria  
E) peroxisome  
Answer: D  
Section: 2.3  
Book LO: 2.4  
Global LO: G2  
Bloom's Level: Remembering/Understanding

- 13) When a phagocytic white blood cell ingests a foreign bacterial cell, the vesicle fuses with this organelle. 13) \_\_\_\_\_
- A) Golgi apparatus
  - B) lysosome
  - C) rough endoplasmic reticulum
  - D) mitochondria
  - E) peroxisome
- Answer: B  
Section: 2.3  
Book LO: 2.4  
Global LO: G2  
Bloom's Level: Applying/Analyzing
- 14) This membranous organelle is the site of protein synthesis for proteins that are secreted by the cell. 14) \_\_\_\_\_
- A) Golgi apparatus
  - B) lysosome
  - C) rough endoplasmic reticulum
  - D) mitochondria
  - E) peroxisome
- Answer: C  
Section: 2.3  
Book LO: 2.4  
Global LO: G2  
Bloom's Level: Remembering/Understanding
- 15) This organelle detoxifies a number of toxic substances. 15) \_\_\_\_\_
- A) Golgi apparatus
  - B) lysosome
  - C) rough endoplasmic reticulum
  - D) mitochondria
  - E) peroxisome
- Answer: E  
Section: 2.3  
Book LO: 2.4  
Global LO: G2  
Bloom's Level: Remembering/Understanding
- 16) Cisternae of this organelle are continuous with the nuclear envelope. 16) \_\_\_\_\_
- A) Golgi apparatus
  - B) lysosome
  - C) rough endoplasmic reticulum
  - D) mitochondria
  - E) peroxisome
- Answer: C  
Section: 2.3  
Book LO: 2.4  
Global LO: G2  
Bloom's Level: Applying/Analyzing

- 17) This organelle has both a cis and a trans face. 17) \_\_\_\_\_
- A) Golgi apparatus
  - B) lysosome
  - C) rough endoplasmic reticulum
  - D) mitochondria
  - E) peroxisome
- Answer: A  
Section: 2.3  
Book LO: 2.4  
Global LO: G2  
Bloom's Level: Applying/Analyzing
- 18) This membranous organelle contains oxidase and catalase enzymes. 18) \_\_\_\_\_
- A) Golgi apparatus
  - B) lysosome
  - C) rough endoplasmic reticulum
  - D) mitochondria
  - E) peroxisome
- Answer: E  
Section: 2.3  
Book LO: 2.4  
Global LO: G2  
Bloom's Level: Applying/Analyzing
- 19) These organelles are often called the "demolition crew" of the cell. 19) \_\_\_\_\_
- A) Golgi apparatus
  - B) lysosome
  - C) rough endoplasmic reticulum
  - D) mitochondria
  - E) peroxisome
- Answer: B  
Section: 2.3  
Book LO: 2.4  
Global LO: G2  
Bloom's Level: Remembering/Understanding
- 20) This organelle primarily modifies products from the rough ER, and it resembles a stack of hollow saucers, one cupped inside the next. 20) \_\_\_\_\_
- A) Golgi apparatus
  - B) lysosome
  - C) rough endoplasmic reticulum
  - D) mitochondria
  - E) peroxisome
- Answer: A  
Section: 2.3  
Book LO: 2.4  
Global LO: G2  
Bloom's Level: Remembering/Understanding

- 21) This organelle is primarily a sac of powerful digestive enzymes called acid hydrolases. 21) \_\_\_\_\_
- A) Golgi apparatus
  - B) lysosome
  - C) rough endoplasmic reticulum
  - D) mitochondria
  - E) peroxisome
- Answer: B  
Section: 2.3  
Book LO: 2.4  
Global LO: G2  
Bloom's Level: Remembering/Understanding
- 22) This organelle is defective in the inherited disorder Tay-Sachs disease. 22) \_\_\_\_\_
- A) Golgi apparatus
  - B) lysosome
  - C) rough endoplasmic reticulum
  - D) mitochondria
  - E) peroxisome
- Answer: B  
Section: 2.3  
Book LO: 2.4  
Global LO: G2  
Bloom's Level: Remembering/Understanding
- 23) This organelle is numerous in liver and kidney cells. 23) \_\_\_\_\_
- A) Golgi apparatus
  - B) lysosome
  - C) rough endoplasmic reticulum
  - D) mitochondria
  - E) peroxisome
- Answer: E  
Section: 2.3  
Book LO: 2.4  
Global LO: G2  
Bloom's Level: Remembering/Understanding
- 24) This organelle produces ATP molecules. 24) \_\_\_\_\_
- A) Golgi apparatus
  - B) lysosome
  - C) rough endoplasmic reticulum
  - D) mitochondria
  - E) peroxisome
- Answer: D  
Section: 2.3  
Book LO: 2.4  
Global LO: G2  
Bloom's Level: Remembering/Understanding

- 25) This organelle contains a single DNA molecule and is capable of self-replication. 25) \_\_\_\_\_
- A) Golgi apparatus
  - B) lysosome
  - C) rough endoplasmic reticulum
  - D) mitochondria
  - E) peroxisome

Answer: D

Section: 2.3

Book LO: 2.4

Global LO: G2

Bloom's Level: Remembering/Understanding

- 26) Mitosis refers only to nuclear division. Separation of the entire cell following mitosis is 26) \_\_\_\_\_
- A) telophase.
  - B) meiosis.
  - C) cytokinesis.
  - D) karyokinesis.

Answer: C

Section: 2.5

Book LO: 2.7

Global LO: G2

Bloom's Level: Remembering/Understanding

- 27) Phospholipids of the plasma membrane are arranged 27) \_\_\_\_\_
- A) as a bilayer with their nonpolar tails sandwiched between the polar heads.
  - B) around a central layer of cholesterol.
  - C) in a single layer with polar heads facing outwards.
  - D) as a bilayer with their polar heads sandwiched between the nonpolar tails.

Answer: A

Section: 2.2

Book LO: 2.2

Global LO: G2

Bloom's Level: Remembering/Understanding

- 28) Which of the following cytoskeleton elements are the largest in diameter? 28) \_\_\_\_\_
- A) intermediate filaments
  - B) centrioles
  - C) microtubules
  - D) microfilaments

Answer: C

Section: 2.3

Book LO: 2.4

Global LO: G2

Bloom's Level: Remembering/Understanding

- 29) Which of the following statements about integral proteins in the plasma membrane is *false*? 29) \_\_\_\_\_
- A) Most extend all the way through the membrane.
  - B) They determine which molecules are transported through the membrane.
  - C) They are more abundant by volume than the membrane phospholipids.
  - D) Some attach to the glycocalyx.

Answer: C

Section: 2.2

Book LO: 2.2

Global LO: G2

Bloom's Level: Remembering/Understanding



- 30) Which type of endocytosis ingests the most specific type of molecule? 30) \_\_\_\_\_  
A) receptor-mediated endocytosis                      B) pinocytosis  
C) phagocytosis    D) fluid-phase endocytosis

Answer: A

Section: 2.2

Book LO: 2.3

Global LO: G2

Bloom's Level: Remembering/Understanding

- 31) Hormones are secreted by 31) \_\_\_\_\_  
A) pinocytosis.                      B) exocytosis.                      C) phagocytosis.                      D) osmosis.

Answer: B

Section: 2.2

Book LO: 2.3

Global LO: G2

Bloom's Level: Remembering/Understanding

- 32) Of the following, the only organelle that has a double membrane structure is the 32) \_\_\_\_\_  
A) Golgi apparatus.                      B) mitochondrion.  
C) endoplasmic reticulum.                      D) centriole.

Answer: B

Section: 2.3

Book LO: 2.4

Global LO: G2

Bloom's Level: Remembering/Understanding

- 33) Functions of the Golgi apparatus include all of the following *except* 33) \_\_\_\_\_  
A) plasma membrane formation.                      B) synthesis of lysosomes.  
C) production of secretory granules.                      D) DNA replication.

Answer: D

Section: 2.3

Book LO: 2.4

Global LO: G2

Bloom's Level: Applying/Analyzing

- 34) Which of the following statements about the rough endoplasmic reticulum is *false*? 34) \_\_\_\_\_  
A) It consists of stacked envelopes called cisternae.  
B) It makes the integral proteins of the cell membrane.  
C) It stores lipids as inclusions.  
D) It makes the digestive enzymes contained in the lysosomes.

Answer: C

Section: 2.3

Book LO: 2.4

Global LO: G2

Bloom's Level: Remembering/Understanding

- 35) Which of the following is *not* a cytoskeleton element? 35) \_\_\_\_\_  
A) intermediate filament                      B) microfilament  
C) centriole                                        D) microtubule  
Answer: C  
Section: 2.3  
Book LO: 2.4  
Global LO: G2  
Bloom's Level: Remembering/Understanding
- 36) Which type of proteins are required for exocytosis? 36) \_\_\_\_\_  
A) SNARE proteins                                B) coatomer proteins  
C) caveolin                                         D) clathrin  
Answer: A  
Section: 2.2  
Book LO: 2.3  
Global LO: G2  
Bloom's Level: Applying/Analyzing
- 37) In chromatin, the DNA molecule wraps around proteins called 37) \_\_\_\_\_  
A) integral protein.                                B) codons.  
C) nucleotides.                                     D) histones.  
Answer: D  
Section: 2.4  
Book LO: 2.6  
Global LO: G1  
Bloom's Level: Remembering/Understanding
- 38) In the cell life cycle, DNA is replicated during 38) \_\_\_\_\_  
A) interphase G1.                                B) interphase S.                                C) prophase II.                                D) prophase I.  
Answer: B  
Section: 2.5  
Book LO: 2.7  
Global LO: G2  
Bloom's Level: Remembering/Understanding
- 39) The longest arrays of microtubules that assemble from each centrosome during prophase form filaments called 39) \_\_\_\_\_  
A) asters.    B) kinetochores.  
C) mitotic spindle fibers.                        D) the nuclear envelope.  
Answer: C  
Section: 2.5  
Book LO: 2.7  
Global LO: G2  
Bloom's Level: Applying/Analyzing

- 40) During anaphase, motor proteins attached to mitotic spindle fibers serve to \_\_\_\_\_  
A) form the aster.  
B) re-form the nuclear envelope.  
C) pull the chromosomes to opposite poles of the cell.  
D) pull together the replicated chromosomal strands.

Answer: C

Section: 2.5

Book LO: 2.7

Global LO: G2

Bloom's Level: Remembering/Understanding

- 41) The \_\_\_\_\_ face of the Golgi apparatus is \_\_\_\_\_ to receive spherical vesicles from the rough endoplasmic reticulum.  
A) cis; flattened      B) trans; convex      C) trans; concave      D) cis; convex

Answer: D

Section: 2.3

Book LO: 2.4

Global LO: G2

Bloom's Level: Applying/Analyzing

- 42) Which membranous organelle stores calcium and is a primary site of lipid metabolism?  
A) Golgi apparatus      B) peroxisome  
C) mitochondrion      D) smooth endoplasmic reticulum

Answer: D

Section: 2.3

Book LO: 2.4

Global LO: G2

Bloom's Level: Applying/Analyzing

- 43) Which organelle is important in neutralizing free radicals?  
A) lysosome      B) Golgi apparatus  
C) mitochondrion      D) peroxisome

Answer: D

Section: 2.3

Book LO: 2.4

Global LO: G2

Bloom's Level: Remembering/Understanding

- 44) Which of the following statements accurately describes the function of the nuclear envelope?  
A) transcription of DNA  
B) protein synthesis  
C) regulation of passage of substances into and out of the cell membrane  
D) separation of nucleoplasm and cytoplasm

Answer: D

Section: 2.4

Book LO: 2.6

Global LO: G2

Bloom's Level: Applying/Analyzing

- 45) Peroxisomes function to 45) \_\_\_\_\_  
A) store cellular free radicals.  
B) synthesize and degrade hydrogen peroxide.  
C) regulate membrane permeability.  
D) produce pigments.

Answer: B

Section: 2.3

Book LO: 2.4

Global LO: G2

Bloom's Level: Remembering/Understanding

- 46) Dyneins and kinesins are motor proteins that 46) \_\_\_\_\_  
A) resist pulling forces that are placed on cells.  
B) move organelles along microtubules through the cytoplasm.  
C) enable a cell to send out and retract extensions called pseudopods.  
D) are molecular components of telomeres.

Answer: B

Section: 2.3

Book LO: 2.4

Global LO: G2

Bloom's Level: Applying/Analyzing

- 47) Cell division is analogous to 47) \_\_\_\_\_  
A) a building forming another building by random accumulation of materials.  
B) a building duplicating its blueprint and then forming a new building by splitting in two.  
C) a building forming another building through a loss of some of its parts.  
D) two buildings duplicating their parts and fusing.

Answer: B

Section: 2.5

Book LO: 2.7

Global LO: G2

Bloom's Level: Applying/Analyzing

- 48) The plasma membrane is important for all the following reasons *except* 48) \_\_\_\_\_  
A) it determines what substances enter and exit the cell.  
B) it is an important site for DNA transcription.  
C) it acts as a site for cell-to-cell interaction and recognition.  
D) it separates the ECF from the ICF.

Answer: B

Section: 2.2

Book LO: 2.2

Global LO: G2

Bloom's Level: Applying/Analyzing

- 49) The plasma membrane is composed of all of the following *except* 49) \_\_\_\_\_  
A) glycoproteins.      B) tubulin protein.      C) phospholipids.      D) cholesterol.

Answer: B

Section: 2.2

Book LO: 2.2

Global LO: G2

Bloom's Level: Remembering/Understanding

- 50) Materials that are to be exocytosed by cells are enclosed in vesicles synthesized by the 50) \_\_\_\_\_  
A) mitochondrion. B) nucleosome.  
C) Golgi apparatus. D) ribosome.

Answer: C

Section: 2.3

Book LO: 2.3

Global LO: G2

Bloom's Level: Remembering/Understanding

- 51) Which of the following does *not* pass through nuclear pores? 51) \_\_\_\_\_  
A) chromatin B) messenger RNA  
C) ribosomal RNA D) proteins

Answer: A

Section: 2.4

Book LO: 2.6

Global LO: G2

Bloom's Level: Remembering/Understanding

- 52) Which of the following is associated with protein synthesis? 52) \_\_\_\_\_  
A) chloroplasts B) mitochondria  
C) ribosomes D) smooth endoplasmic reticulum

Answer: C

Section: 2.3

Book LO: 2.4

Global LO: G2

Bloom's Level: Remembering/Understanding

- 53) Ribosomes may be either free within the cytoplasm or bound to a membrane system known as the 53) \_\_\_\_\_  
A) Golgi apparatus. B) cytoskeleton.  
C) microtubule organizing center. D) rough endoplasmic reticulum.

Answer: D

Section: 2.3

Book LO: 2.4

Global LO: G2

Bloom's Level: Remembering/Understanding

- 54) Which is *not* part of interphase? 54) \_\_\_\_\_  
A) M B) G<sub>1</sub> C) S D) G<sub>2</sub>

Answer: A

Section: 2.5

Book LO: 2.7

Global LO: G2

Bloom's Level: Remembering/Understanding

- 55) Embedded in the plasma membrane of cells, cholesterol molecules act to \_\_\_\_\_  
A) participate in pinocytosis.  
B) destabilize the membrane, leading to heart attacks.  
C) stabilize the membrane.  
D) make the membrane more resistant to freezing.

Answer: C

Section: 2.2

Book LO: 2.2

Global LO: G2

Bloom's Level: Remembering/Understanding

- 56) The endocytotic process in which small vesicles of fluid are brought into the cell is called \_\_\_\_\_  
A) pinocytosis.                      B) xenocytosis.                      C) exocytosis.                      D) phagocytosis.

Answer: A

Section: 2.2

Book LO: 2.3

Global LO: G2

Bloom's Level: Remembering/Understanding

- 57) The double membrane structure is unique to the \_\_\_\_\_  
A) nucleolus.                      B) peroxisome.                      C) mitochondrion.                      D) lysosome.

Answer: C

Section: 2.3

Book LO: 2.4

Global LO: G2

Bloom's Level: Remembering/Understanding

- 58) Peroxisomes \_\_\_\_\_  
A) synthesize proteins for use outside the cell.  
B) are the toxic waste removal system of the cell.  
C) contain some of the code necessary for their own duplication.  
D) are involved in the production of ATP.

Answer: B

Section: 2.3

Book LO: 2.4

Global LO: G2

Bloom's Level: Remembering/Understanding

- 59) The stiffest elements of the cytoskeleton, analogous to the bones of the human body, are \_\_\_\_\_  
A) microtubules.                      B) microfilaments.  
C) the cytosol.                      D) intermediate filaments.

Answer: A

Section: 2.3

Book LO: 2.4

Global LO: G2

Bloom's Level: Remembering/Understanding

- 60) The mitotic spindle forms from the \_\_\_\_\_  
A) nucleus. B) nucleolus.  
C) Golgi apparatus. D) centrosome matrix.

Answer: D

Section: 2.3

Book LO: 2.4

Global LO: G2

Bloom's Level: Remembering/Understanding

- 61) The nuclear envelope is continuous with the rough ER, but it differs from the rough ER in that it \_\_\_\_\_  
A) consists of tubes, like the smooth ER.  
B) has unique pores.  
C) consists of two membranes separated by a space.  
D) is not associated with ribosomes.

Answer: B

Section: 2.4

Book LO: 2.4

Global LO: G2

Bloom's Level: Applying/Analyzing

- 62) Membrane-bound organelles have the same type of membrane as the plasma membrane *except* \_\_\_\_\_  
A) the nonpolar tails face outward. B) they are all covered with ribosomes.  
C) for the absence of a glycocalyx. D) for the absence of cholesterol.

Answer: C

Section: 2.3

Book LO: 2.4

Global LO: G2

Bloom's Level: Applying/Analyzing

- 63) In the process of phagocytosis, the organelles whose enzymes break down ingested foreign cells are the \_\_\_\_\_  
A) lysosomes. B) peroxisomes.  
C) smooth endoplasmic reticulum. D) nucleoli.

Answer: A

Section: 2.3

Book LO: 2.4

Global LO: G2

Bloom's Level: Remembering/Understanding

- 64) During mitosis, the kinetochore microtubules of the mitotic spindle \_\_\_\_\_  
A) push the two poles of the cell apart.  
B) push on the chromatids.  
C) anchor the centriole to the cell membrane.  
D) attach to chromatids and align them at the metaphase plate.

Answer: D

Section: 2.5

Book LO: 2.7

Global LO: G2

Bloom's Level: Remembering/Understanding

- 65) The theory proposing that aging results from the effects of free radicals is primarily a theory of \_\_\_\_\_  
A) wear and tear. B) cross-linking of glucose.  
C) genetically programmed aging. D) progressive disorder of immunity.

Answer: A

Section: 2.6

Book LO: 2.9

Global LO: G1

Bloom's Level: Remembering/Understanding

- 66) The cytoskeletal elements that are analogous to the muscles of the body which generate pseudopodia and contractile forces in conjunction with myosin are \_\_\_\_\_  
A) intermediate filaments. B) integral proteins.  
C) microtubules. D) microfilaments.

Answer: D

Section: 2.3

Book LO: 2.4

Global LO: G2

Bloom's Level: Remembering/Understanding

- 67) Transcription of DNA requires the presence of \_\_\_\_\_  
A) extended chromatin. B) centrosomes.  
C) nucleosomes. D) histones.

Answer: A

Section: 2.4

Book LO: 2.7

Global LO: G2

Bloom's Level: Remembering/Understanding

- 68) The process of cellular aging may involve all of the following *except* \_\_\_\_\_  
A) decreased production of lysosomes. B) accumulated damage by free radicals.  
C) progressive shortening of telomeres. D) excessive metabolic rate.

Answer: A

Section: 2.6

Book LO: 2.9

Global LO: G1

Bloom's Level: Applying/Analyzing

- 69) During what phase of mitosis does the mitotic spindle break down and disappear? \_\_\_\_\_  
A) late prophase B) metaphase C) telophase D) anaphase

Answer: C

Section: 2.5

Book LO: 2.7

Global LO: G2

Bloom's Level: Remembering/Understanding



70) The cytoskeletal elements that form a ring to "squeeze" the two daughter cells apart during cytokinesis are 70) \_\_\_\_\_  
A) the microtrabecular lattice. B) microfilaments.  
C) intermediate filaments. D) microtubules.

Answer: B

Section: 2.5

Book LO: 2.4

Global LO: G2

Bloom's Level: Remembering/Understanding

71) During what phase of the cell cycle is the DNA duplicated? 71) \_\_\_\_\_  
A) interphase B) metaphase C) anaphase D) prophase

Answer: A

Section: 2.5

Book LO: 2.7

Global LO: G2

Bloom's Level: Remembering/Understanding

72) The plasma membrane is 72) \_\_\_\_\_  
A) a single-layered membrane that surrounds the nucleus of the cell.  
B) a membrane composed of tiny shelves or cristae.  
C) a single-layered membrane enclosing the plasma.  
D) the membrane surrounding the cell.

Answer: D

Section: 2.2

Book LO: 2.2

Global LO: G1

Bloom's Level: Remembering/Understanding

73) The cell that gathers information and controls body functions is a 73) \_\_\_\_\_  
A) fat cell. B) sperm cell. C) macrophage. D) neuron.

Answer: D

Section: 2.6

Book LO: 2.8

Global LO: G1

Bloom's Level: Remembering/Understanding

74) The temporary structures in the cytoplasm include all of the following *except* 74) \_\_\_\_\_  
A) pigments. B) the Golgi apparatus.  
C) lipid droplets. D) glycosomes.

Answer: B

Section: 2.3

Book LO: 2.5

Global LO: G2

Bloom's Level: Remembering/Understanding

75) Which of the following is an inclusion, *not* an organelle? 75) \_\_\_\_\_  
A) mitochondrion      B) microtubule      C) glycosome      D) lysosome

Answer: C

Section: 2.3

Book LO: 2.5

Global LO: G2

Bloom's Level: Remembering/Understanding

**TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.**

76) The smooth ER contains its own molecules of DNA. 76) \_\_\_\_\_

Answer: True       False

Section: 2.3

Book LO: 2.4

Global LO: G2

Bloom's Level: Applying/Analyzing

77) Hypercholesterolemia is an inherited disease in which the body's cells lack the protein receptors that bind to cholesterol-delivering LDLs. 77) \_\_\_\_\_

Answer:  True      False

Section: 2.2

Book LO: 2.3

Global LO: G2

Bloom's Level: Applying/Analyzing

78) Ribosomes consist of two subunits, each surrounded by a membrane. 78) \_\_\_\_\_

Answer: True       False

Section: 2.3

Book LO: 2.4

Global LO: G2

Bloom's Level: Remembering/Understanding

79) Peroxisomes are important in detoxification of a number of toxic substances, for instance, hydrogen peroxide. 79) \_\_\_\_\_

Answer:  True      False

Section: 2.3

Book LO: 2.4

Global LO: G2

Bloom's Level: Remembering/Understanding

80) The nucleolus serves as the cell's ribosome-producing machine. 80) \_\_\_\_\_

Answer:  True      False

Section: 2.4

Book LO: 2.6

Global LO: G1

Bloom's Level: Remembering/Understanding

81) Microtubules are composed of actin. 81) \_\_\_\_\_

Answer: True       False

Section: 2.3

Book LO: 2.4

Global LO: G2

Bloom's Level: Remembering/Understanding

- 82) Chromatin is composed of DNA wound around proteins known as actin. 82) \_\_\_\_\_  
Answer: True  False  
Section: 2.4  
Book LO: 2.6  
Global LO: G1  
Bloom's Level: Remembering/Understanding
- 83) An example of a type of cell with high rates of mitosis is a cell of the skin. 83) \_\_\_\_\_  
Answer:  True  False  
Section: 2.5  
Book LO: 2.8  
Global LO: G1  
Bloom's Level: Remembering/Understanding
- 84) During the S phase, cells are characterized by rapid growth. 84) \_\_\_\_\_  
Answer: True  False  
Section: 2.5  
Book LO: 2.7  
Global LO: G2  
Bloom's Level: Remembering/Understanding
- 85) During the G<sub>1</sub> phase, DNA is replicated in the cytoplasm. 85) \_\_\_\_\_  
Answer: True  False  
Section: 2.5  
Book LO: 2.7  
Global LO: G2  
Bloom's Level: Remembering/Understanding
- 86) Telomeres are structures that limit the maximum number of times cells can divide. 86) \_\_\_\_\_  
Answer:  True  False  
Section: 2.6  
Book LO: 2.9  
Global LO: G1  
Bloom's Level: Remembering/Understanding
- 87) Extended chromatin is tightly wound around histones. 87) \_\_\_\_\_  
Answer: True  False  
Section: 2.4  
Book LO: 2.6  
Global LO: G1  
Bloom's Level: Remembering/Understanding
- 88) A mitotic spindle develops during early telophase of mitosis. 88) \_\_\_\_\_  
Answer: True  False  
Section: 2.5  
Book LO: 2.7  
Global LO: G2  
Bloom's Level: Remembering/Understanding

89) During anaphase, the chromosomes are moved to the center of the cell. 89) \_\_\_\_\_

Answer: True  False

Section: 2.5

Book LO: 2.7

Global LO: G2

Bloom's Level: Remembering/Understanding

90) Cytokinesis is the physical division of the cytoplasm between the two newly formed cells that result from mitosis. 90) \_\_\_\_\_

Answer:  True  False

Section: 2.5

Book LO: 2.7

Global LO: G2

Bloom's Level: Remembering/Understanding

**SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.**

91) This phase is the physical division of the cytoplasm between the two newly formed cells that result from mitosis. 91) \_\_\_\_\_

Answer: cytokinesis

Section:

Book LO:

Global LO:

Bloom's Level:

92) What is the transport mechanism by which substances move from the cytoplasm to the outside of the cell? 92) \_\_\_\_\_

Answer: exocytosis

Section:

Book LO:

Global LO:

Bloom's Level:

93) Cell aging may be related to production of what charged molecules produced by the mitochondria? 93) \_\_\_\_\_

Answer: radicals (free radicals)

Section:

Book LO:

Global LO:

Bloom's Level:

94) Identify the two different types of membrane-associated molecules that comprise the glycocalyx. 94) \_\_\_\_\_

Answer: glycolipids and glycoproteins

Section:

Book LO:

Global LO:

Bloom's Level:

- 95) What would extended chromatin wrapped around a group of eight histones be called? 95) \_\_\_\_\_  
Answer: a nucleosome  
Section:  
Book LO:  
Global LO:  
Bloom's Level:
- 96) This is the phase in which a cell grows and carries on all its usual metabolic activities. 96) \_\_\_\_\_  
Answer: G1 phase of interphase  
Section:  
Book LO:  
Global LO:  
Bloom's Level:
- 97) These are the smallest living units in the body. 97) \_\_\_\_\_  
Answer: cells  
Section:  
Book LO:  
Global LO:  
Bloom's Level:
- 98) This is the outermost continuous boundary of a human cell. 98) \_\_\_\_\_  
Answer: plasma membrane (plasmalemma)  
Section:  
Book LO:  
Global LO:  
Bloom's Level:
- 99) This is the name for the currently held theory describing the plasma membrane structure. 99) \_\_\_\_\_  
Answer: fluid mosaic model  
Section:  
Book LO:  
Global LO:  
Bloom's Level:
- 100) The phospholipid molecules of the plasma membrane are primarily composed of \_\_\_\_\_ 100) \_\_\_\_\_  
Answer: a non-polar tail comprised of 2 fatty acid chains attached to a polar head  
Section:  
Book LO:  
Global LO:  
Bloom's Level:
- 101) This network of rods running throughout the cytosol acts as a cell's "bones," "muscles," and "ligaments." 101) \_\_\_\_\_  
Answer: cytoskeleton  
Section:  
Book LO:  
Global LO:  
Bloom's Level:

- 102) This is the mechanism by which large particles and macromolecules enter a cell. 102) \_\_\_\_\_  
Answer: endocytosis  
Section:  
Book LO:  
Global LO:  
Bloom's Level:
- 103) This is the diffusion of water molecules across a membrane. 103) \_\_\_\_\_  
Answer: osmosis  
Section:  
Book LO:  
Global LO:  
Bloom's Level:
- 104) This is the type of protein involved in transport mechanisms across the plasma membrane. 104) \_\_\_\_\_  
Answer: integral proteins (transmembrane proteins)  
Section:  
Book LO:  
Global LO:  
Bloom's Level:
- 105) This is an inherited disease that leads to an accumulation of undigested glycolipids especially in the lysosomes of neurons. 105) \_\_\_\_\_  
Answer: Tay-Sachs disease  
Section:  
Book LO:  
Global LO:  
Bloom's Level:

**ESSAY. Write your answer in the space provided or on a separate sheet of paper.**

- 106) Differentiate phagocytosis from receptor-mediated endocytosis.  
Answer: In phagocytosis, the cell extends pseudopods and engulfs the foreign protein/foreign cell, which is often degraded after the phagocytic vesicle fuses with a lysosome. In receptor-mediated endocytosis, specific membrane receptors bind specific extra-cellular molecules. Once bound, the membrane deforms inward, creating a vesicle with the receptors and molecules inside. The vesicle contents are released into the cytoplasm or fuse with a lysosome, with the receptors recycled back to the membrane.  
Section:  
Book LO:  
Global LO:  
Bloom's Level:
- 107) Describe how cellular differentiation results in structural variation among cells in the human body.  
Answer: Cellular differentiation is the result of highly regulated gene activation/inactivation in the developing embryo. The products of gene activation are proteins. As the embryo develops, certain cells will begin to produce proteins that neighboring cells do not produce. As development progresses, these unique protein "signatures" lead to differences in cellular function. For example, in muscle cells actin and myosin proteins predominate which results in their unique contractile properties.  
Section:  
Book LO:  
Global LO:  
Bloom's Level:

108) Describe the two checkpoints that occur during interphase.

Answer: The G<sub>1</sub> checkpoint ensures that the cell has reached a maximum size and has replicated the necessary organelles and enzymes to synthesize DNA. The G<sub>2</sub> checkpoint checks to see whether replication errors or DNA damage has occurred during DNA synthesis.

Section:

Book LO:

Global LO:

Bloom's Level:

109) Describe the mitochondria.

Answer: These are long, thin organelles, that have their own DNA molecule which allows for self-replication. They produce ATP molecules, which are the equivalent of cellular energy. They are bound by two membranes. The inner one is highly folded into cristae, where many of the critical molecules involved in ATP production are imbedded.

Section:

Book LO:

Global LO:

Bloom's Level:

110) Describe the three major types of cytoskeletal elements.

Answer: Microtubules are the largest in diameter and are formed by the protein tubulin. They are stiff, but bendable. Microtubules are important in the trafficking of organelles within the cytoplasm. Microfilaments are the smallest in diameter. They are strands of the protein actin, are contractile proteins, which are typically very labile. Intermediate filaments are of intermediate diameter. They are very stable and permanent, functioning to resist shearing forces within and between adjacent cells.

Section:

Book LO:

Global LO:

Bloom's Level: