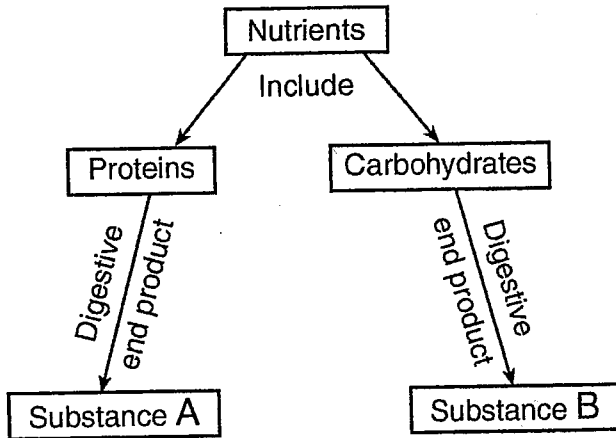


Name:

1. Which structure is best observed using a compound light microscope?
 - (1) a cell
 - (2) a virus
 - (3) the inner surface of a mitochondrion
 - (4) a DNA sequence

Base your answers to questions 2 and 3 on the information in the diagram below and on your knowledge of biology.

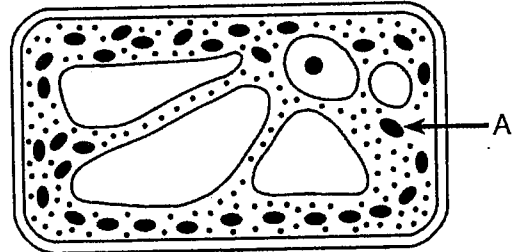


2. In a heterotrophic organism, substance A could be used directly for
 - (1) a genetic code
 - (2) photosynthesis
 - (3) a building block of starch
 - (4) synthesis of enzymes

Midterm Review Practice Q's

3. In an autotrophic organism, substance B functions as a
 - (1) hormone
 - (2) biotic resource
 - (3) vitamin
 - (4) source of energy

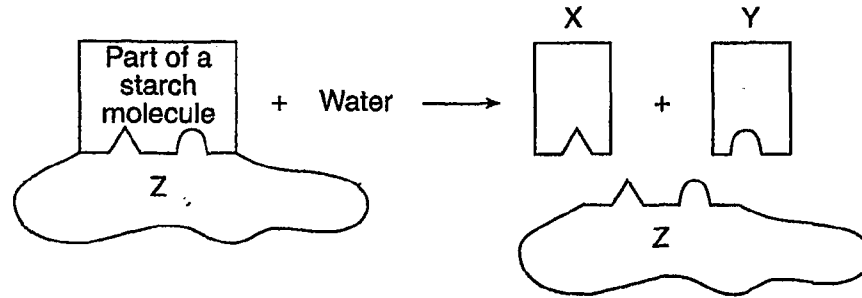
4. The diagram below represents an autotrophic cell.



For the process of autotrophic nutrition, the arrow labeled A would most likely represent the direction of movement of

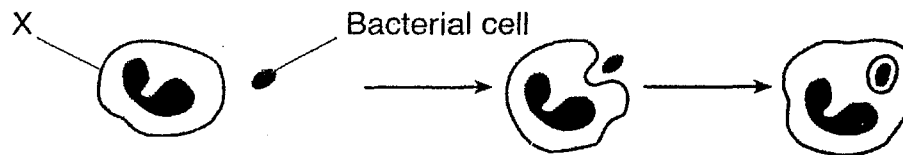
- (1) glucose, water, and heat energy
 - (2) oxygen, glucose, and solar energy
 - (3) carbon dioxide, oxygen, and heat energy
 - (4) carbon dioxide, water, and solar energy
5. Which statement best describes cellular respiration?
 - (1) It stores energy in food molecules.
 - (2) It uses carbon dioxide and produces oxygen.
 - (3) It occurs in animal cells but not in plant cells.
 - (4) It converts energy in food into a more usable form.
 6. Which structures carry out life functions within cells?
 - (1) organ systems
 - (2) organelles
 - (3) organs
 - (4) tissues
 7. A disorder of the digestive system that can cause severe dehydration is known as
 - (1) gallstones
 - (2) diarrhea
 - (3) constipation
 - (4) appendicitis

Base your answers to questions 8 and 9 on the diagram below, which represents a chemical reaction that occurs in the human body, and on your knowledge of biology.



8. Which statement describes a characteristic of molecule Z?
- (1) Molecule Z will function at any temperature above 20°C.
 - (2) Molecule Z is composed of a string of molecular bases represented by A, T, G, and C.
 - (3) Molecule Z will function best at a specific pH.
 - (4) Molecule Z is not specific, so this reaction can be controlled by any other chemical in the body.
9. Substances X and Y are examples of which kind of molecule?
- (1) fat
 - (2) hormone
 - (3) simple sugar
 - (4) amino acid

10. The diagram below shows a cell in the human body engulfing a bacterial cell.

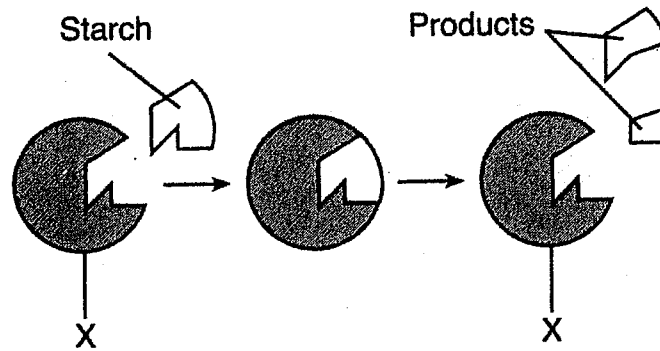


The cell labeled X is most likely a

- (1) white blood cell
- (2) liver cell
- (3) nerve cell
- (4) red blood cell

11. A characteristic shared by all enzymes, hormones, and antibodies is that their function is determined by the
- (1) shape of their molecules
 - (2) organelles present in their structure
 - (3) DNA they contain
 - (4) inorganic molecules they contain

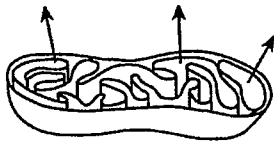
12. Base your answer to the following question on the diagram below, which represents stages in the digestion of a starch, and on your knowledge of biology.



The structure labeled *X* most likely represents

- (1) an enzyme (2) a hormone (3) a receptor molecule (4) an antibody

-
13. The diagram below represents a structure involved in cellular respiration.

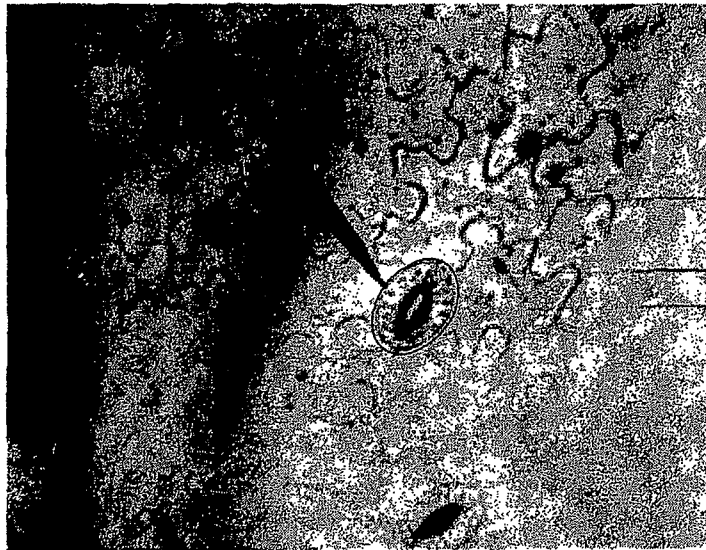


Mitochondrion

The release of which substance is represented by the arrows?

- (1) DNA (3) glucose
(2) oxygen (4) carbon dioxide
14. Which organ system in humans is most directly involved in the transport of oxygen?
- (1) nervous (3) excretory
(2) circulatory (4) digestive
-
15. An enzyme known as rubisco enables plants use large amounts of carbon dioxide. This enzyme is most likely active in the
- (1) nucleus (3) vacuoles
(2) mitochondria (4) chloroplasts

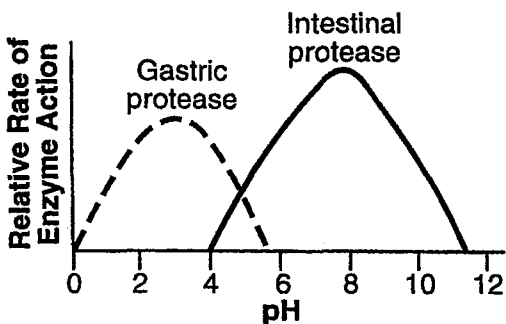
16.



What is the main function of the cells indicated by the black pointer?

- (1) regulate the rate of gas exchange
- (2) give support to the veins in the leaf
- (3) store food for winter dormancy
- (4) undergo mitotic cell division

17. Base your answer to the following question on the graph below and on your knowledge of biology.



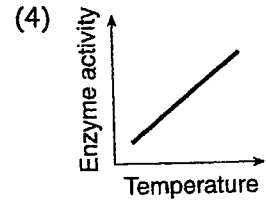
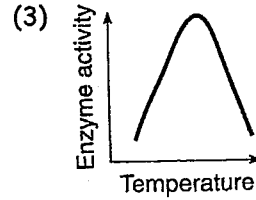
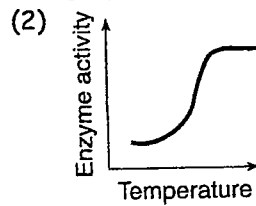
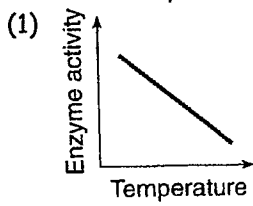
What is the optimum pH for the action of intestinal protease?

- (1) 5
- (2) 8
- (3) 10
- (4) 12

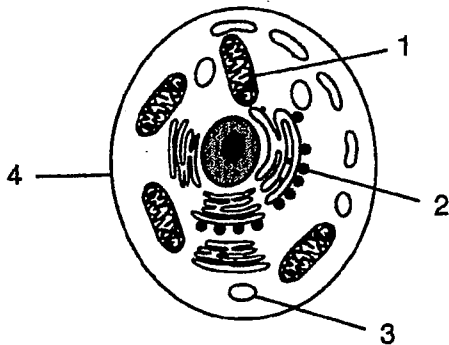
18. The energy an organism requires to transport materials and eliminate wastes is obtained directly from

- (1) starch
- (2) hormones
- (3) DNA
- (4) ATP

19. Enzymes have an optimum temperature at which they work best. Temperatures above and below this optimum will decrease enzyme activity. Which graph best illustrates the effect of temperature on enzyme activity?



20.



Within which structure shown in the diagram below are energy-rich organic compounds used to produce ATP?

- (1) 1 (3) 3
 (2) 2 (4) 4

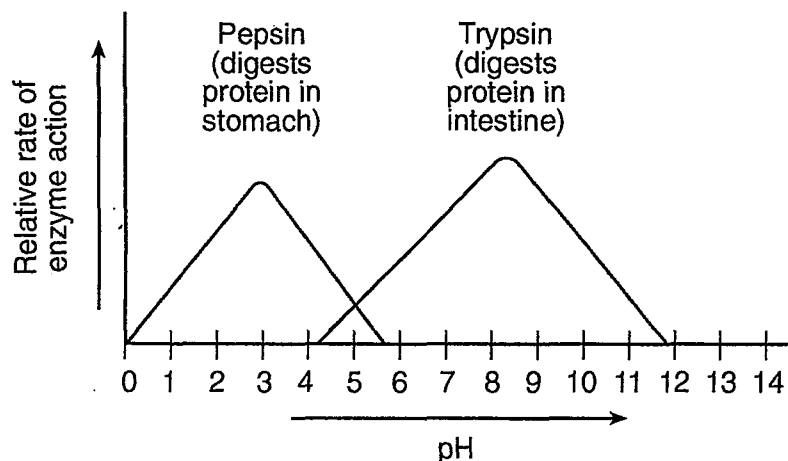
21. Which organelle is correctly paired with its specific function?

- (1) cell membrane—storage of hereditary information
 (2) chloroplast—transport of materials
 (3) vacuole—production of ATP
 (4) ribosome—synthesis of proteins

22. A vaccine used against an infectious disease may contain

- (1) weakened pathogens
 (2) a variety of antibiotics
 (3) toxic enzymes
 (4) specialized blood cells

23. Base your answer to the following question on the graph below and your knowledge of biology.



Pepsin works best in which type of environment?

- (1) acidic, only
- (2) basic, only
- (3) neutral
- (4) sometimes acidic, sometimes basic

24. Homeostasis in every organism is important because it

- (1) direct the synthesis of altered genes that are passed on to every cell in the organism
- (2) determine the diversity necessary for evolution to occur
- (3) regulate the shape of molecules involved in cellular communication
- (4) keeps the internal environment of the organism within its normal range

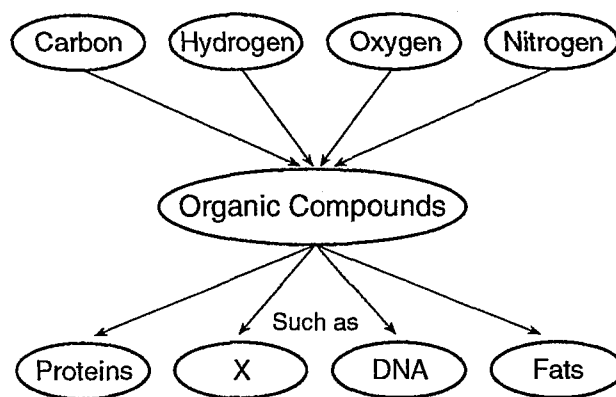
25. Which condition is necessary for enzymes and hormones to function properly in the human body?

- (1) These chemicals must have a specific shape.
- (2) These chemicals must be able to replicate.
- (3) Body pH must be above 10.
- (4) Body temperature must be above 40°C.

26. All cells of an organism are engaged in many different chemical reactions. This fact is best supported by the presence in each cell of thousands of different kinds of

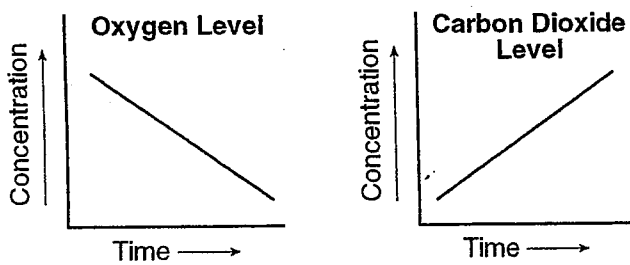
- (1) nuclei
- (2) organelles
- (3) chloroplasts
- (4) enzymes

27. What substance could be represented by the letter X in the diagram below?



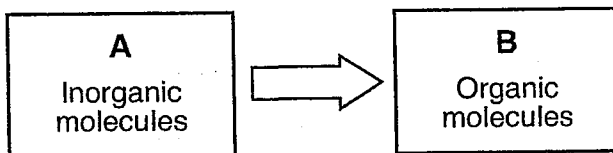
- (1) carbon dioxide
- (2) ozone
- (3) carbohydrates
- (4) water

28. The graphs below show the changes in the relative concentrations of two gases in the air surrounding a group of mice.



Which process in the mice most likely accounts for the changes shown?

- (1) photosynthesis (3) active transport
 (2) respiration (4) evaporation
29. The diagram below represents a biological process



Which set of molecules is best represented by letters *A* and *B*?

- (1) A: oxygen and water
 B: glucose
 (2) A: carbon dioxide and water
 B: glucose
 (3) A: glucose
 B: carbon dioxide and water
 (4) A: glucose
 B: oxygen and water

30. Some human white blood cells help destroy pathogenic bacteria by
- (1) causing mutations in the bacteria
 - (2) producing toxins that compete with bacterial toxins
 - (3) engulfing and digesting the bacteria
 - (4) inserting part of their DNA into the bacterial cells

31. To increase chances for a successful organ transplant, the person receiving the organ should be given special medications. The purpose of these medications is to

- (1) decrease the immune response in the person receiving the transplant
- (2) increase the immune response in the person receiving the transplant
- (3) decrease mutations in the person receiving the transplant
- (4) increase mutations in the person receiving the transplant

32. The sweet taste of freshly picked corn is due to the high sugar content in the kernels. Enzyme action converts about 50% of the sugar to starch within one day after picking. To preserve its sweetness, the freshly picked corn is immersed in boiling water for a few minutes, and then cooled.

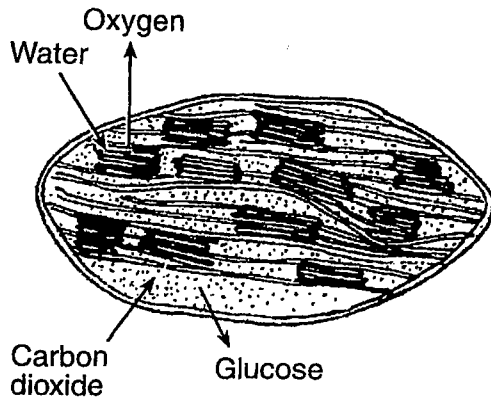
Which statement most likely explains why the boiled corn kernels remain sweet?

- (1) Boiling activates the enzyme that converts amino acids to sugar.
- (2) Boiling destroys sugar molecules so they cannot be converted to starch.
- (3) Boiling deactivates the enzyme responsible for converting sugar to starch
- (4) Boiling kills a fungus on the corn that is needed to convert sugar to starch.

33. The digestion of starch begins in the
- (1) gallbladder (3) small intestine
 - (2) stomach (4) mouth

34. The pancreas is an organ connected to the digestive tract of humans by a duct (tube) through which digestive enzymes flow. These enzymes are important to the digestive system because they
- (1) form proteins needed in the stomach
 - (2) change food materials into wastes that can be passed out of the body
 - (3) change food substances into molecules that can pass into the bloodstream and cells
 - (4) form the acids that break down food

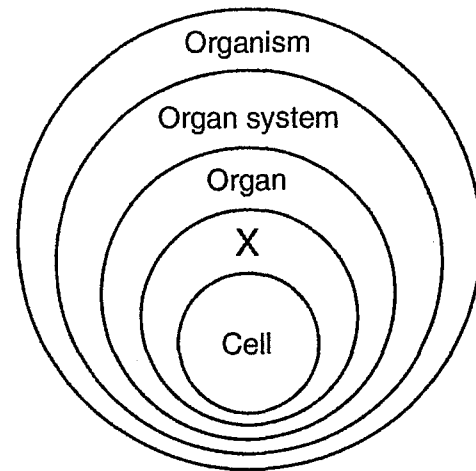
35. The diagram below illustrates the movement of materials involved in a process that is vital for the energy needs of organisms.



The process illustrated occurs within

- | | |
|------------------|------------------|
| (1) chloroplasts | (3) mitochondria |
| (2) ribosomes | (4) vacuoles |

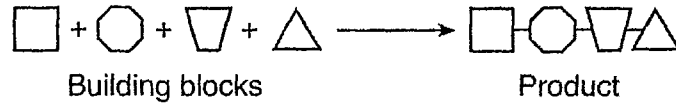
36. The function of most proteins depends primarily on the
- (1) nutritional habits of the organism
 - (2) environment of the organism
 - (3) type and order of amino acids
 - (4) availability of starch molecules
37. The diagram below represents levels of organization in living things.



Which term would best represent X?

- | | |
|-------------|---------------|
| (1) human | (3) tissue |
| (2) stomach | (4) organelle |

38. The diagram below represents the synthesis of a portion of a complex molecule in an organism.



Which row in the chart could be used to identify the building blocks and product in the diagram?

Row	Building Blocks	Product
(1)	starch molecules	glucose
(2)	amino acid molecules	part of protein
(3)	sugar molecules	ATP
(4)	DNA molecules	part of starch

(1) 1

(2) 2

(3) 3

(4) 4

39. Which row in the chart below contains an event that is paired with an appropriate response in the human body?

Row	Event	Response
(1)	a virus enters the bloodstream	increased production of antibodies
(2)	fertilization of an egg	increased levels of testosterone
(3)	dehydration due to increased sweating	increased urine output
(4)	a drop in the rate of digestion	increased respiration rate

(1) (1)

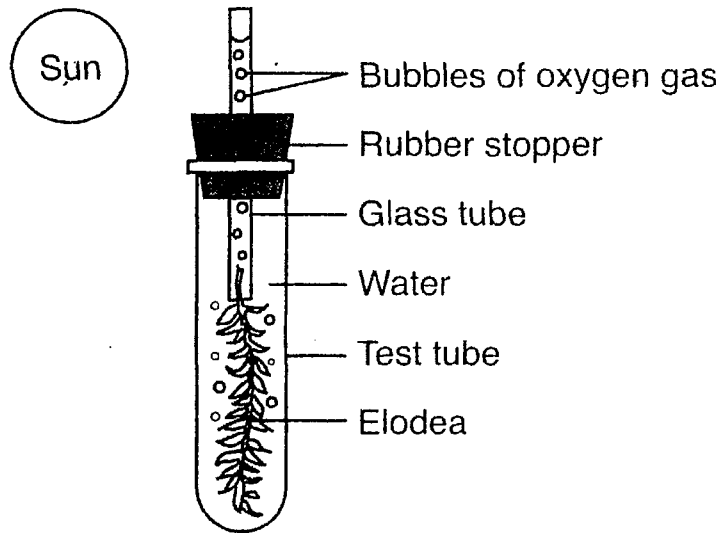
(2) (2)

(3) (3)

(4) (4)

40. Base your answer to the following question on the information and diagram below and on your knowledge of biology.

A small water plant (elodea) was placed in bright sunlight for five hours as indicated below. Bubbles of oxygen gas were observed being released from the plant.



What substance did the plant most likely absorb from the water for the process that produces the oxygen gas?

- (1) dissolved nitrogen (2) an enzyme (3) a hormone (4) carbon dioxide

Midterm Practice Short Answer

Just like complex organisms, cells are able to survive by coordinating various activities. Complex organisms have a variety of systems, and cells have a variety of organelles that work together for survival. Describe the roles of two organelles. In your answer be sure to include:

a the names of two organelles and the function of each

b an explanation of how these two organelles work together

c the name of an organelle and the name of a system in the human body that have similar functions

A television advertisement claims that a certain brand of cough drop reduces coughing for 8 hours.

Describe an investigation that could be used to determine if this claim is valid. In your answer, include at least a description of:

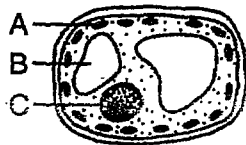
- the treatment to be given to the experimental group
- the treatment to be given to the control group
- the data to be collected
- when the data should be collected
- one observation that would lead to the conclusion that the claim is valid

Describe what will happen to red onion cells in a wet-mount slide when a saltwater solution is added to them.

Some internal environmental factors may interfere with the ability of the enzyme responsible for converting starch into glucose to function efficiently.

Identify *two* internal environmental factors that directly influence the rate of this enzymes action.

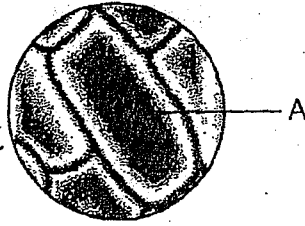
The diagram below represents a cell viewed using a compound light microscope.



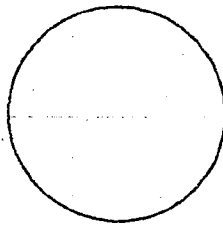
Select *one* of the lettered parts from the diagram. Record the letter of the part chosen in the space *provided on your answer paper* and, using one or more complete sentences, state the function of the part.

22. Base your answer to the following question on the information and diagram below and on your knowledge of biology.

A wet mount of red onion cells as seen with a compound light microscope is shown below.



In the space below, sketch what cell A would look like after the addition of the salt.



AIDS is an infectious disease that has reached epidemic proportions. Describe the nature of this disease and identify *two* ways to prevent or control the spread of infectious diseases, such as AIDS. In your response be sure to include:

- the type of pathogen that causes AIDS
- the system of the body that is attacked by that pathogen
- the effect on the body when this system is weakened by AIDS
- *two* ways to prevent or control the spread of infectious diseases, such as AIDS

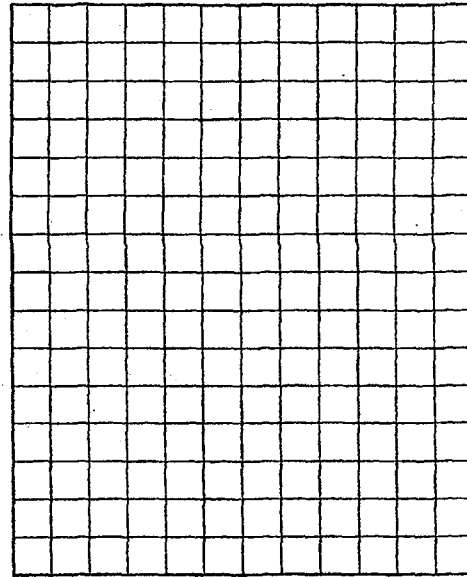
Base your answer to the following question on the information and data table below.

One milliliter of a solution containing an even distribution of a species of bacterium was spread on the surface of a nutrient medium in each of five culture dishes. The nutrient medium in each dish was the same, except for pH. The dishes were then incubated at 37°C for 24 hours. The number of bacterial colonies in each dish was then counted, and the results are represented in the data table below.

Data Table

pH of Nutrient Medium	Number of Bacterial Colonies on Nutrient Medium
5	10
6	50
7	60
8	70
9	5

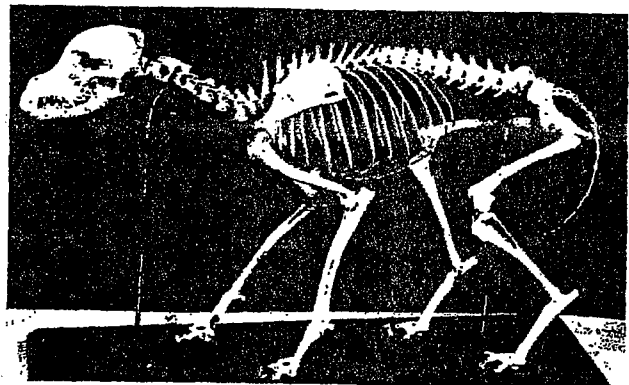
Number of Bacterial Colonies



pH

- Plot the data for the number of bacterial colonies on the grid.
- Surround each point with a small circle and connect the points.
- Select and label appropriate axis's for your graph.
- Write an appropriate title.

The skeletal system of an animal is shown in the photograph below.



List *three* systems, other than the skeletal system, the animal had when alive that helped it to survive. Describe how each of these three systems contributed to maintaining homeostasis.

SAVE THIS REVIEW SHEET

for the rest of the year!

Living Environment Midterm Review

ASE READ

This packet summarizes the key ideas of the 2nd quarter. In addition to this review packet, study your 1st quarter cumulative exam review packet, all old tests, quizzes, notes and diagrams!

Cell Respiration and Photosynthesis

Why is cell respiration important to ALL living things?

In which cell organelle does cell respiration take place? _____

Write out the formula for **AEROBIC CELL RESPIRATION** below.

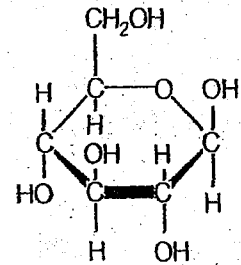
What are the reactants? _____

Products? _____

Which organisms perform this? _____

Write out the formula for **ANAEROBIC CELL RESPIRATION** below (2 types).

ALCOHOLIC FERMENTATION:



What are the reactants? _____

Products? _____

Which organisms perform this? _____

LACTIC ACID FERMENTATION:

What are the reactants? _____

Products? _____

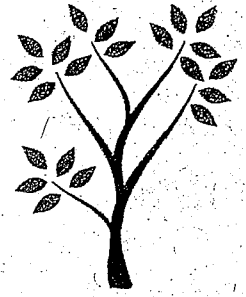
Which organisms perform this? _____

Carbon dioxide is produced as a byproduct (waste) of cellular respiration. It is recycled in nature by which process? _____

Draw an ATP molecule here



Write out the formula for **PHOTOSYNTHESIS** below.



What are the reactants? _____

Products? _____

Which organisms perform this? _____

In which organelle does this process take place? _____

All reactions require what type of protein catalyst? _____ Draw this into its appropriate position in each of the formulas you wrote above.

Draw a chloroplast below. Label GRANA, STROMA, Thylakoid Disc!

What is the difference between an autotroph and a heterotroph?

Why do you think plants are considered "self-sustaining"?

HUMAN BODY SYSTEMS

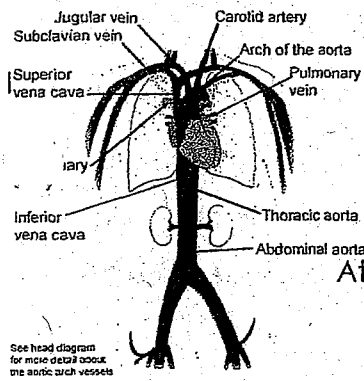
The DIGESTIVE SYSTEM is associated with the life process _____ because its function is to...

The CIRCULATORY SYSTEM is associated with the life process _____ because its function is to...

The IMMUNE SYSTEM is associated with the life process _____ because its function is to...

The RESPIRATORY SYSTEM is associated with the life process _____ because its function is to...

★ Describe how any two body systems work together to maintain homeostasis!



This picture represents the body system: _____

Its major structures are the _____, _____, and _____.

Which blood vessels lead to the heart? _____

Which blood vessels are the most muscular? _____

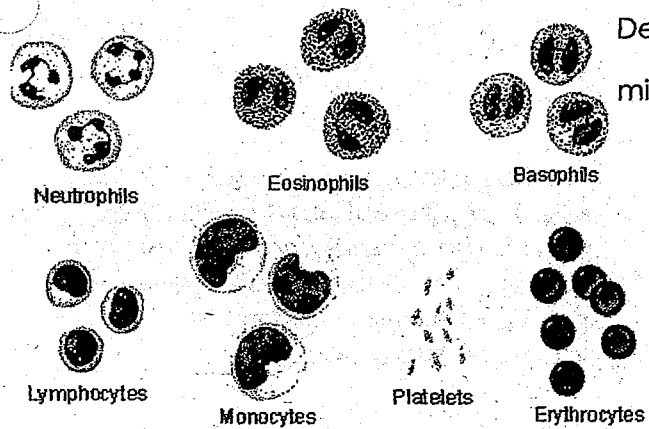
At which blood vessels do nutrients, oxygen and wastes diffuse into the blood? _____

List the pathway that blood takes, starting and ending with the Right Atrium!

Describe the main functions of the 4 major components of blood:

- Plasma:
- Platelets:
- Red Blood Cells:
- White Blood Cells:

This picture represents red blood cells, platelets and many different types of white blood cells!



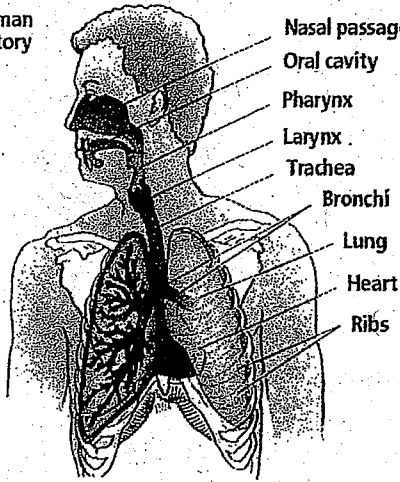
Describe 3 different jobs (functions) that White Blood Cells might perform:

Describe an immune response to a foreign substance. Use the terms **antigen**, **pathogen**, **engulf**, **antibodies**, **permanent immunity**.

What are the contents of a vaccine and how does it protect a person from infection?

What is the difference between passive and active immunity?

The Human Respiratory System



What types of blood vessels surround your alveoli? _____

Which part of the brain controls breathing rate? _____

An excess of which gas triggers your diaphragm to contract? _____

Which structure decreases pressure in your lungs causing air to rush in? _____

Which structure becomes infected during asthma? _____

Which structure becomes infected during allergies? _____

Which structure prevents a person from choking on food? _____

Where does the diffusion of oxygen and CO₂ take place? _____

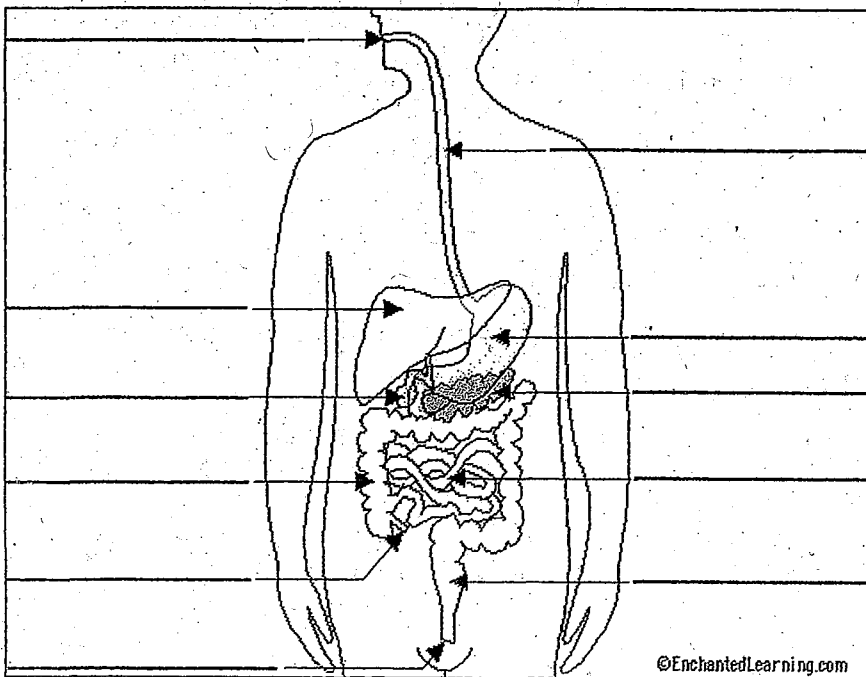
If this structure gets inflamed, you may lose your voice. _____

Another name for your throat area. _____

Describe the importance of cilia in your respiratory system.

What types of things can harm or damage your respiratory cilia?

DIGESTIVE SYSTEM (Label all organs)



Describe the process of digestion of a slice of **pepperoni pizza** as it passes from mouth to anus. Indicate where chemical and mechanical digestion of specific nutrients found in the pepperoni pizza occurs.

Mouth -

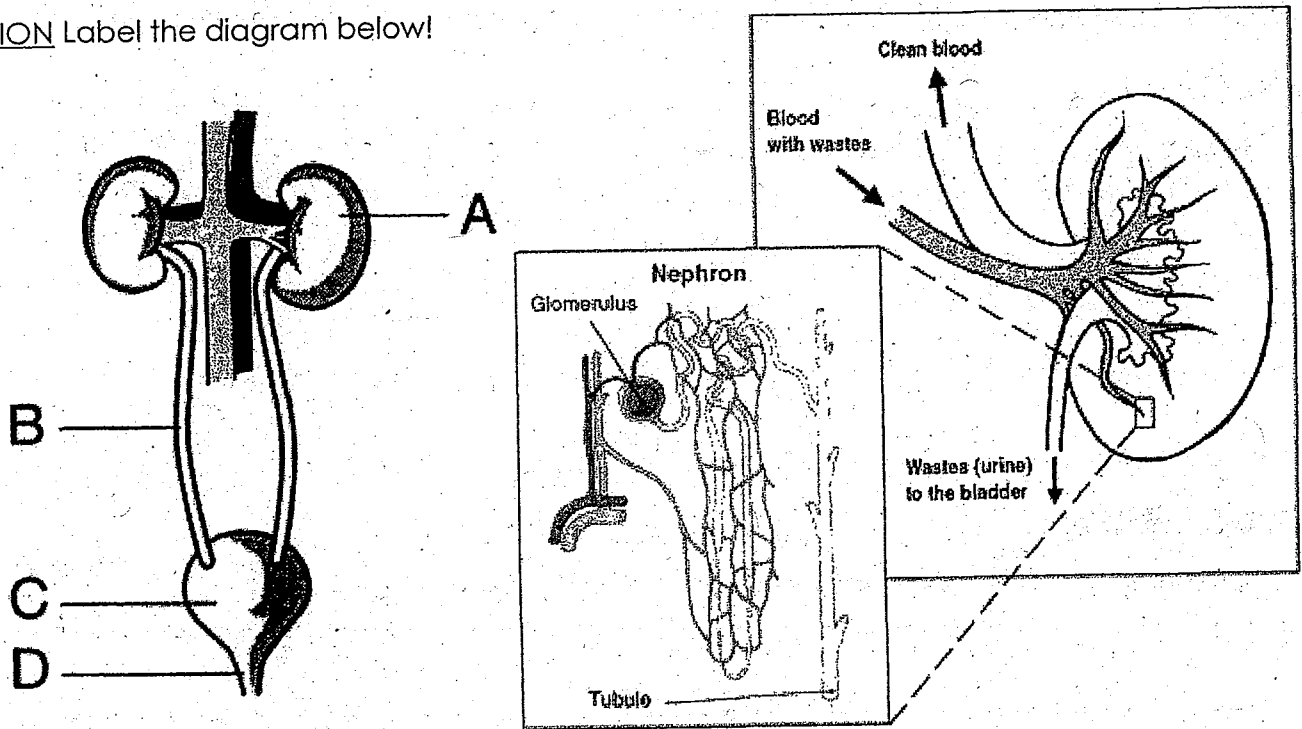
Esophagus -

Stomach -

Small Intestine (with help from liver, gall bladder and pancreas) -

Large Intestine -

EXCRETION Label the diagram below!



Many organs are involved with excretion. How is each involved with excretion?

Lungs (Respiratory) –

Skin –

Liver –

Kidneys –

Name 4 metabolic wastes that are excreted from the body.

The "functional unit" of the kidney is called the _____

This unit is composed of several parts with specific functions. Define each:

Glomerulus –

Bowman's Capsule –

Loop of Henle –

Collecting Duct –

Malfunctions and Disorders Name and describe 3 disorders/malfunctions of each body system.

Digestive System

Malfunction	Structure Affected	Description	Treatment or Prevention

Circulatory System

Malfunction	Structure Affected	Description	Treatment or Prevention

Immune System

Malfunction	Structure Affected	Description	Treatment or Prevention

Respiratory System

Malfunction	Structure Affected	Description	Treatment or Prevention

Which disorders can be controlled by proper diet, exercise and avoidance of toxic alcohol/cigarette smoke?