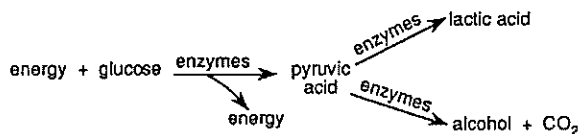


- The fermentation of glucose by yeast normally yields
  - lactic acid,  $\text{CO}_2$ , and 2 ATP
  - alcohol,  $\text{CO}_2$ , and 36 ATP
  - alcohol,  $\text{CO}_2$ , and 2 ATP
  - $\text{CO}_2$ ,  $\text{H}_2\text{O}$ , and 36 ATP

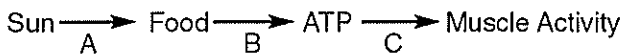
- Base your answer to the following question on the diagram below which represents two different pathways of glucose oxidation and on your knowledge of biology.



Until it is used by an organism, energy released from these pathways is stored in the form of

- DNA
- carbon dioxide
- water
- ATP

- The flow of energy through an ecosystem involves many energy transfers. The diagram below summarizes the transfer of energy that eventually powers muscle activity.



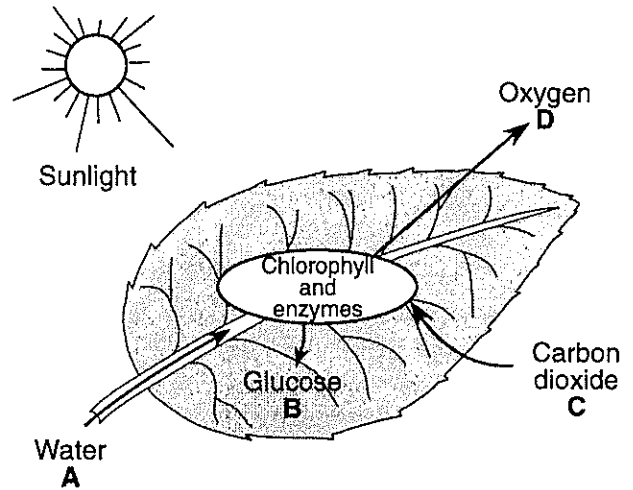
The process of cellular respiration is represented by

- arrow A, only
- arrow B, only
- arrow C, only
- arrows A, B, and C

- Which organelles must be present within a cell of a geranium leaf for respiration and photosynthesis to occur?

- cell wall and lysosome
- mitochondrion and chloroplast
- centrosome and nucleus
- endoplasmic reticulum and ribosome

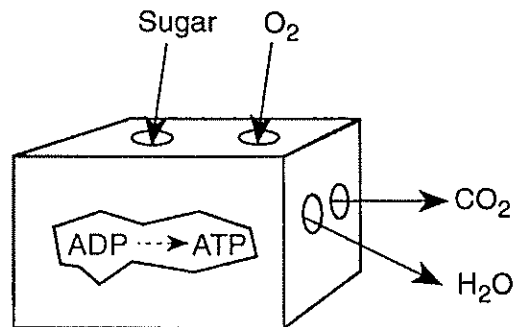
- Base your answer to the following question on the diagram below and on your knowledge of biology. The diagram represents some processes occurring in the leaf of a plant.



Which letters indicate substances needed by the leaf to carry out the process of aerobic cellular respiration?

- A and C
- B and C
- C and D
- B and D

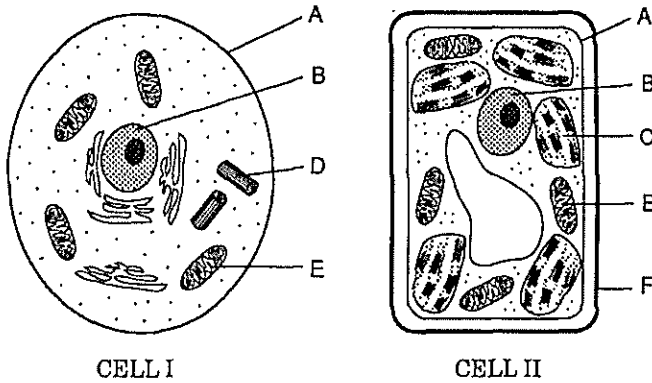
- The diagram below represents some events that take place in a plant cell.



In which organelle would these events most likely occur?

- mitochondrion
- chloroplast
- lysosome
- centriole

7. Base your answer to the following question on the diagrams below which represent two different cells.



In both cells, the organelles labeled *E* are the sites of

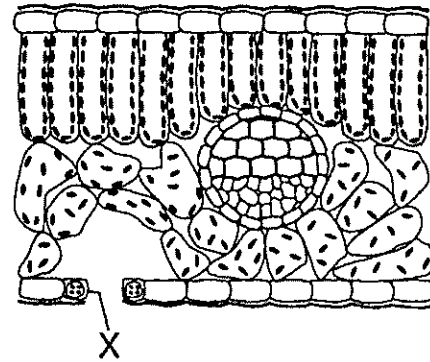
- 1) secretion
  - 2) starch synthesis
  - 3) aerobic respiration
  - 4) food storage
8. Which laboratory procedure would be best for demonstrating the effect of light intensity on the production of chlorophyll in pea plants?
- 1) using 10 plants of different species, each grown under the same intensity of light
  - 2) using 10 plants of different species, each grown under a different intensity of light
  - 3) using 10 plants of the same species, each grown under the same intensity of light
  - 4) using 10 plants of the same species, each grown under a different intensity of light
9. When do green plants carry on cellular respiration?
- 1) only during the night
  - 2) only during the day
  - 3) during both the night and the day
  - 4) neither during the night nor during the day

10. ATP is a compound that is synthesized when
- 1) chemical bonds between carbon atoms are formed during photosynthesis
  - 2) energy stored in chemical bonds is released during cellular respiration
  - 3) energy stored in nitrogen is released, forming amino acids
  - 4) digestive enzymes break amino acids into smaller parts

11. Base your answer to the following question on

Gases move into intercellular spaces in leaves through openings known as

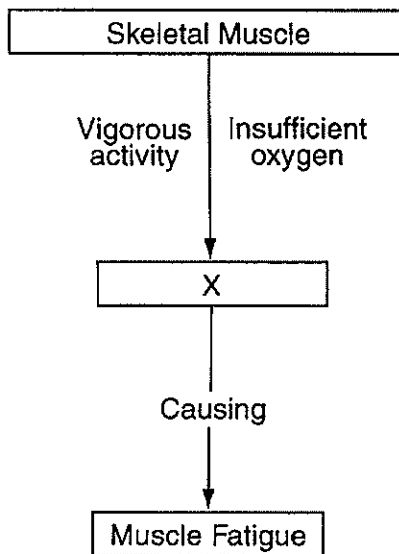
- 1) stomates
  - 2) lenticels
  - 3) phloem tubes
  - 4) xylem tubes
12. Base your answer to the following question on The diagram below represents a cross section of a leaf.



Which structure is indicated by letter *X*?

- 1) cuticle
  - 2) spongy cell
  - 3) guard cell
  - 4) palisade layer
13. Living organisms must be able to obtain materials, change the materials into new forms, remove poisons, and move needed material from one place to another. Many of these activities directly require
- 1) energy released from ATP
  - 2) carbohydrates formed from receptor molecules
  - 3) the synthesis of DNA
  - 4) the breakdown of energy-rich inorganic molecules

14. The energy found in ATP molecules synthesized in animal cells comes directly from
- 1) sunlight
  - 2) organic molecules
  - 3) minerals
  - 4) inorganic molecules
15. Which substances are produced as a result of the process of aerobic respiration?
- 1) carbon dioxide and glucose
  - 2) oxygen and adenosine triphosphate
  - 3) oxygen and water
  - 4) carbon dioxide and water
16. Which process produces the greatest quantity of ATP per molecule of glucose oxidized?
- 1) aerobic respiration
  - 2) lactic acid production
  - 3) photosynthesis
  - 4) fermentation
17. The diagram below shows a sequence of events that often occurs in human muscle cells.

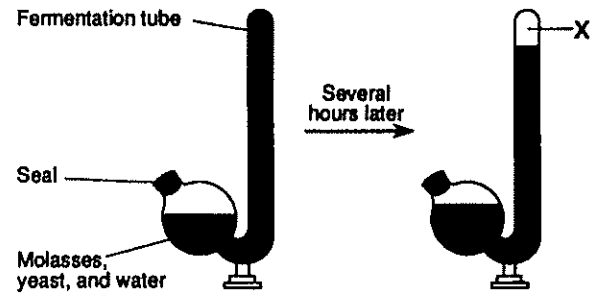


The substance represented by letter X is most likely

- 1) hemoglobin
- 2) glycogen
- 3) ethyl alcohol
- 4) lactic acid

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

A student conducted an investigation on fermentation. Yeast, molasses, and water were combined in a fermentation tube and left for several hours at room temperature. The results are shown below.



Which substance would most likely be found in the greatest amount in area X?

- 1)  $O_2$
- 2)  $C_6H_{12}O_6$
- 3)  $H_2O$
- 4)  $CO_2$

Base your answers to questions 19 and 20 on the list of molecules below. Select the molecule, *chosen from the list below*, that is most closely associated with that phrase.

*Molecules*

- (1) Oxygen
- (2) Pyruvic acid
- (3) Enzymes
- (4) Carbon dioxide
- (5) Water

19. Controls each reaction in both aerobic and anaerobic respiration

- 1) 1
- 2) 2
- 3) 3
- 4) 4
- 5) 5

20. May be converted to lactic acid in anaerobic respiration

- 1) 1
- 2) 2
- 3) 3
- 4) 4
- 5) 5

21. Which substance is needed for aerobic cellular respiration to occur?

- 1) oxygen
- 2) carbon dioxide
- 3) nitrogen
- 4) methane

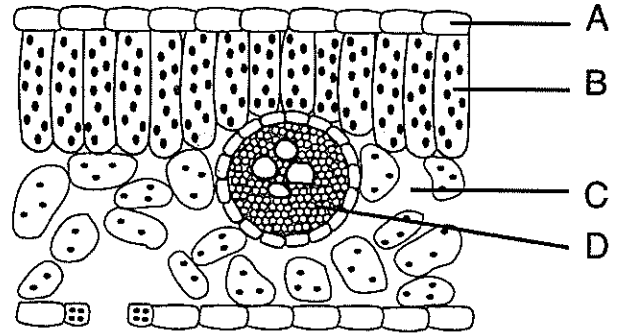
22. Within a plant cell, the glucose formed as a result of photosynthesis may be used directly as

- 1) an energy source during cellular respiration
- 2) an enzyme for intracellular digestion
- 3) an absorber of radiant energy
- 4) a source of molecular oxygen

23. One immediate cause of a decrease in the rate of photosynthesis is a reduction in the availability of

- 1) carbon dioxide
- 2) carbon monoxide
- 3) hydrogen
- 4) nitrogen

24. Base your answer to the following question on The diagram below represents a cross section of a plant structure.



Which letter indicates the region where most autotrophic nutrition takes place?

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

Answer Key  
photo and resp test [Nov 20, 2006]

1. 3

2. 4

3. 2

4. 2

5. 4

6. 1

7. 3

8. 4

9. 3

10. 2

11. 1

12. 3

13. 1

14. 2

15. 4

16. 1

17. 4

18. 4

19. 3

20. 2

21. 1

22. 1

23. 1

24. 2

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