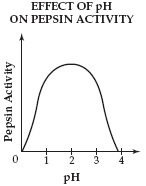
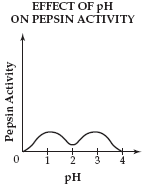
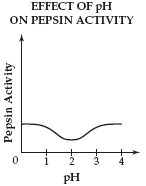
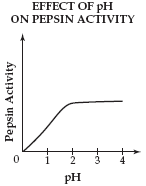
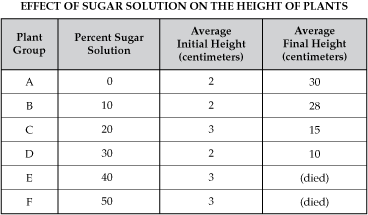
**Midterm Practice Exam – Part II**

1. Cells in the stomach produce pepsin, an enzyme, to help digest food. Pepsin works best at a pH of 2. Which of these graphs most likely shows what will happen to the activity of pepsin as the pH of the stomach is increased?
   1. 
   2. 
   3. 
   4. 
2. Which of these substances moves across cell membranes by osmosis?
   1. salt
   2. sugar
   3. water
   4. protein
3. Read the description of the experiment and use the table of results below to answer the following question.

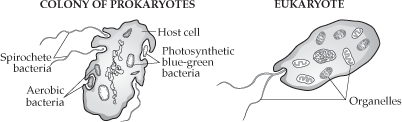
A student designed an experiment to see if plants grow better when watered with a sugar solution. He divided the plants into six groups, measured the initial height of each plant, and calculated the average height for each group. Once a week for two months, he watered the plants in each group using a different sugar solution for each plant group. At the end of two months, he measured the final height of each plant and calculated the average height for each group. The student’s data are shown in the table below.



Which of these statements explains why the plants in Groups E and F died?

* 1. The high sugar content caused too much water to move out of the root cells.
  2. The high sugar content caused too much water to move into the root cells.
  3. The high sugar content prevented the plant from capturing energy.
  4. The high sugar content clogged the pores in the cell membranes.

1. The diagram below shows a colony of prokaryotes and a single-celled eukaryote. The eukaryote contains organelles that resemble the three types of bacteria found in the colony of prokaryotes. More than a billion years ago, bacteria like these may have joined other prokaryotes to form colonies of cells. Researchers think that these once free-living prokaryotes became the organelles of modern-day eukaryotes.



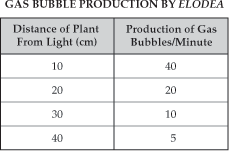
One of the organelles in the eukaryote releases energy from sugars. What is this process called?

* 1. respiration
  2. transpiration
  3. photosynthesis
  4. chemosynthesis

1. In a recent experiment, scientists studied the effects of increased carbon dioxide levels on the growth of pine trees. The scientists observed that increased levels of carbon dioxide resulted in an increase in the average circumference of the tree trunks. The change in circumference is a result of the process of
   1. osmosis
   2. adaptation
   3. transpiration
   4. photosynthesis

Use the information and the table below to answer the following.

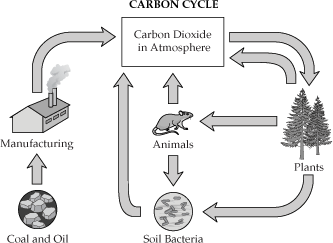
1. *Elodea,* a freshwater plant, releases gas bubbles when it is placed in direct light. In an investigation, a student placed a lamp at different distances from an aquarium containing *Elodea.* The student counted the number of bubbles produced by the *Elodea* plant. His data are shown in the table below.



What energy source is used by *Elodea*?

* 1. heat
  2. light
  3. oxygen
  4. carbon dioxide

1. The bubbles released by *Elodea* contain mostly
   1. oxygen
   2. carbon dioxide
   3. nitrogen
   4. water vapor
2. The diagram below shows part of the carbon cycle.



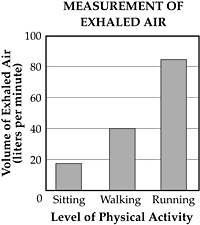
During photosynthesis, trees convert carbon dioxide and other materials to

* 1. lipids
  2. amino acids
  3. nucleic acids
  4. sugars

1. The energy required for photosynthesis is provided by
   1. proteins
   2. sunlight
   3. chlorophyll
   4. carbohydrates
2. Deep sea bacteria live at ocean depths too great for light to reach. These bacteria make their own food. Which of these is the source of energy for the bacteria?
   1. nucleic acids
   2. binary fission
   3. inorganic compounds
   4. DNA replication
3. Which of these statements about photosynthesis and respiration is true?
   1. Both processes produce food.
   2. Both processes release energy from food.
   3. Photosynthesis produces oxygen; respiration does not.
   4. Photosynthesis produces carbon dioxide; respiration does not.

Use the information and the graph below to answer the following item.

1. A group of students measured the volume of air they exhaled during three different activities: sitting, walking, and running. The volume of exhaled air is directly related to the amount of carbon dioxide produced. The data the students collected are summarized in the graph below.



Which of these processes produces carbon dioxide?

* 1. mitosis
  2. diffusion
  3. respiration
  4. photosynthesis

Use the information below to answer the following item.

1. The water quality of the Chesapeake Bay is measured by the Chesapeake Bay Water Quality Monitoring Program. Scientists measure the salinity, temperature, pH, and oxygen levels to help determine the health of the Bay. Healthy water also contains appropriate amounts of nutrients. Monitoring water quality helps communities make decisions about the Bay.

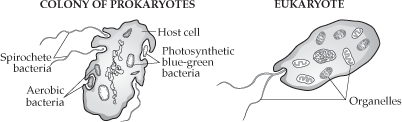
Measuring oxygen levels of the Bay provides scientists with information about which process?

* 1. mitosis
  2. meiosis
  3. chemosynthesis
  4. photosynthesis

1. Which of the following pairs of materials is required for a cell to carry on respiration?
   1. water and oxygen
   2. glucose and oxygen
   3. water and carbon dioxide
   4. glucose and carbon dioxide
2. Cyanide is a poison that prevents mitochondria from using oxygen. As a result, the mitochondria cannot produce
   1. lipids
   2. sugar
   3. minerals
   4. energy

Use the information and the figure below to answer the following.

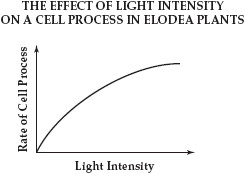
1. The diagram below shows a colony of prokaryotes and a single-celled eukaryote. The eukaryote contains organelles that resemble the three types of bacteria found in the colony of prokaryotes. More than a billion years ago, bacteria like these may have joined other prokaryotes to form colonies of cells. Researchers think that these once free-living prokaryotes became the organelles of modern-day eukaryotes.



In the eukaryote, which of these organelles are used to make sugars?

* 1. flagella
  2. ribosomes
  3. mitochondria
  4. chloroplasts

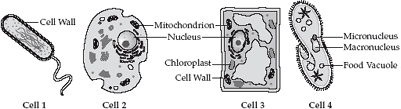
1. A group of students studied the effect of light intensity on the rate of a cell process in Elodea plants. The students exposed Elodea plants to different light intensities. A gas was produced by the cell process. The amount of this gas was measured. The rate of the cell process was determined by the amount of gas produced. A graph of the students' measurements is shown below.



Which of these parts of the Elodea plant cell produces the gas measured in the experiment?

* 1. mitochondrion
  2. chloroplast
  3. ribosome
  4. nucleus

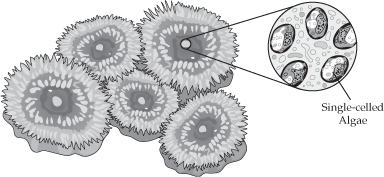
1. A student observed different types of cells under a microscope. Four of the cells he observed are shown below.



Which of these structures in Cell 3 releases energy for use in cell processes?

* 1. nucleus
  2. cell wall
  3. chloroplast
  4. mitochondrion

1. Cell 4 has many hair-like structures that it uses for movement. What are these structures called?
   1. cilia
   2. flagella
   3. vacuoles
   4. pseudopodia
2. Maryland white oak trees make their own food. Their cells contain structures that capture energy from the sun. What are these structures?
   1. chloroplasts
   2. nuclei
   3. mitochondria
   4. ribosomes
3. During a trip to the beach, Allen finds a colony of sea anemones on a rock. These sea anemones are green and get their color from tiny single-celled algae that live in their tissues. The algae produce food for the anemones while the anemones provide a place for the algae to live.



A drawing of a mobile form of the single-celled green algae is shown below.

http://www.mdk12.org/assessments/high_school/look_like/2006/biology/images/8_q.gif

Which of these structures help this algae move?

* 1. flagella
  2. cilia
  3. pseudopodia
  4. vacuoles

1. Which parts of the single-celled algae are responsible for capturing energy?
   1. nuclei
   2. chloroplasts
   3. mitochondria
   4. cytoplasm
2. Most organisms need oxygen for their cells to function normally. In mammals, two organ systems work together to move oxygen throughout the body.

Which of these organelles use oxygen to release energy?

* 1. nuclei
  2. ribosomes
  3. chloroplasts
  4. mitochondria

1. Which cell structure contains molecules that direct cell activities?
   1. nucleus
   2. ribosome
   3. mitochondrion
   4. chloroplast

Use the information below to answer the following question.

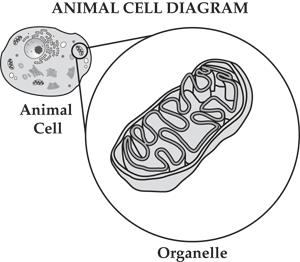
1. A particular toxin prevents cellular production of usable energy. Cells that are affected by this toxin are unable to carry out many of their normal functions.

Which of these organelles would be most directly harmed by this toxin?

* 1. ribosomes
  2. the nucleus
  3. mitochondria
  4. the vacuole

Use the information and diagram below to answer the following item.

1. Animal cells contain an organelle that helps release energy. A diagram of this organelle is shown below.



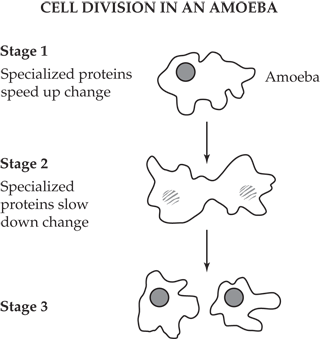
What is the organelle described?

* 1. chloroplast
  2. mitochondrion
  3. nucleus
  4. ribosome

1. Which function would the energy-releasing organelle most likely have in the animal cell?
   1. cellular control
   2. cellular respiration
   3. removal of wastes
   4. storage of nutrients

Use the information and the diagram below to answer the following item.

1. The diagram below shows stages of cell division of an amoeba, a unicellular organism.



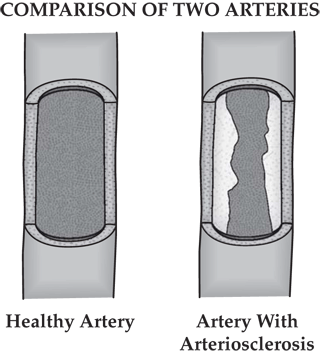
Scientists have found that the rate of division in amoebas is controlled. Scientists believe that the transition from stage 2 to stage 3 is slowed by proteins. The additional time seems to help the amoeba change coding errors caused during DNA replication.

Specialized proteins control cell division in the amoeba. Which cell part is responsible for making these proteins?

* 1. mitochondrion
  2. nucleus
  3. pseudopod
  4. ribosome

Use the information and the diagram below to answer the following item.

1. Arteriosclerosis is a disease which clogs arteries in the human body. In arteriosclerosis, artery walls become thick. Fatty deposits build up on inner walls of arteries. This condition reduces the ability of arteries to perform their function. The diagram below shows a comparison between a healthy artery and one with arteriosclerosis.



A healthy circulatory system is able to deliver excess oxygen and nutrients to cells. Which cell organelle requires oxygen to carry out cellular respiration?

* 1. ribosomes
  2. nuclei
  3. mitochondrion
  4. membranes

Use the information below to answer the following item.

1. Plants grow in various environments. Some plants, like mangroves, grow in salty wetlands. Mangroves have specialized structures that prevent salt from entering their cells. Other mangroves have specialized glands that can excrete excess salt.

Which organelle in mangrove cells converts solar energy into useable energy?

* 1. nucleus
  2. ribosome
  3. chloroplast
  4. mitochondrion