

TEST NAME: Biology Test 2 (CP)
TEST ID: 3262141
GRADE: 10 - Tenth Grade
SUBJECT: Life and Physical Sciences
TEST CATEGORY: School Assessment

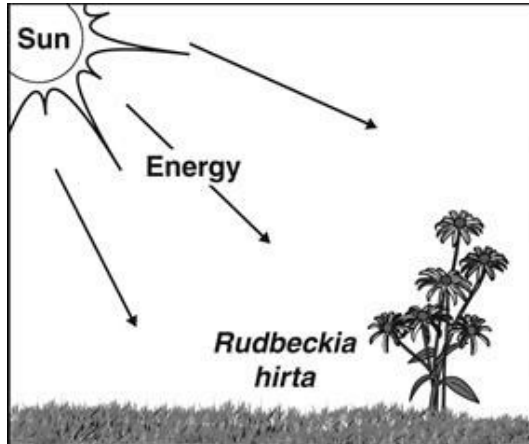
09/27/19, Biology Test 2 (CP)

Student: _____

Class: _____

Date: _____

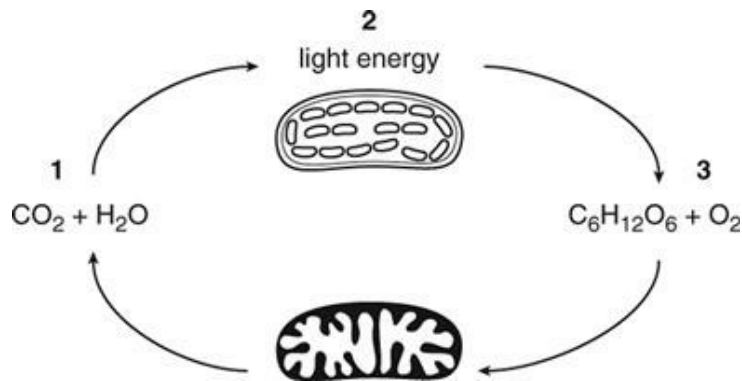
1. The diagram shows a system in which energy is transformed.



Which energy transformation takes place in the plant, *Rudbeckia hirta*?

- A. Thermal energy is transformed into radiant (light) energy.
 - B. Radiant (light) energy is transformed into thermal energy.
 - C. Radiant (light) energy is transformed into chemical energy.
 - D. Thermal energy is transformed into mechanical energy.
2. An amoeba uses a sugar molecule during metabolic activity. It loses energy to the environment as a result. The transformation of energy from the sugar molecule to environmental energy can be described as a transformation between which of these?
- A. electrical energy to radiant (light) energy
 - B. chemical energy to thermal (heat) energy
 - C. electrical energy to chemical energy
 - D. chemical energy to electromagnetic energy
3. When placed in a glucose solution with no oxygen, yeast cells will produce bubbles. Which process are the yeast cells carrying out?
- A. chemosynthesis
 - B. photosynthesis
 - C. fermentation
 - D. aerobic respiration

4. **During photosynthesis, plants absorb light energy from the Sun and convert it into chemical energy in the form of glucose. Which compounds combine in the presence of sunlight to form glucose?**
- carbon dioxide (CO_2) and hydrogen (H_2)
 - oxygen (O_2) and carbon dioxide (CO_2)
 - carbon dioxide (CO_2) and water (H_2O)
 - oxygen (O_2) and water (H_2O)
5. **Electron transport in mitochondria results in a chemiosmotic gradient of which particle across the mitochondrial membrane?**
- ADP
 - ATP
 - protons
 - neutrons
6. **The reaction that releases energy to create ATP for use by the cell occurs in which site?**
- Golgi apparatus
 - endoplasmic reticulum
 - cytoplasmic membrane
 - mitochondrial membrane
7. **Look at the diagram below of a biochemical reaction that occurs within cells.**



Which reaction is taking place between 3 and 1?

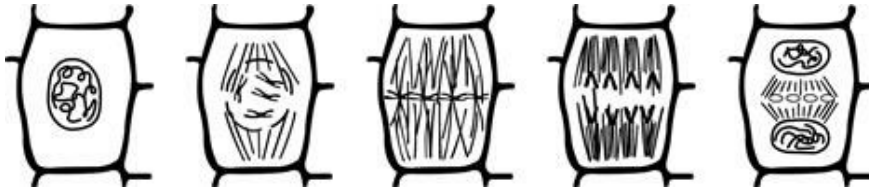
- mitosis
- glycolysis
- photosynthesis
- respiration

8. **During the light reactions of photosynthesis, energy is stored in the compounds ATP and NADPH. A second set of reactions uses this stored energy to produce vital compounds such as glucose. This second set of reactions involves a biochemical pathway called**
- A. the Calvin cycle.
 - B. the Krebs Cycle
 - C. respiration.
 - D. glycolysis.
9. A student noticed that the freshwater plant, *Elodea*, produced bubbles when placed in direct light. What could the student **most likely** conclude?
- A. Bubbles of carbon dioxide were produced as a result of photosynthesis.
 - B. Bubbles of carbon dioxide were produced as a result of cellular respiration.
 - C. Bubbles of oxygen were produced as a result of photosynthesis.
 - D. Bubbles of oxygen were produced as a result of cellular respiration.
10. **Cellular respiration results in the production of adenosine triphosphate (ATP) molecules for energy. The most efficient form of cellular respiration would result in the production of ATP along with which substances?**
- A. oxygen and energy
 - B. glucose and glycogen
 - C. lactic acid and alcohol
 - D. carbon dioxide and water
11. **During a biochemical reaction, pyruvate ($C_3H_4O_3$) is converted into carbon dioxide (CO_2) and water (H_2O). In what part of a cell does this biochemical reaction occur?**
- A. thylakoid membrane
 - B. cytoplasm
 - C. mitochondrial matrix
 - D. stroma
12. **When animals use energy, some is always lost to the environment in the form of...?**
- A. light
 - B. heat
 - C. glucose
 - D. electricity

13. A student observes a flask containing a mixture of yeast, water, and a carbohydrate; the top of the flask is covered by a balloon. After 30 minutes, what waste products would she expect to find in the balloon and flask?
- A. carbon dioxide and ethyl alcohol (ethanol)
 - B. carbon dioxide and lactic acid
 - C. oxygen and glucose
 - D. oxygen and starch
14. Which type of cell will result from a DNA code for cells specialized in transmitting electrical signals?
- A. bone cell
 - B. nerve cell
 - C. sperm cell
 - D. red blood cell
15. Which **best** explains why muscle cells are different from blood cells?
- A. A mutation occurs during the development of muscle cells but not in blood cells.
 - B. Different genes are activated in muscle cells than in blood cells.
 - C. Muscles cells experience different environmental influences than blood cells.
 - D. Muscle cells are produced by the brain, but blood cells are produced by the heart.
16. Which cell is undifferentiated?
- A. stem cell
 - B. sperm cell
 - C. kidney cell
 - D. red blood cell

17. **Which type of cell could give rise to any differentiated cell in a particular organism?**
- A. somatic stem cell
 - B. multipotent stem cell
 - C. pluripotent stem cell
 - D. adult stem cell
18. **Most of the cells in a multicellular organism contain all of the genetic information for the organism. Which of the following cells does NOT fall into this category?**
- A. nerve cell
 - B. red blood cell
 - C. white blood cell
 - D. muscle cell
19. **Genes are located on chromosomes which are composed of**
- A. DNA.
 - B. RNA.
 - C. ATP.
 - D. ADP.
20. **Which organism would require cell differentiation?**
- A. amoeba
 - B. bacteria
 - C. snake
 - D. euglena

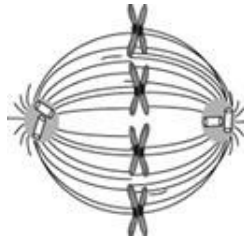
21. A diagram of a plant cell is shown.



What process is shown in the diagram?

- A. photosynthesis
 - B. mitosis
 - C. respiration
 - D. budding
22. As a corn plant ages, its leaves grow. Which process is directly responsible for the growth of these leaves?
- A. the division of cells in the plant
 - B. the release of oxygen from the plant
 - C. the absorption of carbon dioxide in the stem
 - D. the transportation of water from the roots
23. At the end of the mitotic cell cycle, a cell divides into two cells. Which phase does each daughter cell enter at the end of the division?
- A. G1
 - B. S
 - C. G2
 - D. M
24. Which factor BEST explains how many diseases, such as cancer, are formed within the body?
- A. A traumatic injury to the body has occurred.
 - B. A disruption in the cell cycle has taken place.
 - C. A response by the immune system was triggered by an allergic reaction.
 - D. A differentiated cell has spontaneously reverted back to a stem cell.

25. Use the diagram to answer the question that follows.

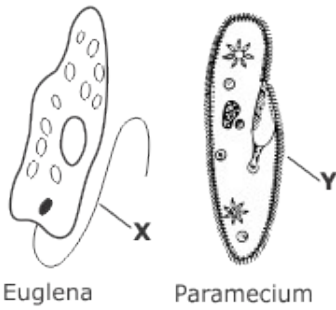


Which phase of mitosis is represented in the diagram?

- A. prophase
 - B. anaphase
 - C. metaphase
 - D. telophase
26. If a cell is exposed to a chemical that inhibits the production of spindle fibers as the cell is preparing for mitosis, what would MOST likely happen?
- A. The cell would continue with mitotic division.
 - B. The cell would not copy its DNA.
 - C. The cell would break open.
 - D. The cell would not divide.
27. What is the result when a single cell reproduces by mitosis?
- A. two cells with genetic material identical to the parent cell
 - B. two cells with half the genetic material of the parent cell
 - C. four cells with half the genetic material of the parent cell
 - D. four cells with genetic material identical to the parent cell
28. Which stage of the cell cycle includes Growth 1, DNA synthesis, and Growth 2?
- A. anaphase
 - B. telophase
 - C. interphase
 - D. cytokinesis

29. In which phase of the cell cycle is DNA replicated?
- A. gap 1
 - B. gap 2
 - C. mitosis
 - D. synthesis
30. What process involves the division of the cytoplasm?
- A. anaphase
 - B. cytokinesis
 - C. interphase
 - D. prophase
31. **Fossil records indicate that Earth was first inhabited by bacteria-like organisms. These organisms**
- A. were single-celled.
 - B. had organ systems.
 - C. were multi-cellular.
 - D. had small appendages.

32. These diagrams represent a Euglena and a Paramecium.



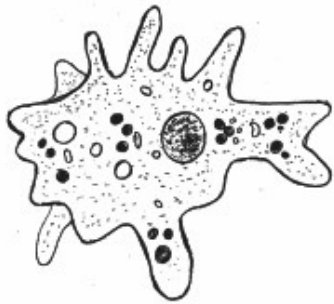
Which function do structures **X** and **Y** have in common?

- A. digestion
 - B. gathering food
 - C. movement
 - D. reproduction
33. Which is the part of cellular respiration when the most ATP is produced?
- A. glycolysis
 - B. citric acid cycle
 - C. electron transport chain
 - D. lactic acid fermentation
34. Which is the paramecium regulating with the use of the contractile vacuole?
- A. development
 - B. homeostasis
 - C. metabolism
 - D. reproduction

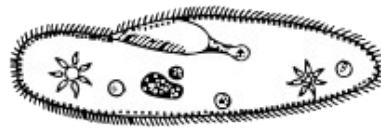
35. How does an amoeba capture food?

- A. traps it with cilia
- B. traps it with flagella
- C. engulfs it with pseudopodia
- D. ingests it through contractile vacuole

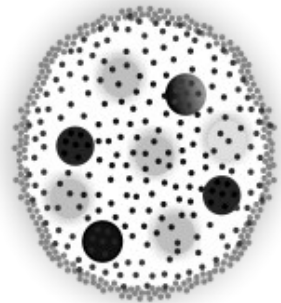
36. The pictures below are examples of four different organisms.



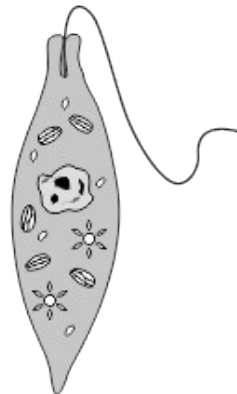
organism 1



organism 2



organism 3



organism 4

Which organism uses cilia for movement and to capture food?

- A. organism 1
- B. organism 2
- C. organism 3
- D. organism 4

37. Which would **most likely** hinder the ability of a paramecium to survive in its environment?
- A. absorbing chemicals that impact contractile vacuoles
 - B. dividing into two identical daughter cells
 - C. using ATP to aid in movement of the cilia
 - D. replicating mitochondria within the cell
38. What advantage does the single-celled Volvox **most likely** gain by living in colonies?
- A. The single-celled Volvox is able to hunt and ingest larger predatory species.
 - B. The single-celled Volvox is better adapted to live in saltwater environments.
 - C. The single-celled Volvox is better adapted to move away from direct sunlight.
 - D. The single-celled Volvox is able to coordinate and complete tasks more efficiently.
39. A unicellular organism that produces glucose through photosynthesis would **most likely** contain which structure?
- A. chloroplasts
 - B. cilia
 - C. eyespots
 - D. pseudopods

40. Which **best** describes the function of eyespots in *Euglena*?
- A. maintains water balance within the *Euglena*
 - B. senses predators so that the *Euglena* can escape
 - C. produces energy for the *Euglena* to use for movement
 - D. detects the direction and intensity of light for the *Euglena*
41. Which is the role of the contractile vacuole in a paramecium?
- A. It is used for pumping out excess water to help maintain a suitable osmotic pressure.
 - B. It helps the organism move around its aquatic environment by using water pressure.
 - C. It contracts on at regular intervals to help the cilia move the organism around its environment.
 - D. It is used to store wastes from food digestion that will eventually be pumped out of the organism.
42. Which organism uses a specialized structure, the pseudopod, as an extension of streaming cytoplasm for movement?
- A. amoeba
 - B. bacterium
 - C. euglena
 - D. paramecium
43. In which part of the cell is glucose initially broken down to form 2 molecules of pyruvate?
- A. the nucleus
 - B. the cytoplasm
 - C. the mitochondria
 - D. the plasma membrane

44. How many phosphate groups does an ATP molecule contain?
- A. 1
 - B. 2
 - C. 3
 - D. 4
45. **Which BEST describes the role of chlorophyll in energy conversion?**
- A. Chlorophyll converts chemical energy into radiant (light) energy.
 - B. Chlorophyll converts glucose to CO₂, releasing energy.
 - C. Chlorophyll converts oxygen and nutrients in order to drive metabolic activities.
 - D. Chlorophyll absorbs light and converts it to chemical energy.
46. Why must DNA replication have to occur before a cell can divide by mitosis?
- A. to maintain the same number of chromosomes in the daughter cells as in the parent cell
 - B. to cause one of the cells produced to have double the number of chromosomes as the parent cell
 - C. to cause all the cells produced to have double the number of chromosomes as the parent cell
 - D. to cause all the cells produced to have half the number of chromosomes as the parent cell
47. Which of these cells in a human body is specialized to transport oxygen throughout the body?
- A. neuron
 - B. red blood cell
 - C. sperm cell
 - D. skeletal muscle cell
48. Which process will start to happen in the muscle cells of a runner when cellular oxygen levels are low?
- A. aerobic respiration
 - B. photosynthesis
 - C. lactic acid fermentation
 - D. alcoholic fermentation