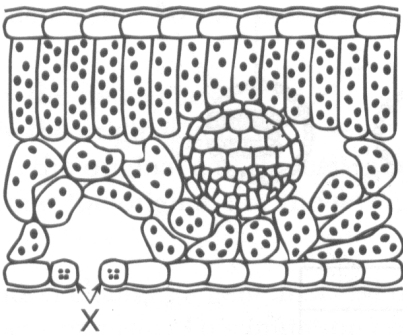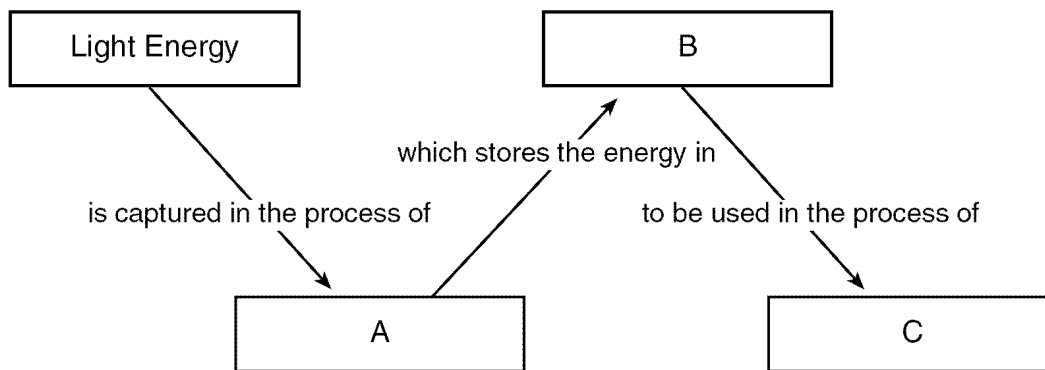1. What uses the dissolved carbon dioxide in a lake?

   A) producers   B) parasites
   C) fungi   D) decomposers

2. Which process usually uses carbon dioxide molecules?

   A) cellular respiration
   B) asexual reproduction
   C) active transport
   D) autotrophic nutrition

3. Which statement best describes animals that are heterotrophs?

   A) They are able to convert light energy into useful chemical bond energy.
   B) They are able to synthesize organic materials from inorganic raw materials.
   C) They are unable to consume preformed organic compounds.
   D) They are unable to synthesize organic materials from inorganic raw materials.

4. Base your answer to the following question on the diagram below which represents a cross section of part of a leaf.

   Which life functions are directly regulated through feedback mechanisms associated with the actions of the structures labeled X?

   A) excretion and immunity
   B) digestion and coordination
   C) circulation and reproduction
   D) respiration and photosynthesis
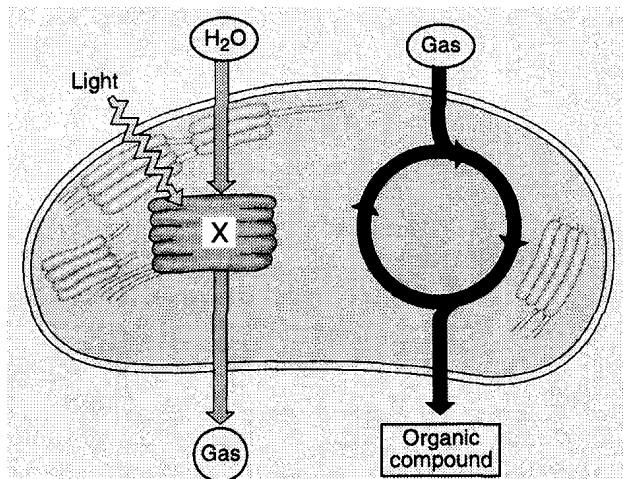
5. Which set of terms best identifies the letters in the diagram below?

```
┌─────────────────┐              ┌─────────────────┐
│   Light Energy  │              │        B        │
└─────────────────┘              └─────────────────┘
         ╲                     ╱              ╲
          ╲      which stores the energy in    ╲
           ╲                 ╱                   ╲
  is captured in the process of    to be used in the process of
            ╲             ╱                       ╲
             ▼           ╱                         ▼
      ┌─────────────────┐              ┌─────────────────┐
      │        A        │              │        C        │
      └─────────────────┘              └─────────────────┘
```

	A	B	C
(1)	photosynthesis	inorganic molecules	decomposition
(2)	respiration	organic molecules	digestion
(3)	photosynthesis	organic molecules	respiration
(4)	respiration	inorganic molecules	photosynthesis

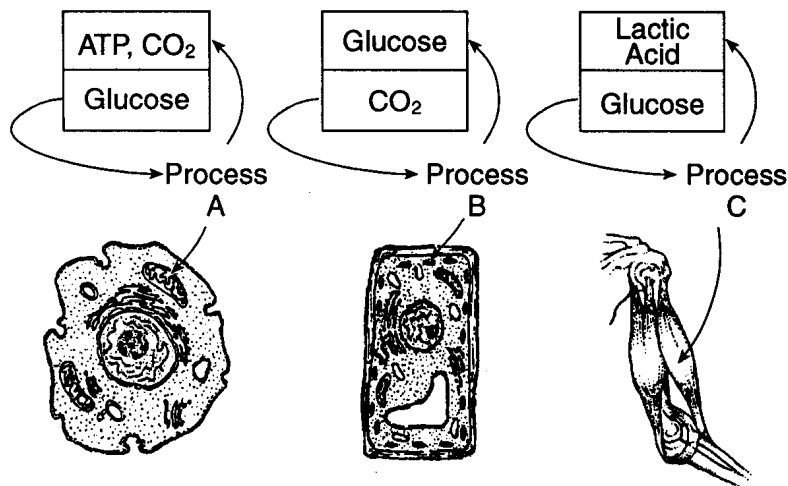A) 1   B) 2   **C) 3**   D) 4

6. Base your answer to the following question on The diagram below represents part of a life process in a leaf chloroplast.

If the process illustrated in the diagram is interrupted by a chemical at point X, there would be an immediate effect on the release of

A) chlorophyll   B) nitrogen
C) carbon dioxide   **D) oxygen**

7. Base your answer to the following question on the diagrams below and on your knowledge of biology. The arrow below each lettered process indicates where the process takes place.

Glucose is a product of

A) process *A*, only

B) **process *B*, only**

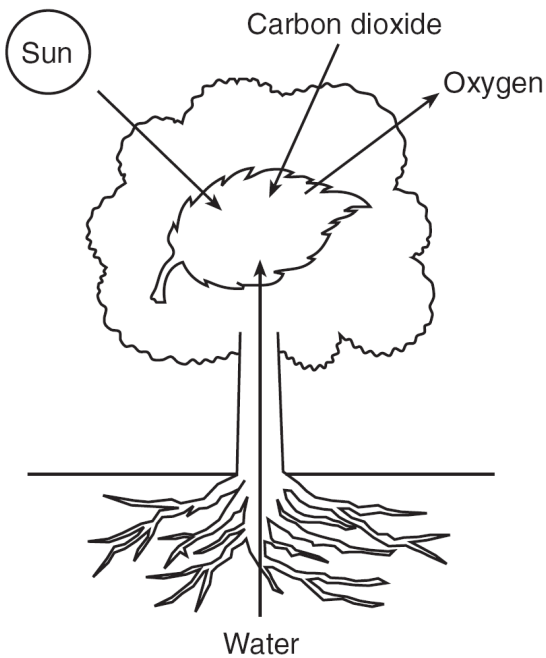C) process *B* and process *C*

D) process *A* and process *C*

8. Base your answer to the following question on The equation below represents a summary of a biological process.

carbon dioxide + water $\rightarrow$ glucose + water + oxygen
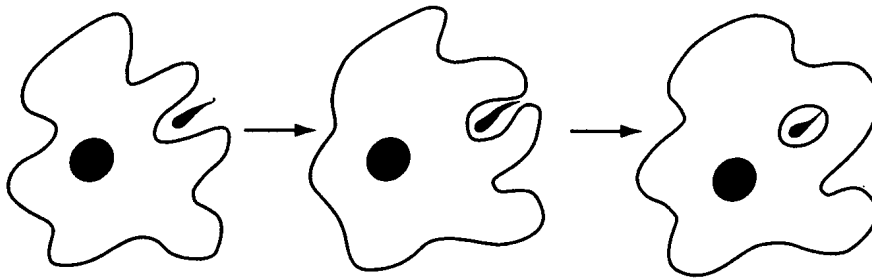
This process is completed in

A) mitochondria   B) ribosomes

C) cell membranes   **D) chloroplasts**

9. Base your answer to the following question on The diagram below represents events associated with a biochemical process that occurs in some organisms.

Which statement concerning this process is correct?

A) The process represented is respiration and the primary source of energy for the process is the Sun.

B) **The process represented is photosynthesis and the primary source of energy for the process is the Sun.**

C) This process converts energy in organic compounds into solar energy which is released into the atmosphere.

D) This process uses solar energy to convert oxygen into carbon dioxide.

10. Base your answer to the following question on The series of diagrams below represents a process carried out by a unicellular organism.

This process is known as

A) autotrophic nutrition   B) replication

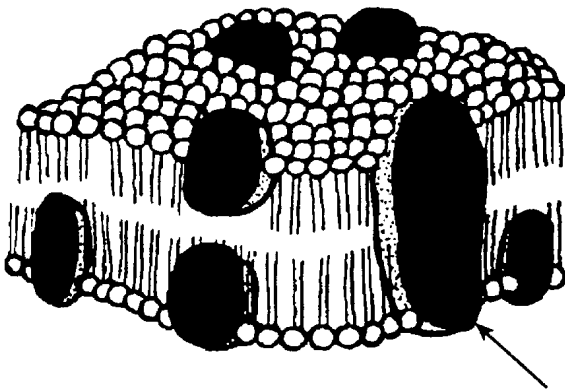C) sporulation   D) **phagocytosis**

Do Now Unit 3

11. Base your answer to the following question on Which activity is illustrated in the diagram below?

A) a virus destroying a cell by extracellular digestion
B) a member of the bryophyte phylum performing intercellular digestion
C) a protozoan ingesting food during heterotrophic nutrition
D) a lysosome egesting a food particle into the cytoplasm

12. Base your answer to the following question on Which words best complete the lettered blanks in the two sentences below?

Organic compounds, such as proteins and starches, are too **A** to diffuse into cells. Proteins are digested into **B** and starches are digested into **C** .

A) *A*—large, *B*—simple sugars, *C*—amino acids
B) *A*—small, *B*—simple sugars, *C*—amino acids
C) *A*—large, *B*—amino acids, *C*—simple sugars
D) *A*—small, *B*—amino acids, *C*—simple sugars

13. Base your answer to the following question on the diagram below which represents the fluid-mosaic model of a cell membrane.

The arrow points to a component of the membrane that is best described as a

A) sugar floating in lipids
B) protein floating in lipids
C) lipid floating in proteins
D) lipid floating in sugars

14. The fluid-mosaic model of the cell membrane suggests that the membrane is primarily composed of

A) proteins and starches
B) carbohydrates and lipids
C) sugars and proteins
D) proteins and lipids

15. Which statement regarding the functioning of the cell membrane of all organisms is *not* correct?

A) The cell membrane forms a boundary that separates the cellular contents from the outside environment.
B) The cell membrane is capable of receiving and recognizing chemical signals.
C) The cell membrane forms a barrier that keeps all substances that might harm the cell from entering the cell.
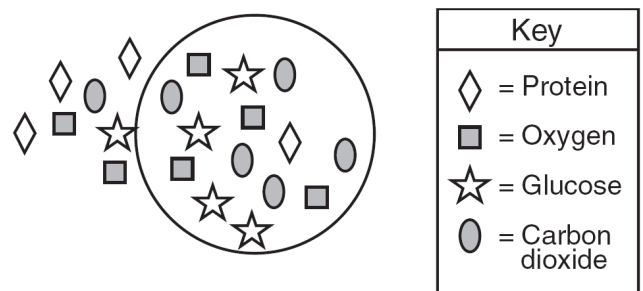D) The cell membrane controls the movement of molecules into and out of the cell.

16. In a cell, the selective permeability of the cell membrane is most closely associated with the maintenance of

A) homeostasis   B) hydrolysis
C) phagocytosis   D) pinocytosis

17. Which substances may pass through a cell membrane by simple diffusion?

A) starch and protein
B) protein and fat
C) carbon dioxide and water
D) carbon dioxide and starch

18. The diagram below shows the relative concentration of molecules inside and outside of a cell.

Which statement *best* describes the general direction of diffusion across the membrane of this cell?
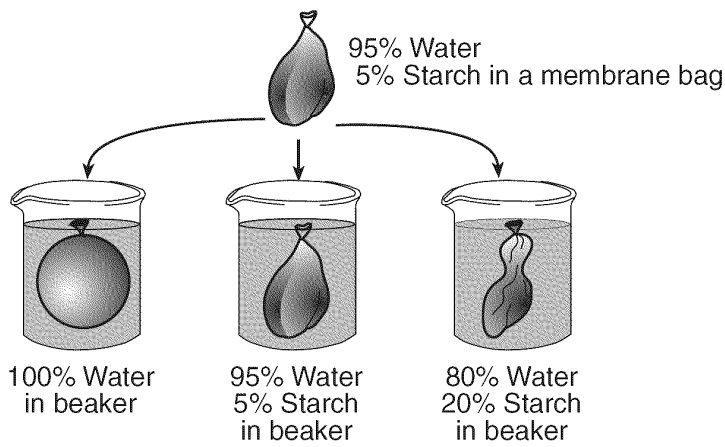
A) Glucose would diffuse into the cell.
B) Protein would diffuse out of the cell.
C) Carbon dioxide would diffuse out of the cell.
D) Oxygen would diffuse into the cell.

19. Base your answer to the following question on Which row in the chart below best describes the active transport of molecule X through a cell membrane?

Row	Movement of Molecule X	ATP
(1)	high concentration → low concentration	used
(2)	high concentration → low concentration	not used
(3)	low concentration → high concentration	used
(4)	low concentration → high concentration	not used

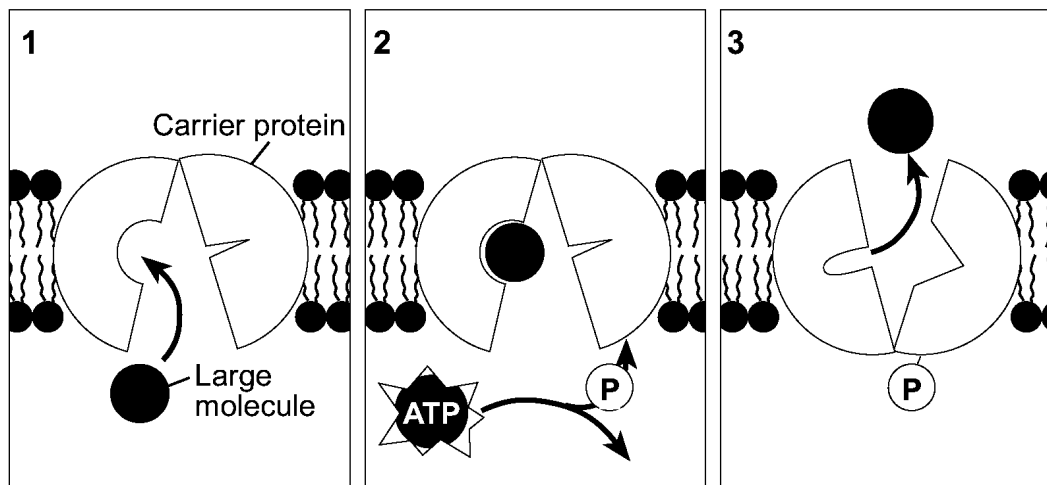A) 1   B) 2   **C) 3**   D) 4

20. Base your answer to the following question on An investigation was set up to study the movement of water through a membrane. The results are shown in the diagram below.

95% Water
5% Starch in a membrane bag

100% Water in beaker

95% Water 5% Starch in beaker

80% Water 20% Starch in beaker

Based on these results, which statement correctly predicts what will happen to red blood cells when they are placed in a beaker containing a water solution in which the salt concentration is much higher than the salt concentration in the red blood cells?

A) The red blood cells will absorb water and increase in size.
B) The red blood cells will lose water and decrease in size.
C) The red blood cells will first absorb water, then lose water and maintain their normal size.
D) The red blood cells will first lose water, then absorb water, and finally double in size.
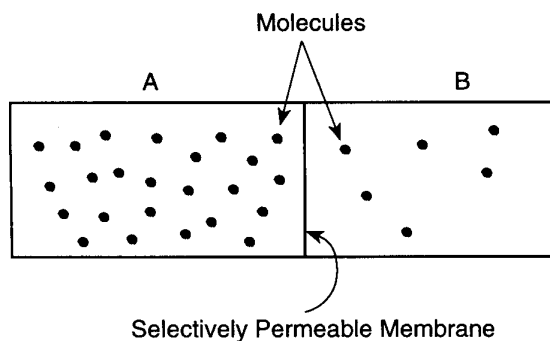
21. Base your answer to the following question on The diagram below represents movement of a large molecule across a membrane.

Which process is best represented in this diagram?

A) active transport
B) diffusion
C) protein building
D) gene manipulation

22. Base your answer to the following question on The diagram below shows the same type of molecules in area *A* and area *B*. With the passage of time, some molecules move from area *A* to area *B*.

This movement is the result of which process?

A) transpiration
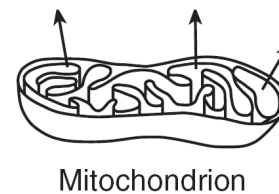**C) diffusion**
B) respiration
D) active transport

23. Which process directly results in energy being stored in ATP molecules?

A) cellular respiration
B) cellular reproduction
C) diffusion
D) digestion

24. Which part of a molecule provides energy for life processes?

A) carbon atoms
C) chemical bonds
B) oxygen atoms
D) inorganic nitrogen

25. Base your answer to the following question on The diagram below represents a structure involved in cellular respiration.
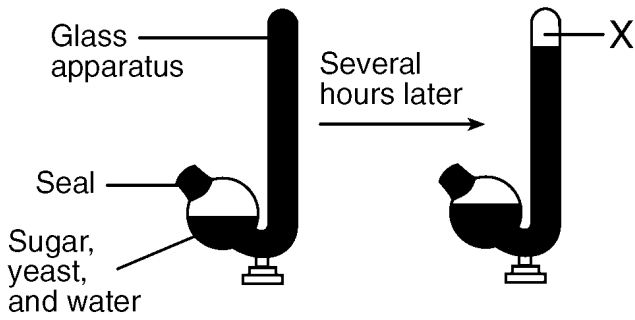

Mitochondrion

The release of which substance is represented by the arrows?

A) glucose
C) carbon dioxide
B) oxygen
D) DNA

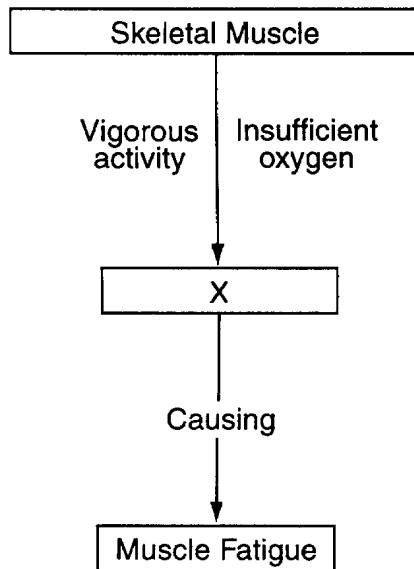26. Which two organ systems provide materials required for the human body to produce ATP?

A) reproductive and excretory
B) digestive and respiratory
C) respiratory and immune
D) digestive and reproductive

27. Base your answer to the following question on An investigation was carried out and the results are shown below. Substance X resulted from a metabolic process that produces ATP in yeast (a single-celled fungus).
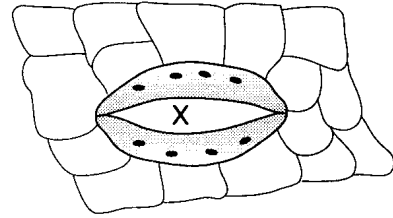

Which statement best describes substance X?

A) It is oxygen released by protein synthesis.
B) It is glucose that was produced in photosynthesis.
C) It is starch that was produced during digestion.
D) It is carbon dioxide released by respiration.

28. Base your answer to the following question on The diagram below shows a sequence of events that often occurs in human muscle cells.

The substance represented by letter X is most likely

A) hemoglobin   B) glycogen
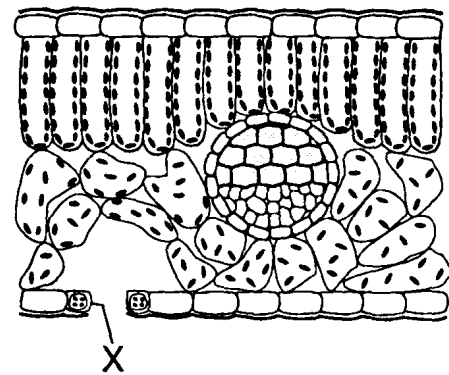C) ethyl alcohol   **D) lactic acid**

29. Base your answer to the following question on The diagram below shows a microscopic view of the lower epidermis of a maple leaf.

The area indicated by letter X is known as

A) a stomate   B) a lenticel
C) xylem tissue   D) phloem tissue

30. Base your answer to the following question on The diagram below represents a cross section of a leaf.
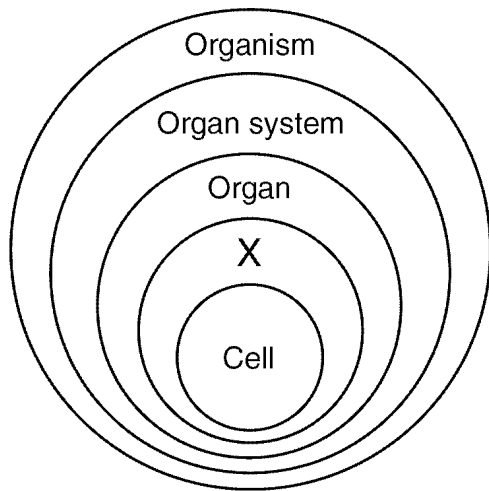

Which structure is indicated by letter X?

A) cuticle   B) spongy cell
C) guard cell   D) palisade layer

31. In multicellular organisms, cells must be able to communicate with each other. Structures that enable most cells to communicate with each other are known as

A) pathogenic agents   B) chloroplasts
C) antibiotics   **D) receptor molecules**

32. When the antenna of a male moth detects tiny amounts of the chemical released by a female moth, the antenna is functioning as a

A) stimulus   B) response
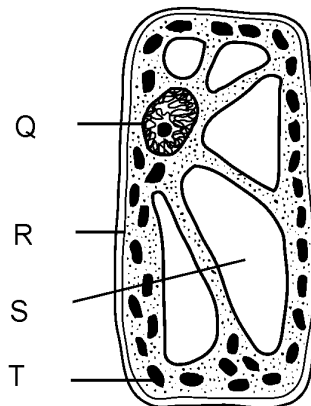**C) receptor**   D) hormone

33. Base your answer to the following question on The diagram below represents levels of organization in living things.

Which term would best represent *X*?

A) human   **B) tissue**

C) stomach   D) chloroplast

34. Many scientists consider viruses nonliving. Evidence supporting this consideration includes the fact that viruses

A) always function independently of living organisms

B) are multinucleated cells

C) lack basic cellular organelles

D) cannot be reproduced in a sterile culture medium

35. Which instrument was used in the 18th and 19th centuries and helped scientists develop the cell theory?

A) electron microscope

B) light microscope

C) microdissecting apparatus

D) ultracentrifuge

36. Which organelle is correctly paired with its specific function?

A) cell membrane—storage of hereditary information

B) chloroplast—transport of materials

C) ribosome—synthesis of proteins

D) vacuole—production of ATP

37. Hereditary information is stored inside the

A) ribosomes, which have chromosomes that contain many genes

B) ribosomes, which have genes that contain many chromosomes

C) nucleus, which has chromosomes that contain many genes

D) nucleus, which has genes that contain many chromosomes

38. Muscle cells in athletes often have more mitochondria than muscle cells in nonathletes. Based on this observation, it can be inferred that the muscle cells in athletes

A) have a smaller demand for cell proteins than the muscle cells of nonathletes

B) reproduce less frequently than the muscle cells of nonathletes

C) have nuclei containing more DNA than nuclei in the muscle cells of nonathletes

D) have a greater demand for energy than the muscle cells of nonathletes

39. Base your answer to the following question on Which letter indicates a cell structure that directly controls the movement of molecules into and out of the cell?
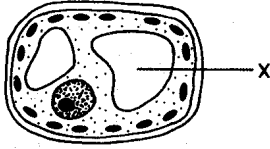

A) Q   **B) *R***   C) *S*   D) T

40. In a cell, all organelles work together to carry out

A) diffusion

B) active transport

C) information storage

D) metabolic processes

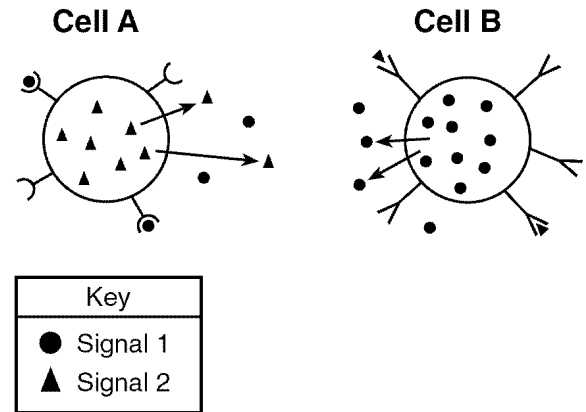41. Examples of self-duplicating cellular structures are the

   A) mitochondria and chloroplasts
   B) mitochondria and cell walls
   C) cell walls and chloroplasts
   D) vacuoles and chloroplasts

42. Base your answer to the following question on In the diagram of a cell below, the structure labeled X enables the cell to

   A) release energy
   B) store waste products
   C) control nuclear division
   D) manufacture proteins

43. Base your answer to the following question on Cellular communication is illustrated in the diagram below.

Key

● Signal 1
▲ Signal 2

Information can be sent from

   A) cell A to cell B because cell B is able to recognize signal 1
   B) cell A to cell B because cell A is able to recognize signal 2
   C) cell B to cell A because cell A is able to recognize signal 1
   D) cell B to cell A because cell B is able to recognize signal 2

44. What determines the ability of certain hormones to attach to a cell?

   A) receptor molecules in the cell membrane
   B) proteins in the cytoplasm of the cell
   C) amount of DNA in the cell
   D) concentration of salts outside the cell

Answer Key
Do Now Unit 3 Cell Biology

1.	**A**	37.	**C**
2.	**D**	38.	**D**
3.	**D**	39.	**B**
4.	**D**	40.	**D**
5.	**C**	41.	**A**
6.	**D**	42.	**B**
7.	**B**	43.	**C**
8.	**D**	44.	**A**
9.	**B**		
10.	**D**		
11.	**C**		
12.	**C**		
13.	**B**		
14.	**D**		
15.	**C**		
16.	**A**		
17.	**C**		
18.	**C**		
19.	**C**		
20.	**B**		
21.	**A**		
22.	**C**		
23.	**A**		
24.	**C**		
25.	**C**		
26.	**B**		
27.	**D**		
28.	**D**		
29.	**A**		
30.	**C**		
31.	**D**		
32.	**C**		
33.	**B**		
34.	**C**		
35.	**B**		
36.	**C**		

Question ID's in Numerical Order

22. 3340
35. 3757
28. 4466
39. 5144
27. 5605
5. 5821
1. 5741
37. 5798
36. 5941
24. 6032
23. 6033
3. 565
42. 682
14. 785
34. 1424
30. 1427
41. 2509
16. 2537
32. 2546
11. 2658
29. 2662
17. 2764
10. 4242
13. 4448
7. 4639
15. 4715
31. 4716
21. 4856
40. 4926
44. 4927
6. 4947
8. 5090
12. 5108
2. 5374
20. 5416
38. 5422
26. 5492
33. 5795
19. 5797
43. 5828
25. 5957
18. 5969
9. 6037
4. 6109