

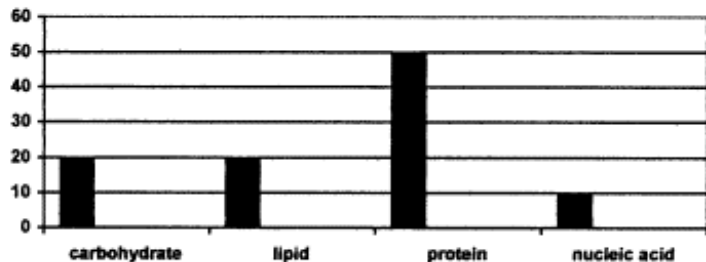
Name: \_\_\_\_\_

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## Biology Term 2 Review

- 1) Fats are important energy storage compounds because they:
  - A. readily breakdown to form glucose
  - B. provide immediate energy
  - C. contain more energy per gram than carbohydrates or proteins
  - D. are liquid at normal body temperatures
  - E. don't require nitrogen
- 2) Which characteristic of water allows it to support the weight of objects more dense than water?
  - A. capillary action
  - B. surface tension
  - C. specific heat
  - D. evaporation
  - E. adhesion
- 3) Which chemical elements would you expect to find in abundance in a living cell?
  - A. hydrogen, neon, argon
  - B. carbon, oxygen, hydrogen
  - C. iron, magnesium, calcium
  - D. sodium, potassium, sulfur

- 4) This chart shows the percentage amount of macromolecules found in a body tissue. What tissue type would this cell be from?
  - A. fat
  - B. muscle
  - C. bone
  - D. blood



- 5) The six elements that make up 99.9% of all living things include
  - A. C, K, O, N, Ca and S
  - B. C, P, S, H, O and N
  - C. C, P, K, I, O and N
  - D. N, O, P, H, S and T
- 6) In red blood cells, the compound carbonic anhydrase increases the rate at which carbon dioxide is converted to bicarbonate ions for transport in the blood. In red blood cells, carbonic anhydrase acts as which of the following?
  - A. an enzyme
  - B. a hormone
  - C. a lipid
  - D. a sugar
- 7) Which of the following is a primary function of carbohydrates?
  - A. storage of energy
  - B. transmission of genetic material
  - C. acceleration of chemical reactions
  - D. transport of molecules across membranes
- 8) Which of the following describes the function of proteins?
  - A. energy formation and storage
  - B. energy used in muscles and reaction
  - C. structural use and enzyme formation
  - D. heredity and genetic code carriers
- 9) Many aquatic birds secrete waxy organic substances that repel water. The birds use these substances to coat their feathers. An analysis of these substances would reveal that they are composed mostly of
  - A. lipids.
  - B. proteins.
  - C. carbohydrates.
  - D. nucleic acids.
- 10) The properties of water make it very valuable to living systems. Which of the following statements regarding water is not true?
  - A. it modifies temperature extremes
  - B. it makes up about 50% of your body
  - C. it is the greatest solvent in the world
  - D. it expands slightly when it freezes
  - E. it covers more than 75% of the earth's surface
- 11) If scientists search other planets for possible life, they are likely to focus on the presence of molecules containing which of the following elements?
  - A. carbon
  - B. iron
  - C. potassium
  - D. sodium

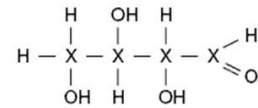
12) The following statements all apply to **one** element:  
 used by plants in photosynthesis  
 recycled by decay and burning

found in carbohydrates, proteins, and lipids  
 required element in all organic molecules

What is this element?

- A. carbon
- B. nitrogen
- C. phosphorus
- D. sulfur

13) The structure of an organic molecule is represented below. In this organic molecule, which element is identified by each X?



- A. iron
- B. carbon
- C. sodium
- D. phosphorus

14) Many plants have waxy coatings on some surfaces. This coating reduces water loss because it is not water-permeable. This waxy coating is which of the following types of organic molecule?

- A. carbohydrate
- B. lipid
- C. nucleic acid
- D. protein

15) What are the building blocks of protein molecules?

- A. polymers
- B. fatty acids
- C. glucose molecules
- D. amino acids

16) What is the most common food storage compound in plants?

- A. glucose
- B. starch
- C. sucrose
- D. cellulose
- E. fat

17) Which of the following statements are true of enzymes?

- A. they are lipids
- B. they will react with most body chemicals
- C. they can only be used once
- D. they usually slow down reactions and prevent overheating of the cells
- E. they usually speed up chemical reactions

18) Magnetic Resonance Imaging (MRI) works by affecting water molecules in the body. MRI uses powerful magnets to align the nuclei and then uses radio waves which are transformed into an image. MRI can show the soft tissues and organs since they are mostly made up of water. What does this demonstrate?

- A. Science provides information which is generally NOT helpful to the health of humans.
- B. Science affects humans by improving technology to help diagnose diseases and disorders.
- C. Technology is too expensive and should not be used in health care because of its tremendous cost.
- D. People are afraid of technology and don't want to know what is really wrong with them.

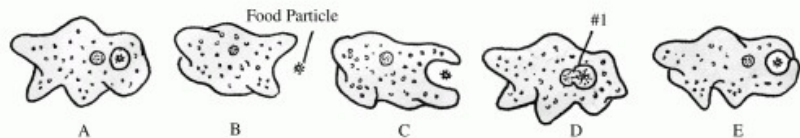
19) Until the early 1800s, many chemists thought organic compounds could only be created by natural processes within living things. In 1828, a German chemist was able to synthesize the organic compound urea, in the lab. Chemists soon realized that the principles governing the chemistry of non-living things could be applied to living things. Which statement best describes this scenario?

- A. Science is a way of knowing by many people -- not just scientists.
- B. Science raises ethical issues for which science alone cannot provide solutions.
- C. Science conclusions are subject to revision in light of new evidence.
- D. Science does not have one correct scientific method to use to verify experiments.

20) The figure shows an amoeba at different stages engulfing a food particle. Use the diagram to answer the question.

What is this sequence of pictures an example of?

- A. Photosynthesis
- B. Respiration
- C. Exocytosis
- D. Passive transport
- E. Active transport

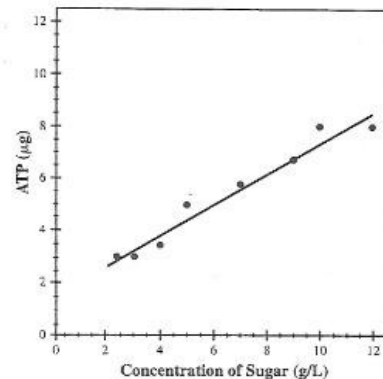


21) Which of the following puts the pictures in the correct sequence?

- A. A E C B D
- B. B C E A D
- C. B D E D A
- D. C B D E A
- E. C D E A B

- 22) Which process most precisely identifies the process which produces energy for life's activities?  
 A. circulation  
 B. chemical digestion  
 C. excretion  
 D. cellular respiration
- 23) Oxygen and sugar are the products of  
 A. cell division.  
 B. digestion.  
 C. photosynthesis.  
 D. respiration.
- 24) Why are cells dependent on outside sources of organic molecules that can be used to produce energy? Cells are dependent because...  
 A. cells are not capable of producing their own energy molecules  
 B. it takes more energy to make molecules than the cell gets from breaking them down  
 C. the cell's Golgi apparatus cannot function alone  
 D. cells are not capable of synthesizing inorganic molecules
- 25) In which of the following ways are photosynthesis and cellular respiration alike?  
 A. Both processes produce glucose.  
 B. Both processes consume carbon dioxide.  
 C. Both processes take place in chloroplasts.  
 D. Both processes involve energy transformations.
- 26) As a person exercises, the need for oxygen in the muscles increases. What is the best reason for this?  
 A. Oxygen is necessary in the muscles to move the carbon dioxide out  
 B. Oxygen is necessary for the increased production of ATP  
 C. Increased oxygen cools down overheated muscles  
 D. Oxygen is a component of water, which leaves the body in the form of sweat
- 27) Which of the following processes releases **primarily** oxygen into the atmosphere?  
 A. combustion  
 B. osmosis  
 C. photosynthesis  
 D. respiration
- 28) Which of the following words includes all of the other words?  
 A. Cellular respiration  
 B. Photosynthesis  
 C. Protein synthesis  
 D. Metabolism  
 E. DNA replication
- 29) Which of the following occurs during photosynthesis?  
 A. CO<sub>2</sub> is used to produce water.  
 B. CO<sub>2</sub> is absorbed by mitochondria.  
 C. CO<sub>2</sub> and H<sub>2</sub>O are converted to carbohydrates.  
 D. CO<sub>2</sub> and H<sub>2</sub>O are combined into carbonic acid.
- 30) Which of the following **best** describes how plants use the energy they receive from sunlight?  
 A. They change water into heat.  
 B. They produce their own food.  
 C. They make minerals for their roots.  
 D. They break down nutrients into rocks.
- 31) The graph below represents data gathered during an experiment on cellular respiration. Which of the following conclusions is **best** supported by data from this graph?
- 32) A mutation that prevents a maple tree from efficiently taking gases from the air would **most directly** affect which of the following processes?  
 A. reproduction  
 B. photosynthesis  
 C. water uptake  
 D. DNA replication
- 33) Which process do the animals in the food web use to convert energy from food into ATP?  
 A. cellular respiration  
 B. osmosis  
 C. photosynthesis  
 D. transcription

Effect of Sugar on ATP Production in Muscle Cells



- 34) In one of the steps of the carbon cycle, a person exhales a molecule of carbon dioxide (CO<sub>2</sub>) into the atmosphere. Which of the following is **most likely** to happen next to the atom of carbon in this molecule?
- A. It may be used as part of a sugar in a plant.
  - B. It may become part of a protein in an animal.
  - C. It may be consumed as a fossil fuel is burned.
  - D. It may be decomposed into carbon and oxygen by a bacterium.
- 35) The natural cycling of oxygen between organisms and their environment is **most** directly accomplished through which of the following pairs of processes?
- A. fermentation and oxidation
  - B. transpiration and evaporation
  - C. precipitation and condensation
  - D. photosynthesis and respiration
- 36) Compare 2 tanks (same size) in a classroom. One has aquatic plants and trout in it. The other has a similar amount of aquatic plant in it, but not trout. Why would the dissolved oxygen level in the tank with the fish be lower than the dissolved oxygen level in the tank without fish?
- A. The tank with the fish and the plants has less because the fish use up the dissolved oxygen
  - B. Plants in the tank with fish give off less oxygen
  - C. The absence of animals in the tank with only plants reduces the oxygen level
  - D. There is less space in the tank with both plants and animals, thus the plants produce less oxygen
- 37) Which of the following is the basic structural unit of the nervous system?
- A. axon
  - B. neuron
  - C. red blood cell
  - D. white blood cell
- 38) In humans, where does the exchange of oxygen and carbon dioxide take place?
- A. heart
  - B. skin
  - C. ovary
  - D. lungs
- 39) What is the **primary** function of the large intestine?
- A. to digest proteins
  - B. to absorb nutrients
  - C. to break down complex carbohydrates
  - D. to remove water from undigested waste
- 40) Which of the following sequences represents the correct order of organization from simple to most complex?
- A. cell, organ, tissue, organ system, organism, population, community, ecosystem
  - B. muscle tissue, muscle, muscle cell, muscle man
  - C. heart cell, heart tissue, heart, circulatory system
  - D. organism, organ system, organ, tissue, cell, organic compounds, atoms
- 41) While breathing, what feature of the alveoli makes it possible for the exchange of gases?
- A. They are supported by cartilage rings
  - B. They are composed of smooth muscle
  - C. They contain rapidly dividing tissue
  - D. They are composed of thin-walled sacs
- 42) Which of the following organs removes extra water from the blood to keep the amount of fluid in the bloodstream at the proper level?
- A. kidneys
  - B. liver
  - C. pancreas
  - D. stomach
- 43) If all flowers are picked off a plant, the plant will **not** be able to
- A. grow taller.
  - B. produce seeds.
  - C. make their own food.
  - D. absorb nutrients from the soil.
- 44) In 1969, Dr. Christian Barnard performed the first successful human heart transplant. The patient lived for 18 days. Since then, our technology, procedures, and medications have improved so dramatically that we are able to successfully transplant many organs, including hearts and give long-term survival to the recipients. In 1995, the success rate for long-term survival for heart transplants was 90%. Not all agree with the use of transplants as a way to save lives. Which of the following statements best describes this scenario?
- A. Science is a way of knowing by many people -- not just scientists.
  - B. Science raises ethical issues for which science alone cannot provide solutions.
  - C. Science conclusions are subject to revision in light of new evidence.
  - D. Science does not have one correct scientific method to use to verify experiments.

- 45) What feature of the skin allows it to protect the rest of the body?  
 A. It contains sweat and oil glands  
 B. The hair follicles contain rapidly dividing cells  
 C. The skin contains a rich supply of blood vessels  
 D. It is composed of several cell layers
- 46) Which part of grass plants absorb **most** of the minerals needed by this plant?  
 A. flowers  
 B. leaves  
 C. stems  
 D. roots
- 47) How do we know that the xylem and phloem of a plant are similar to the veins and arteries of a human?  
 A. We assume that they both serve the same function because they are the outer covering.  
 B. We observe and record both organisms under many similar conditions.  
 C. We just know that the xylem and phloem transport blood through the tree.  
 D. We count the number of tree rings to see how old the tree is.
- 48) Which of the following terms refers to the transportation of nutrients through the body?  
 A. protection  
 B. digestion  
 C. respiration  
 D. circulation
- 49) Which of the following is the **best** example of an organism maintaining homeostasis?  
 A. a wolf panting after a chase  
 B. a spider catching an insect in a web  
 C. a cricket becoming infected by a virus  
 D. a mole digging tunnels in the ground
- 50) Edward Jenner observed that people who had contacted cowpox did not develop smallpox. He inoculated a boy with cowpox and later exposed this boy to smallpox. The boy did not contract smallpox. What hypothesis did Jenner make?  
 A. If exposed to cowpox, a person would also be immune to smallpox  
 B. If exposed to smallpox, a person would also be immune to cowpox  
 C. If T-lymphocytes were not yet differentiated, smallpox would still develop  
 D. Cowpox and smallpox are the same disease
- 51) How are valves in the circulatory system similar to sphincters in the digestive system?  
 A. Both limit movement of substances through the system  
 B. Both absorb excess fluid from the system  
 C. Both add strength to the walls of the system  
 D. Both actively push substances through the system  
 E. Both control an exit to the system
- 52) Which term refers to the body's ability to maintain a stable, internal environment?  
 A. modification  
 B. protection  
 C. metabolism  
 D. organism
- 53) How would a change in altitude, such as climbing to the top of Mount Timpanogos, affect a person's breathing rate?  
 A. The rate would be decreased because of more carbon dioxide  
 B. The rate would be increased because of less atmospheric pressure  
 C. The rate would be unchanged because the factors that would cause an increase are balanced by factors causing a decrease  
 D. The rate would be increased because of lower blood carbon dioxide levels  
 E. The rate would be decreased because of high blood oxygen levels
- 54) In the above table, which substances are higher in concentration in the urine than in the blood?  
 A. water and protein  
 B. protein and glucose  
 C. glucose and sodium  
 D. sodium and potassium  
 E. potassium and urea
- 55) Which two body systems work together to transport oxygen to the cells?  
 A. skeletal and respiratory  
 B. digestive and respiratory  
 C. respiratory and circulatory  
 D. respiratory and reproductive

Comparison of Materials in Blood and Urine		
	% in Blood	% in Urine
Water	92.0	96.0
Protein	7.0	0.0
Glucose	0.1	0.0
Sodium	0.33	0.25
Potassium	0.02	0.24
Urea	0.03	2.90