*Biology for a Changing World 2e,* Chapter 3 Test Bank

1. According to the cell theory, all living organisms are composed of

1. DNA.
2. cells.
3. proteins.
4. macromolecules.
5. phospholipids.

Answer: B

DQ: What structural features are shared by all cells, and what are the key differences between prokaryotic and eukaryotic cells?

Type: Know It

Difficulty: Easy

Important Words/Concepts: cell theory

2. According to the cell theory, all cells come from

1. an adaptation.
2. a common ancestor.
3. pre-existing cells.
4. a protocell.
5. endosymbiosis.

Answer: C

DQ: What structural features are shared by all cells, and what are the key differences between prokaryotic and eukaryotic cells?

Type: Know It

Difficulty: Easy

Important Words/Concepts: cell theory

3. Which feature is found in eukaryotic cells but not in prokaryotic cells?

1. cytoplasm
2. cell membrane
3. DNA
4. nucleus
5. ribosomes

Answer: D

DQ: What structural features are shared by all cells, and what are the key differences between prokaryotic and eukaryotic cells?

Type: Know It

Difficulty: Easy

Important Words/Concepts: prokaryotic versus eukaryotic cells

4. According to the cell theory, which of the following is NOT considered a living organism?

1. *Influenza* virus
2. protist
3. yeast
4. amoeba
5. diatoms

Answer: A

DQ: What structural features are shared by all cells, and what are the key differences between prokaryotic and eukaryotic cells?

Type: Know It

Difficulty: Easy

Important Words/Concepts: cell theory, definition of life

5. Which of the following is absent in some kinds of living cells?

A. cytoplasm

B. cell membrane

C. ribosomes

D. nucleus

E. phospholipids

Answer: D

DQ: What structural features are shared by all cells, and what are the key differences between prokaryotic and eukaryotic cells?

Type: Know It

Difficulty: Easy

Important Words/Concepts: cell theory, cell parts, prokaryotic versus eukaryotic

6. Which of the following are NOT composed of cells?

A. bacteria

B. viruses

C. humans

D. plants

E. fungi

Answer: B

DQ: What structural features are shared by all cells, and what are the key differences between prokaryotic and eukaryotic cells?

Type: Know It

Difficulty: Easy

Important Words/Concepts: cell theory

7. What are the two fundamental ideas upon which the Cell Theory is based?

*Answer:* 1) All living things are made of cells, and 2) all cells must come from the reproduction of existing cells.

DQ: What structural features are shared by all cells, and what are the key differences between prokaryotic and eukaryotic cells?

Type: Know It

Difficulty: Easy

Important Words/Concepts: cell theory

8. Cells that lack internal membrane-bound organelles are referred to as being \_\_\_\_\_\_\_\_\_\_, whereas cells that do contain membrane-bound organelles are called \_\_\_\_\_\_\_\_\_\_.

*Answer:* prokaryotic; eukaryotic

DQ: What structural features are shared by all cells, and what are the key differences between prokaryotic and eukaryotic cells?

Type: Use It

Difficulty: Medium

Important Words/Concepts: prokaryotic versus eukaryotic cells

9. Which structure is found only in eukaryotes?

1. cytoplasm
2. cell membrane
3. DNA
4. nucleus
5. ribosomes

Answer: D

DQ: What structural features are shared by all cells, and what are the key differences between prokaryotic and eukaryotic cells?

Type: Know It

Difficulty: Easy

Important Words/Concepts: prokaryotic versus eukaryotic cells

10. Which structure is found in prokaryotes and not in animal cells?

1. cytoplasm
2. cell membrane
3. DNA
4. cell wall
5. ribosomes

Answer: D

DQ: What structural features are shared by all cells, and what are the key differences between prokaryotic and eukaryotic cells?

Type: Know It

Difficulty: Easy

Important Words/Concepts: prokaryotic versus eukaryotic cells

11. When observing a sample of cells through the microscope, presence of which of the following structures would indicate that you were observing a eukaryote and not a prokaryote?

1. cytoplasm
2. mitochondria
3. DNA
4. cell wall
5. ribosomes

Answer: B

DQ: What structural features are shared by all cells, and what are the key differences between prokaryotic and eukaryotic cells?

Type: Use It

Difficulty: Easy

Important Words/Concepts: prokaryotic versus eukaryotic cells

12. Where is the genetic information of a prokaryotic organism stored?

1. in the cytoplasm
2. in the nucleus
3. in the ribosomes
4. on a DNA chromosome in the cytoplasm
5. on a chromosome in the nucleus

Answer: D

DQ: What structural features are shared by all cells, and what are the key differences between prokaryotic and eukaryotic cells?

Type: Know It

Difficulty: Easy

Important Words/Concepts: the structure and components of prokaryotic cells

13. Under a microscope, a cell appears to have a nucleus. This eliminates which type of cell?

1. cheek cell
2. single-cell protist
3. animal cell
4. plant cell
5. bacterial cell

Answer: E

DQ: What structural features are shared by all cells, and what are the key differences between prokaryotic and eukaryotic cells?

Type: Use It

Difficulty: Easy

Important Words/Concepts: prokaryotic versus eukaryotic cells

14. Which of the following has prokaryotic cells?

1. a plant
2. an organism with a nucleus
3. a bacterium
4. a human
5. *Penicillium*

Answer: C

DQ: What structural features are shared by all cells, and what are the key differences between prokaryotic and eukaryotic cells?

Type: Know It

Difficulty: Easy

Important Words/Concepts: prokaryotic versus eukaryotic cells

15. Peptidoglycan cell walls are found in

1. bacterial cells.
2. animal cells.
3. plant cells.
4. animal and plant cells.
5. all cells.

Answer: A

DQ: What structural features are shared by all cells, and what are the key differences between prokaryotic and eukaryotic cells?

Type: Know It

Difficulty: Easy

Important Words/Concepts: prokaryotic versus eukaryotic cells

16. Nuclei are found in

1. bacterial cells.
2. animal cells.
3. plant cells.
4. animal and plant cells.
5. all cells.

Answer: D

DQ: What structural features are shared by all cells, and what are the key differences between prokaryotic and eukaryotic cells?

Type: Know It

Difficulty: Easy

Important Words/Concepts: prokaryotic versus eukaryotic cells

17. Ribosomes are found in

1. bacterial cells.
2. animal cells.
3. plant cells.
4. animal and plant cells.
5. all cells.

Answer: E

DQ: What structural features are shared by all cells, and what are the key differences between prokaryotic and eukaryotic cells?

Type: Know It

Difficulty: Easy

Important Words/Concepts: prokaryotic versus eukaryotic cells

18. Cell membranes are found in

1. bacterial cells.
2. animal cells.
3. plant cells.
4. animal and plant cells.
5. all cells.

Answer: E

DQ: What structural features are shared by all cells, and what are the key differences between prokaryotic and eukaryotic cells?

Type: Know It

Difficulty: Easy

Important Words/Concepts: prokaryotic versus eukaryotic cells

19. Mitochondria are found in

1. bacterial cells.
2. animal cells.
3. plant cells.
4. animal and plant cells.
5. all cells.

Answer: D

DQ: What structural features are shared by all cells, and what are the key differences between prokaryotic and eukaryotic cells?

Type: Know It

Difficulty: Easy

Important Words/Concepts: prokaryotic versus eukaryotic cells

20. DNA is found in

1. bacterial cells.
2. animal cells.
3. plant cells.
4. animal and plant cells.
5. all cells.

Answer: E

DQ: What structural features are shared by all cells, and what are the key differences between prokaryotic and eukaryotic cells?

Type: Know It

Difficulty: Easy

Important Words/Concepts: prokaryotic versus eukaryotic cells

21. Endoplasmic reticulum is found in

1. bacterial cells.
2. animal cells.
3. plant cells.
4. animal and plant cells.
5. all cells.

Answer: D

DQ: What structural features are shared by all cells, and what are the key differences between prokaryotic and eukaryotic cells?

Type: Know It

Difficulty: Easy

Important Words/Concepts: prokaryotic versus eukaryotic cells

22. The Golgi apparatus is found in

1. bacterial cells.
2. animal cells.
3. plant cells.
4. animal and plant cells.
5. all cells.

Answer: D

DQ: What structural features are shared by all cells, and what are the key differences between prokaryotic and eukaryotic cells?

Type: Know It

Difficulty: Easy

Important Words/Concepts: prokaryotic versus eukaryotic cells

23. Where in a prokaryotic cell would you find its DNA?

*Answer:* It is floating freely in the cytoplasm.

DQ: What structural features are shared by all cells, and what are the key differences between prokaryotic and eukaryotic cells?

Type: Use It

Difficulty: Easy

Important Words/Concepts: the structure and components of prokaryotic cells

24. Fill in the following chart with the characteristics typical of prokaryotic and eukaryotic cells:

|  |  |  |
| --- | --- | --- |
|  | Prokaryotic | Eukaryotic |
| Size (small or large) |  |  |
| Cell membrane (yes or no) |  |  |
| Membrane-bound organelles (yes or no) |  |  |
| Nucleus (yes or no) |  |  |

*Answers:*

|  |  |  |
| --- | --- | --- |
|  | Prokaryotic | Eukaryotic |
| Size (small or large) | Small | Large |
| Cell membrane (yes or no) | Yes | Yes |
| Membrane-bound organelles (yes or no) | No | Yes |
| Nucleus (yes or no) | No | Yes |

DQ: What structural features are shared by all cells, and what are the key differences between prokaryotic and eukaryotic cells?

Type: Know It

Difficulty: Easy

Important Words/Concepts: prokaryotic versus eukaryotic cells

25. Prokaryotic and eukaryotic cells have all of the following in common EXCEPT

* 1. DNA.
  2. a nucleus.
  3. ribosomes.
  4. a cell membrane.
  5. cytoplasm.

Answer: B

DQ: What structural features are shared by all cells, and what are the key differences between prokaryotic and eukaryotic cells?

Type: Know It

Difficulty: Easy

Important Words/Concepts: prokaryotic versus eukaryotic cells

26. All of the following have eukaryotic cells EXCEPT

* 1. animals.
  2. plants.
  3. fungi.
  4. bacteria.
  5. humans.

Answer: D

DQ: What structural features are shared by all cells, and what are the key differences between prokaryotic and eukaryotic cells?

Type: Know It

Difficulty: Hard

Important Words/Concepts: prokaryotic versus eukaryotic cells

27. List three differences between prokaryotic and eukaryotic cells in the following chart:

|  |  |
| --- | --- |
| Prokaryotic | Eukaryotic |
|  |  |
|  |  |
|  |  |

*Answers:*

|  |  |
| --- | --- |
| Prokaryotic | Eukaryotic |
| Small | Large |
| Peptidoglycan cell wall | No cell wall, or cell wall not made of peptidoglycan |
| No membrane-bound organelles | Membrane-bound organelles |
| No nucleus | Nucleus |

DQ: What structural features are shared by all cells, and what are the key differences between prokaryotic and eukaryotic cells?

Type: Know It

Difficulty: Hard

Important Words/Concepts: prokaryotic versus eukaryotic cells

28. List at least three similarities between prokaryotic and eukaryotic cells.

*Answer:*

* cell membranes
* cytoplasm
* ribosomes
* DNA

DQ: What structural features are shared by all cells, and what are the key differences between prokaryotic and eukaryotic cells?

Type: Know It

Difficulty: Hard

Important Words/Concepts: prokaryotic versus eukaryotic cells

29. Ribosomes are necessary for:

1. DNA replication.
2. protein production.
3. transcription.
4. DNA elongation.
5. respiration.

Answer: B

DQ: What structural features are shared by all cells, and what are the key differences between prokaryotic and eukaryotic cells?

Type: Know It

Difficulty: Easy

Important Words/Concepts: protein production, cell parts

30. Proteins are made

1. by the nucleus.
2. only by eukaryotes.
3. by the Golgi apparatus.
4. by the ribosomes.
5. anywhere in the cytoplasm.

Answer: D

DQ: What structural features are shared by all cells, and what are the key differences between prokaryotic and eukaryotic cells?

Type: Know It

Difficulty: Easy

Important Words/Concepts: protein production, cell parts

31. Ribosomes

* 1. read DNA.
  2. make energy.
  3. make proteins.
  4. are the main component of cell walls.
  5. are the main component of cell membranes.

Answer: C

DQ: What structural features are shared by all cells, and what are the key differences between prokaryotic and eukaryotic cells?

Type: Know It

Difficulty: Easy

Important Words/Concepts: protein production, cell parts

32. Which statement about cell membranes is true?

1. They have hydrophilic tails.
2. They are made of proteins.
3. They are impermeable.
4. They are made up of a double phospholipid layer.
5. They have hydrophobic surfaces.

Answer: D

DQ: How do solutes and water cross membranes, and what determines the direction of movement of solutes and water in different situations?

Type: Know It

Difficulty: Easy

Important Words/Concepts: cell membranes and phospholipid bilayer

33. The terms hydrophilic and hydrophobic relate to a substance’s interaction with which molecule?

1. glucose
2. ATP
3. oxygen
4. phosphate
5. water

Answer: E

DQ: How do solutes and water cross membranes, and what determines the direction of movement of solutes and water in different situations?

Type: Know It

Difficulty: Easy

Important Words/Concepts: hydrophobic and hydrophilic

34. What provides a boundary between the internal and external environment of all cells?

1. hydrophilic heads and hydrophilic tails
2. a phospholipid trilayer
3. a phospholipid bilayer
4. a phospholipid layer
5. hydrophobic heads and tails

Answer: C

DQ: How do solutes and water cross membranes, and what determines the direction of movement of solutes and water in different situations?

Type: Know It

Difficulty: Easy

Important Words/Concepts: cell membranes and phospholipid bilayer

35. The hydrophilic head of a phospholipid is composed of

1. a cholesterol group, a phosphate group, and a glycerol molecule.
2. a choline group, a phosphate group, and a glycerol molecule.
3. a cholesterol group, a phosphate group, and a glycine molecule.
4. a choline group, a phosphorous atom, and a glycerol molecule.
5. a choline group, a phosphorous atom, and a glycine molecule.

Answer: B

DQ: How do solutes and water cross membranes, and what determines the direction of movement of solutes and water in different situations?

Type: Know It

Difficulty: Hard

Important Words/Concepts: phospholipid bilayer

36. The interior part of the bilayer in a cell membrane is hydro-\_\_\_\_\_.

*Answer:* phobic

DQ: How do solutes and water cross membranes, and what determines the direction of movement of solutes and water in different situations?

Type: Know It

Difficulty: Easy

Important Words/Concepts: cell membranes and phospholipid bilayer

37. The exterior surface of the bilayer in a cell membrane is hydro-\_\_\_\_\_.

*Answer:* philic

DQ: How do solutes and water cross membranes, and what determines the direction of movement of solutes and water in different situations?

Type: Know It

Difficulty: Easy

Important Words/Concepts: cell membranes and phospholipid bilayer

38. A cell membrane is composed of

1. a layer of lipids.
2. a double layer of phospholipids.
3. proteins.
4. cell wall material.
5. a double layer of phospholipids with proteins embedded in it.

Answer: E

DQ: How do solutes and water cross membranes, and what determines the direction of movement of solutes and water in different situations?

Type: Know It

Difficulty: Easy

Important Words/Concepts: cell membranes and phospholipid bilayer

39. Phospholipids are

1. hydrophilic.
2. hydrophobic.
3. neutral.
4. partly hydrophilic and partly hydrophobic.
5. partly neutral and partly hydrophilic.

Answer: D

DQ: How do solutes and water cross membranes, and what determines the direction of movement of solutes and water in different situations?

Type: Know It

Difficulty: Easy

Important Words/Concepts: phospholipids

40. All of the following are true of the cell membrane EXCEPT

* 1. it is a boundary between the environment and the cytoplasm.
  2. it is semipermeable.
  3. it is stiff and rigid.
  4. it is made of phospholipids.
  5. it contains proteins that can transport nutrients in and out.

Answer: C

DQ: How do solutes and water cross membranes, and what determines the direction of movement of solutes and water in different situations?

Type: Know It

Difficulty: Easy

Important Words/Concepts: cell membranes and phospholipid bilayer

41. The hydrophobic part of a phospholipid is the

* 1. choline group.
  2. phosphate group.
  3. glycerol group.
  4. fatty acid group.
  5. adenine group.

Answer: D

DQ: How do solutes and water cross membranes, and what determines the direction of movement of solutes and water in different situations?

Type: Know It

Difficulty: Easy

Important Words/Concepts: phospholipids

42. Osmosis refers to the diffusion of

1. small molecules.
2. water.
3. solute.
4. molecules.
5. gaseous particles.

Answer: B

DQ: How do solutes and water cross membranes, and what determines the direction of movement of solutes and water in different situations?

Type: Know It

Difficulty: Easy

Important Words/Concepts: osmosis

43. Water crosses a semipermeable membrane to dilute a solute that is unable to cross the membrane. What is this process called?

1. diffusion
2. facilitated transport
3. osmosis
4. homeostasis
5. feedback regulation

Answer: C

DQ: How do solutes and water cross membranes, and what determines the direction of movement of solutes and water in different situations?

Type: Know It

Difficulty: Easy

Important Words/Concepts: osmosis

44. Define osmosis.

*Answer:* Water crosses a semipermeable membrane to dilute a solute that is unable to cross the membrane.

DQ: How do solutes and water cross membranes, and what determines the direction of movement of solutes and water in different situations?

Type: Use It

Difficulty: Easy

Important Words/Concepts: osmosis

45. You take a fish, a plant, and a bacterium that were living in pond water that contains solute and you put them into a fish tank that contains pure, de-ionized water. What will happen to the plant cells, the bacterial cells, and the cells of the fish gills (those are the cells first exposed to the pure water)?

*Answer:* The plant cell and bacterial cell will take on water, but their cell walls will limit the amount of water. The fish-gill cells will also take on water, but they lack a cell wall, so they may take on so much water that they explode—leaving the fish with no oxygen.

DQ: How do solutes and water cross membranes, and what determines the direction of movement of solutes and water in different situations?

Type: Use It

Difficulty: Hard

Important Words/Concepts: osmosis

46. Water moves across a semi-permeable membrane from an area of low solute concentration to an area of high solute concentration in a process called \_\_\_\_\_\_\_\_\_\_\_.

*Answer:* osmosis

DQ: How do solutes and water cross membranes, and what determines the direction of movement of solutes and water in different situations?

Type: Know It

Difficulty: Easy

Important Words/Concepts: osmosis

47. An important purpose of a cell wall in bacteria is to

* 1. prevent the cell from adhering to other cells.
  2. prevent the cell from collapsing.
  3. prevent the cell from being eaten.
  4. allow the cell to live in water.
  5. allow the cell to take in nutrients.

Answer: D

DQ: How do solutes and water cross membranes, and what determines the direction of movement of solutes and water in different situations?

Type: Know It

Difficulty: Hard

Important Words/Concepts: cell wall, osmosis, prokaryotic

48. If an animal cell is living in water that is much saltier than the cell’s cytoplasm, the water

* 1. will enter the cell.
  2. will move out of the cell.
  3. will neither move in or out of the cell.
  4. will leave the cell, bind salt in the water, and then re-enter the cell.
  5. will enter the cell, bind salts in the cytoplasm, and then leave the cell.

Answer: B

DQ: How do solutes and water cross membranes, and what determines the direction of movement of solutes and water in different situations?

Type: Use It

Difficulty: Hard

Important Words/Concepts: osmosis

49. The process of molecules moving from a high concentration to a lower concentration in a solution without an energy input is termed

1. active transport.
2. active diffusion.
3. facilitated diffusion.
4. simple diffusion.
5. osmosis.

Answer: D

DQ: How do solutes and water cross membranes, and what determines the direction of movement of solutes and water in different situations?

Type: Know It

Difficulty: Easy

Important Words/Concepts: diffusion, transport

50. The process of molecules going against a concentration gradient that requires energy and a membrane protein is termed

1. active transport.
2. active diffusion.
3. facilitated diffusion.
4. simple diffusion.
5. osmosis.

Answer: A

DQ: How do solutes and water cross membranes, and what determines the direction of movement of solutes and water in different situations?

Type: Know It

Difficulty: Easy

Important Words/Concepts: diffusion, transport

51. The process of molecules going from a high to a low concentration using a specific membrane protein that has no energy requirement is termed

1. active transport.
2. active diffusion.
3. facilitated diffusion.
4. simple diffusion.
5. osmosis.

Answer: C

DQ: How do solutes and water cross membranes, and what determines the direction of movement of solutes and water in different situations?

Type: Know It

Difficulty: Easy

Important Words/Concepts: the permeability of cell membranes

52. Proteins that move large or hydrophilic molecules across a cell membrane are called \_\_\_\_ proteins.

*Answer:* transport

DQ: How do solutes and water cross membranes, and what determines the direction of movement of solutes and water in different situations?

Type: Know It

Difficulty: Easy

Important Words/Concepts: transport

53. Proteins that move large or hydrophilic molecules across a cell membrane are called \_\_\_\_ proteins.

1. transfer
2. osmotic
3. integral
4. transport
5. diffusion

Answer: D

DQ: How do solutes and water cross membranes, and what determines the direction of movement of solutes and water in different situations?

Type: Know It

Difficulty: Easy

Important Words/Concepts: transport

54. Which of the following require cellular energy?

1. O2 going from your lungs to your blood cells
2. CO2 leaving your blood cells and entering your lungs
3. water molecules entering through special open pores called aquaporins
4. moving glucose from a low concentration to a high concentration
5. moving glucose from a high concentration to a low concentration

Answer: D

DQ: How do solutes and water cross membranes, and what determines the direction of movement of solutes and water in different situations?

Type: Know It

Difficulty: Hard

Important Words/Concepts: transport

55. Molecules that can cross the cell membrane by simple diffusion are

* 1. large.
  2. ions.
  3. hydrophilic.
  4. uncharged molecules.
  5. All molecules can cross the cell membrane by simple diffusion.

Answer: D

DQ: How do solutes and water cross membranes, and what determines the direction of movement of solutes and water in different situations?

Type: Know It

Difficulty: Easy

Important Words/Concepts: cell membrane, diffusion, transport

56. Circle one of each pair: Simple diffusion is the movement of small/large molecules that are hydrophilic/hydrophobic across a membrane from an area of lower/higher concentration to an area of lower/higher concentration which does/does not require energy.

*Answer:* small; hydrophobic; higher; lower; does not

DQ: How do solutes and water cross membranes, and what determines the direction of movement of solutes and water in different situations?

Type: Know It

Difficulty: Easy

Important Words/Concepts: cell membrane, diffusion, transport

57. All of the following describe transport proteins EXCEPT

* 1. there are hundreds of types in the human body.
  2. they are very specific in the type of molecule they transfer.
  3. they are embedded in the cell membrane.
  4. they allow large molecules to pass across the cell membrane.
  5. they help small hydrophobic molecules to pass across the cell membrane.

Answer: E

DQ: How do solutes and water cross membranes, and what determines the direction of movement of solutes and water in different situations?

Type: Know It

Difficulty: Easy

Important Words/Concepts: cell membrane, diffusion, transport protein

58. Fill in the following table to distinguish between simple diffusion, facilitated diffusion, and active transport:

|  |  |  |  |
| --- | --- | --- | --- |
|  | Simple Diffusion | Facilitated Diffusion | Active Transport |
| Molecule Size? (small/large/either) |  |  |  |
| Hydrophilic, Hydrophobic, Either? |  |  |  |
| High-to-Low or  Low-to-High Concentration? |  |  |  |
| Transport Protein? (yes/no) |  |  |  |
| Energy Required? (yes/no) |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  | Simple Diffusion | Facilitated Diffusion | Active Transport |
| Molecule Size? (small/large/either) | Small | Either | Either |
| Hydrophilic, Hydrophobic, Either? | Hydrophobic | Hydrophilic | Either |
| High-to-Low or  Low-to-High Concentration? | High to Low | High to Low | Low to High |
| Transport Protein? (yes/no) | No | Yes | Yes |
| Energy Required? (yes/no) | No | No | Yes |

DQ: How do solutes and water cross membranes, and what determines the direction of movement of solutes and water in different situations?

Type: Know It

Difficulty: Hard

Important Words/Concepts: active transport, cell membrane, diffusion, facilitated diffusion, transport protein

59. Water is a large molecule that crosses the cell membrane by facilitated diffusion. Cells living in very dilute environments (i.e., the environment has a lower solute concentration than the cytoplasm) pump water out of the cell using active transport. Why is this necessary? If this were an animal cell, what would happen if the active transport proteins were suddenly disabled?

*Answer:* If a cell lives in a very dilute environment, then water is constantly coming into the cell. The cell needs to actively pump water out in order to maintain an appropriate solute concentration within the cytoplasm. If the active transport proteins of an animal cell were suddenly disabled, then the cell would take on too much water, burst open, and die.

DQ: How do solutes and water cross membranes, and what determines the direction of movement of solutes and water in different situations?

Type: Use It

Difficulty: Hard

Important Words/Concepts: active transport, cell membrane, facilitated diffusion, transport protein

60. You take some human blood cells and some plant cells that each naturally contains 0.9% salt solution, and you place them in containers of pure water (0% salt). What will happen?

*Answer:* The plant cell and red blood cells will both take on water, but the plant cell walls will limit the amount of water they take on. The red blood cells lack cell walls, so they may take on so much water that they explode.

DQ: How do solutes and water cross membranes, and what determines the direction of movement of solutes and water in different situations?

Type: Use It

Difficulty: Hard

Important Words/Concepts: cell types

61. What were Fleming’s initial observations about organisms on a Petri dish that led him to discover penicillin?

1. A zone of clearing formed around bacterial colonies.
2. Bacterial mycelium inhibited mold growth.
3. Fungal colonies grew around bacterial colonies.
4. Bacteria inhibited the growth of mold.
5. A mold inhibited the growth of bacterial colonies.

Answer: E

DQ: How do antibiotics target bacteria, and in what situation is antibiotic therapy indicated?

Type: Know It

Difficulty: Easy

Important Words/Concepts: Alexander Fleming and penicillin

62. Penicillin is isolated from

1. *Staphylococcus*.
2. protists.
3. mold.
4. bacteria.
5. yeast.

Answer: C

DQ: How do antibiotics target bacteria, and in what situation is antibiotic therapy indicated?

Type: Know It

Difficulty: Easy

Important Words/Concepts: Alexander Fleming and penicillin

63. Penicillin was isolated from \_\_\_\_\_\_ growing on a plate of agar.

1. a bacterium
2. a plant
3. an animal
4. a colony of mold
5. two rival colonies of mold

Answer: D

DQ: How do antibiotics target bacteria, and in what situation is antibiotic therapy indicated?

Type: Know It

Difficulty: Easy

Important Words/Concepts: penicillin

64. What observations made Fleming further investigate some mold growing on his bacterial plate, instead of just discarding the contaminated plate?

*Answer:* There was a region around the mold where no bacteria were growing. When he looked closer, he saw that bacterial cells in that empty area had burst.

DQ: How do antibiotics target bacteria, and in what situation is antibiotic therapy indicated?

Type: Use It

Difficulty: Hard

Important Words/Concepts: penicillin

65. All of the following are true of penicillin EXCEPT

* 1. Alexander Fleming was the first to study it scientifically.
  2. it is produced by bacteria.
  3. it was the first medical antibiotic.
  4. it revolutionized medicine.
  5. it works against gram-positive bacteria.

Answer: B

DQ: How do antibiotics target bacteria, and in what situation is antibiotic therapy indicated?

Type: Know It

Difficulty: Easy

Important Words/Concepts: antibiotic, penicillin

66. Penicillin is

* 1. a chemical that kills bacteria.
  2. a chemical that kills fungi.
  3. a chemical that kills viruses.
  4. a chemical that kills plants.
  5. a chemical that kills all life forms it contacts.

Answer: A

DQ: How do antibiotics target bacteria, and in what situation is antibiotic therapy indicated?

Type: Know It

Difficulty: Easy

Important Words/Concepts: antibiotic, penicillin

67. If you were a physician and had two sick patients, one with a *Pneumococcus* infection, the other with *Influenza*, would you give both of them penicillin? Why or why not?

*Answer:* The patient with a *Pneumococcus* infection could receive penicillin because penicillin will help kill the *Pneumococcus*, but the patient with *Influenza* should not get penicillin because penicillin will have no effect on *Influenza*.

DQ: How do antibiotics target bacteria, and in what situation is antibiotic therapy indicated?

Type: Use It

Difficulty: Hard

Important Words/Concepts: antibiotic, penicillin

68. Penicillin kills bacteria by disrupting their

1. cell wall.
2. cell membrane.
3. DNA.
4. ribosomes.
5. lysosomes.

Answer: A

DQ: How do antibiotics target bacteria, and in what situation is antibiotic therapy indicated?

Type: Know It

Difficulty: Easy

Important Words/Concepts: the mechanism of action of antibiotics, penicillin

69. Gram-positive bacteria grown in the presence of penicillin swell and lyse because

1. their cell wall becomes weakened.
2. osmosis allows water into the cell.
3. water pressure causes the cell to rupture.
4. no new cell wall can be synthesized.
5. All of the above.

Answer: E

DQ: How do antibiotics target bacteria, and in what situation is antibiotic therapy indicated?

Type: Know It

Difficulty: Hard

Important Words/Concepts: the mechanism of action of antibiotics

70. The outermost layer of a Gram positive bacterium is made of \_\_\_\_\_\_\_.

*Answer:* peptidoglycan

DQ: How do antibiotics target bacteria, and in what situation is antibiotic therapy indicated?

Type: Know It

Difficulty: Easy

Important Words/Concepts: antibiotics, bacteria cell structure

71. The outermost layer of a gram-negative bacterium is made of \_\_\_\_\_\_\_.

*Answer:* lipids

DQ: How do antibiotics target bacteria, and in what situation is antibiotic therapy indicated?

Type: Know It

Difficulty: Easy

Important Words/Concepts: antibiotics

72. Penicillin is effective against gram- \_\_\_\_\_ bacteria.

*Answer:* positive

DQ: How do antibiotics target bacteria, and in what situation is antibiotic therapy indicated?

Type: Know It

Difficulty: Easy

Important Words/Concepts: antibiotics, bacteria cell structure

73. Streptomycin is effective against gram- \_\_\_\_ bacteria.

*Answer:* negative

DQ: How do antibiotics target bacteria, and in what situation is antibiotic therapy indicated?

Type: Know It

Difficulty: Easy

Important Words/Concepts: antibiotics, streptomycin

74. Streptomycin interferes with a cells ability to make

* + 1. cell walls.
    2. cell membranes.
    3. peptidoglycan.
    4. proteins.
    5. chromosomes.

Answer: D

DQ: How do antibiotics target bacteria, and in what situation is antibiotic therapy indicated?

Type: Know It

Difficulty: Easy

Important Words/Concepts: antibiotics, streptomycin

75. Streptomycin interferes with a cell’s ability to make \_\_\_\_\_\_\_\_\_\_\_.

*Answer:* proteins

DQ: How do antibiotics target bacteria, and in what situation is antibiotic therapy indicated?

Type: Know It

Difficulty: Easy

Important Words/Concepts: antibiotics, streptomycin

76. Penicillin weakens bacterial

1. cell walls.
2. cell membranes.
3. ribosomes.
4. chromosomes.
5. Golgi apparatus.

Answer: A

DQ: How do antibiotics target bacteria, and in what situation is antibiotic therapy indicated?

Type: Know It

Difficulty: Easy

Important Words/Concepts: antibiotics, penicillin

77. Compare the activity of penicillin and streptomycin and explain why one is effective against gram-negative bacteria and the other is effective against gram-positive bacteria.

*Answer:* Penicillin interferes with peptidoglycan synthesis. When a gram-positive bacterial cell grows, it must make a lot of peptidoglycan. If it fails to do so, the cell wall is incomplete and water will rush into the cell, causing it to explode. Streptomycin can cross the peptidoglycan layer and enter the cell, where it attaches to the ribosome. This prevents normal ribosomal function, including the building of proteins. Without the needed proteins, the cell dies.

DQ: How do antibiotics target bacteria, and in what situation is antibiotic therapy indicated?

Type: Use It

Difficulty: Hard

Important Words/Concepts: antibiotic mode of action

78. Bacterial cell walls are made rigid by the presence of

1. phosphates.
2. lipids.
3. peptidoglycan.
4. cholesterol.
5. glycerol.

Answer: C

DQ: How do antibiotics target bacteria, and in what situation is antibiotic therapy indicated?

Type: Know It

Difficulty: Easy

Important Words/Concepts: bacteria, cell wall, prokaryotic

79. Peptidoglycan is made of

1. lipids.
2. sugars.
3. amino acids.
4. A and B but not C.
5. B and C but not A.

Answer: E

DQ: How do antibiotics target bacteria, and in what situation is antibiotic therapy indicated?

Type: Know It

Difficulty: Hard

Important Words/Concepts: bacteria, cell wall, prokaryotic

80. Penicillin works by

1. interfering with the ability of bacterial cells to take in nutrients.
2. interfering with the formation of peptidoglycan.
3. interfering with protein formation in bacterial cells.
4. breaking up the DNA in a bacterial cell.
5. breaking up the cell membrane.

Answer: B

DQ: How do antibiotics target bacteria, and in what situation is antibiotic therapy indicated?

Type: Know It

Difficulty: Hard

Important Words/Concepts: antibiotic, bacteria, cell wall, penicillin, prokaryotic

81. Plants and some fungi have a cell wall, as do bacteria. Why, then, does penicillin only affect bacteria?

*Answer:* Penicillin works by interfering with the formation of peptidoglycan, and only bacteria use peptidoglycan in the formation of their cell walls.

DQ: How do antibiotics target bacteria, and in what situation is antibiotic therapy indicated?

Type: Know It

Difficulty: Hard

Important Words/Concepts: antibiotic, bacteria, cell wall, eukaryotic, penicillin, prokaryotic

82. Penicillin kills bacterial cells but not human cells because

* 1. human cells do not have cell walls.
  2. human cells use ribosomes to make protein.
  3. human cells have cholesterol in their cell membrane.
  4. bacterial cells do not have cell membranes.
  5. bacterial cells do not have DNA.

Answer: A

DQ: How do antibiotics target bacteria, and in what situation is antibiotic therapy indicated?

Type: Know It

Difficulty: Hard

Important Words/Concepts: antibiotic, bacteria, cell wall, eukaryotic, penicillin, prokaryotic

83. Where are proteins produced in prokaryotic cells?

1. rough ER
2. cell membrane
3. cell wall
4. ribosomes
5. smooth ER

Answer: D

DQ: How do antibiotics target bacteria, and in what situation is antibiotic therapy indicated?

Type: Know It

Difficulty: Easy

Important Words/Concepts: protein production

84. Streptomycin inhibits the production of

1. phospholipids.
2. protein.
3. bacterial proteins only.
4. bacterial peptidoglycans.
5. bacterial phospholipids only.

Answer: C

DQ: How do antibiotics target bacteria, and in what situation is antibiotic therapy indicated?

Type: Know It

Difficulty: Hard

Important Words/Concepts: protein production, antibiotic, streptomycin

85. Streptomycin kills bacteria by

* 1. interfering with cell division.
  2. interfering with energy production.
  3. interfering with formation of the bacterial cell membrane.
  4. interfering with formation of the bacterial cell wall.
  5. interfering with formation of proteins.

Answer: E

DQ: How do antibiotics target bacteria, and in what situation is antibiotic therapy indicated?

Type: Know It

Difficulty: Easy

Important Words/Concepts: antibiotic, bacteria, prokaryotic, streptomycin

86. Both animal and plant cells contain these energy-processing organelles.

1. Golgi apparatus
2. lysosomes
3. ribosomes
4. chloroplasts
5. mitochondria

Answer: E

DQ: What are some key eukaryotic organelles and their functions?

Type: Know It

Difficulty: Easy

Important Words/Concepts: animal and plant cell structure

87. Chloroplasts are found in

1. bacterial cells.
2. animal cells.
3. plant cells.
4. animal and plant cells.
5. all cells.

Answer: C

DQ: What are some key eukaryotic organelles and their functions?

Type: Know It

Difficulty: Easy

Important Words/Concepts: animal and plant cell structure

88. Evidence in support of the endosymbiosis hypothesis includes all of the following EXCEPT

* 1. mitochondria and chloroplasts are the same size as bacteria.
  2. mitochondria and chloroplasts have cell walls like bacteria.
  3. mitochondria and chloroplasts divide in a manner similar to bacteria.
  4. mitochondria and chloroplasts have circular DNA like bacteria.
  5. mitochondria and chloroplasts have ribosomes that are similar to bacteria.

Answer: B

DQ: What are some key eukaryotic organelles and their functions?

Type: Know It

Difficulty: Hard

Important Words/Concepts: endosymbiosis

89. Animal cells have all of the following EXCEPT

* 1. cell walls.
  2. mitochondria.
  3. lysosomes.
  4. Golgi apparatus.
  5. endoplasmic reticulum.

Answer: A

DQ: What are some key eukaryotic organelles and their functions?

Type: Know It

Difficulty: Easy

Important Words/Concepts: animal cell, eukaryotic, organelle

90. Match up each organelle with its function.

1. Golgi apparatus a. Houses genetic material
2. Nucleus b. Package and process proteins
3. Mitochondria c. Site of photosynthesis
4. Chloroplast d. Site of protein synthesis
5. Ribosomes e. “Power plants” of the cell

*Answer:* A. b; B. a; C. e; D. c; E. d

DQ: What are some key eukaryotic organelles and their functions?

Type: Know It

Difficulty: Easy

Important Words/Concepts: eukaryotic organelle structure and function

91. What theory states that mitochondria and chloroplasts are derived from free-living prokaryotic cells?

1. endosymbiosis
2. prokaryotic
3. organelle
4. osmosis
5. endoplasmic

Answer: A

DQ: What are some key eukaryotic organelles and their functions?

Type: Know It

Difficulty: Easy

Important Words/Concepts: eukaryotic organelle structure and function, endosymbiosis

92. The \_\_\_\_\_\_\_ is the site of photosynthesis in eukaryotes.

1. mitochondrion
2. cytoplasm
3. nucleus
4. Golgi apparatus
5. chloroplast

Answer: E

DQ: What are some key eukaryotic organelles and their functions?

Type: Know It

Difficulty: Easy

Important Words/Concepts: organelles

93. Proteins are modified and packaged for delivery in the

1. endoplasmic reticulum.
2. cytoplasm.
3. nucleus.
4. cytoskeleton.
5. Golgi apparatus.

Answer: E

DQ: What are some key eukaryotic organelles and their functions?

Type: Know It

Difficulty: Easy

Important Words/Concepts: organelles

94. The \_\_\_\_\_\_\_ is the site of cellular respiration where the energy stored in food is extracted.

1. mitochondrion
2. cytoplasm
3. nucleus
4. Golgi apparatus
5. chloroplast

Answer: A

DQ: What are some key eukaryotic organelles and their functions?

Type: Know It

Difficulty: Easy

Important Words/Concepts: organelles

95. The DNA is located in the \_\_\_\_\_\_\_ in eukaryotes.

1. endoplasmic reticulum
2. cytoplasm
3. nucleus
4. cytoskeleton
5. Golgi apparatus

Answer: C

DQ: What are some key eukaryotic organelles and their functions?

Type: Know It

Difficulty: Easy

Important Words/Concepts: organelles

96. The cytoskeleton is composed of \_\_\_\_\_\_\_ fibers.

1. lipid
2. protein
3. fat
4. carbohydrate
5. metal

Answer: B

DQ: What are some key eukaryotic organelles and their functions?

Type: Know It

Difficulty: Easy

Important Words/Concepts: organelles

97. The \_\_\_\_\_\_ provides support and a pathway for movement of structures within a cell.

1. endoplasmic reticulum
2. cytoplasm
3. nucleus
4. cytoskeleton
5. Golgi apparatus

Answer: D

DQ: What are some key eukaryotic organelles and their functions?

Type: Know It

Difficulty: Easy

Important Words/Concepts: organelles

98. The \_\_\_\_\_\_\_ is the site of cellular respiration to extract the energy stored in food.

*Answer:* mitochondrion

DQ: What are some key eukaryotic organelles and their functions?

Type: Know It

Difficulty: Hard

Important Words/Concepts: organelles

99. The \_\_\_\_\_\_\_ is composed of protein fibers that provide cell structural support.

*Answer:* cytoskeleton

DQ: What are some key eukaryotic organelles and their functions?

Type: Know It

Difficulty: Hard

Important Words/Concepts: organelles

100. The \_\_\_\_\_\_\_ provides support and a pathway for movement of structures within a cell.

*Answer:* cytoskeleton

DQ: What are some key eukaryotic organelles and their functions?

Type: Know It

Difficulty: Hard

Important Words/Concepts: organelles

101. \_\_\_\_\_\_\_ deliver proteins to the Golgi apparatus.

*Answer:* Vesicles

DQ: What are some key eukaryotic organelles and their functions?

Type: Know It

Difficulty: Hard

Important Words/Concepts: organelles

102. The \_\_\_\_\_\_\_ is the site of photosynthesis in eukaryotes.

*Answer:* chloroplast

DQ: What are some key eukaryotic organelles and their functions?

Type: Know It

Difficulty: Hard

Important Words/Concepts: organelles

103. Explain how the nucleus, endoplasmic reticulum, ribosomes, and Golgi apparatus work together to create and transport proteins.

*Answer:* The DNA in the nucleus provides the instructions for proteins. These are read by the ribosomes and used to put together amino acids to make proteins. These ribosomes are attached to the endoplasmic reticulum (ER) and are made into the ER. The ER packages the new proteins into vesicles and sends them to the Golgi apparatus, where they are modified, repackaged, and sent to their final destinations.

DQ: What are some key eukaryotic organelles and their functions?

Type: Use It

Difficulty: Hard

Important Words/Concepts: organelles

104. The defining organelle of a eukaryotic cell is the

* 1. endoplasmic reticulum.
  2. Golgi apparatus.
  3. mitochondrion.
  4. nucleus.
  5. cytoskeleton.

Answer: D

DQ: What are some key eukaryotic organelles and their functions?

Type: Know It

Difficulty: Easy

Important Words/Concepts: eukaryotic, organelle

105. The rough ER makes \_\_\_\_\_\_\_\_\_, whereas the smooth ER makes \_\_\_\_\_\_\_\_\_.

* 1. sugars; proteins
  2. proteins; sugars
  3. sugars; lipids
  4. lipids; sugars
  5. proteins; lipids

Answer: E

DQ: What are some key eukaryotic organelles and their functions?

Type: Know It

Difficulty: Easy

Important Words/Concepts: organelles

106. The Golgi apparatus is responsible for

* 1. making proteins.
  2. making lipids.
  3. processing and packaging proteins.
  4. making the cell membrane.
  5. digesting or breaking down molecules.

Answer: C

DQ: What are some key eukaryotic organelles and their functions?

Type: Know It

Difficulty: Easy

Important Words/Concepts: organelles

107. The instructions for making proteins that a cell needs are found in the

* 1. nucleus.
  2. Golgi apparatus.
  3. rough ER.
  4. smooth ER.
  5. mitochondria.

Answer: A

DQ: What are some key eukaryotic organelles and their functions?

Type: Know It

Difficulty: Easy

Important Words/Concepts: organelles

108. Which of the following places the stages of the manufacture of a membrane transport protein in the correct order, from beginning to end?

* 1. nucleus→cell membrane→rough ER→Golgi apparatus
  2. nucleus→ Golgi apparatus→ rough ER→cell membrane
  3. nucleus→rough ER→Golgi apparatus→cell membrane
  4. cell membrane→nucleus→rough ER→Golgi apparatus
  5. cell membrane→Golgi apparatus→rough ER→nucleus

Answer: C

DQ: What are some key eukaryotic organelles and their functions?

Type: Know It

Difficulty: Easy

Important Words/Concepts: organelles, protein synthesis

109. All of the following are true of the mitochondriaEXCEPT

* 1. they have a double membrane.
  2. they have ribosomes.
  3. they have their own DNA.
  4. they convert food energy to energy the cell can use.
  5. they are not found in plant cells.

Answer: E

DQ: What are some key eukaryotic organelles and their functions?

Type: Know It

Difficulty: Hard

Important Words/Concepts: organelles

110. Chloroplasts contain all of the following EXCEPT

1. a double membrane.
2. ribosomes.
3. their own DNA.
4. mitochondria.
5. thylakoid membrane.

Answer: D

DQ: What are some key eukaryotic organelles and their functions?

Type: Know It

Difficulty: Easy

Important Words/Concepts: organelles

111. The part of a cell that functions most like a human stomach is the

1. Golgi apparatus.
2. mitochondrion.
3. lysosome.
4. nucleus.
5. smooth ER.

Answer: C

DQ: What are some key eukaryotic organelles and their functions?

Type: Know It

Difficulty: Easy

Important Words/Concepts: organelles

112. Once a lysosome has carried out its function, what happens to its contents?

1. They are sent to the nucleus.
2. They are released to make new parts of the cell.
3. They become embedded in the cell membrane.
4. They are read by the ribosomes to make proteins.
5. They are sent to another lysosome for storage.

Answer: B

DQ: What are some key eukaryotic organelles and their functions?

Type: Know It

Difficulty: Easy

Important Words/Concepts: organelles

113. All of the following are true of the cytoskeleton EXCEPT

1. it is made of protein.
2. it serves as cell support.
3. it aids in cell movement.
4. it aids in movement of cell organelles.
5. it is found only in animal cells.

Answer: E

DQ: What are some key eukaryotic organelles and their functions?

Type: Know It

Difficulty: Hard

Important Words/Concepts: organelles

114. What would be the consequence to the cell if all the lysosomes suddenly ruptured?

*Answer:* If the lysosomes suddenly ruptured, the digestive enzymes would be released and would digest cell contents; this, in turn, would likely lead to cell death.

DQ: What are some key eukaryotic organelles and their functions?

Type: Use It

Difficulty: Hard

Important Words/Concepts: organelles