Cellular Energy - Solution Paper

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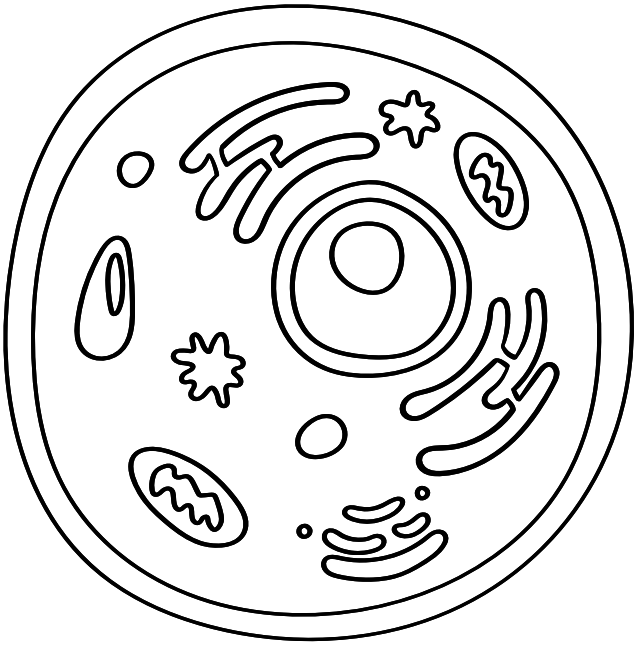
Chapter 7

Cellular Energy



SOLUTION PAPER

by Abd Alrahman Basim

SECTION 1:

HOW ORGANISMS OBTAIN ENERGY

SECTION 2:

PHOTOSYNTHESIS

SECTION 3:

CELLULAR RESPIRATION

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HOW ORGANISMS OBTAIN ENERGY

1. _____ is the energy currency of the cell.

   a) Metabolism
   b) Adenosine triphosphate (ATP)
   c) Photosynthesis
   d) Cellular respiration

2. The study of the flow and transformation of energy is called _____ .

   a) energy
   b) cellular respiration
   c) photosynthesis
   d) thermodynamics

3. _____ can exist in many forms.

   a) Energy
   b) Bioenergetics
   c) thermodynamics
   d) photosynthesis

4. Chemical reactions that convert energy within a cell are referred to as _____ .

   a) autotrophs
   b) metabolism
   c) photosynthesis
   d) cellular respiration

5. Light energy is converted into chemical energy during the process of _____ .

   a) metabolism
   b) autotrophs
   c) cellular respiration
   d) photosynthesis

HOW ORGANISMS OBTAIN ENERGY

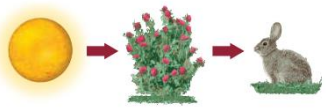
6. Which is **NOT** a characteristic of energy?

   a) cannot be created nor destroyed
   b) is the capacity to do work
   c) exists in forms such as chemical, light, and mechanical
   d) changes spontaneously from disorder to order

7. Which organism depends on an external source of organic compounds?

   a) Autotroph
   b) Heterotroph
   c) Chemoautotroph
   d) photoautotroph

8. Which part of this food chain provides energy to just one other part?



   a) the chemoautotroph
   b) the heterotroph
   c) the Sun
   d) the photoautotroph

9. What do cells store and releaseas the main source of chemical energy?

   a) ATP
   b) $NADP^+$
   c) ADP
   d) NADPH

10. Which energy transformation can occur only in autotrophs?

   a) chemical energy into mechanical energy
   b) electrical energy into thermal energy
   c) light energy into chemical energy
   d) mechanical energy into thermal energy

PHOTOSYNTHESIS

1. _____ is the location of the light reactions.

   a) Thylakoid
   b) Granum
   c) Calvin cycle
   d) Stroma

2. A stack of thylakoids is called _____ .

   a) pigment
   b) rubisco
   c) granum
   d) stroma

3. _____ is a colored molecule that absorbs light

   a) Rubisco
   b) Pigment
   c) $NADP^+$
   d) Thylakoid

4. _____ is a process in which energy is stored in organic molecules.

   a) Calvin cycle
   b) Carbon fixation
   c) glycolysis
   d) Krebs cycle

5. What waste product of photosynthesis is released to the environment?

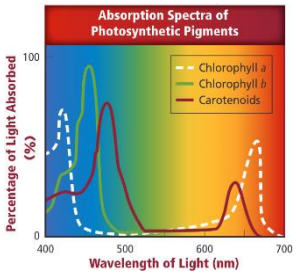
   a) carbon dioxide
   b) water
   c) oxygen
   d) ammonia

PHOTOSYNTHESIS

6. Which is the internal membrane of the chloroplast that is organized into flattened membranous sacs?

   a) Thylakoids
   b) Theca
   c) Mitochondria
   d) Stroma

7. Of which wavelength of light do carotenoids absorb the greatest percentage?



   a) 400
   b) 600
   c) 500
   d) 700

8. Which supplies energy used to synthesize carbohydrates during the Calvin cycle?

   a) CO_2 and ATP
   b) ATP and NADPH
   c) NADPH and H_2O
   d) H_2O and O_2

9. Which step occurs during the Calvin cycle?

   a) formation of ATP
   b) formation of six-carbon sugars
   c) release of oxygen gas
   d) transport of electrons by $NADP^+$

CELLULAR RESPIRATION

1. The series of reactions in which pyruvate is broken down into carbon dioxide is called the _____ .

   a) Krebs cycle
   b) glycolysis
   c) Calvin cycle
   d) fermentation

2. _____ is a process that do not require oxygen.

   a) Krebs cycle
   b) Electron transport
   c) Aerobic process
   d) Anaerobic process

3. _____ occurs in the cytoplasm and regenerates the cell's supply of NAD^+ while producing a small amount of ATP.

   a) Cellular respiration
   b) Fermentation
   c) Electron transport
   d) Krebs cycle

4. _____ is a process that do require oxygen.

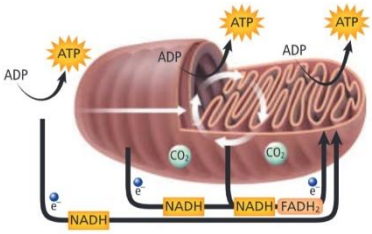
   a) Fermentation
   b) Glycolysis
   c) Aerobic process
   d) Anaerobic process

5. Glucose is broken down in the cytoplasm through the process of _____ .

   a) Krebs cycle
   b) electron transport
   c) Calvin cycle
   d) glycolysis

CELLULAR RESPIRATION

6. Which organelle is illustrated in the figure?



   a) Golgi apparatus
   b) Mitochondrion
   c) Nucleus
   d) Endoplasmic reticulum

7. Which process does not occur in the organelle illustrated above?

   a) glycolysis
   b) Krebs cycle
   c) conversion of pyruvate to acetyl CoA
   d) electron transport

8. Which is not a stage of cellular respiration?

   a) glycolysis
   b) Krebs cycle
   c) electron transport chain
   d) lactic acid fermentation

9. What is produced when the electrons leave the electron transport chain in cellular respiration and bind to the final electron acceptor for the chain?

   a) H_2O
   b) O_2
   c) CO_2
   d) CO

10. In which molecule is most of the energy of glucose stored at the end of glycolysis?

   a) pyruvate
   b) acetyl CoA
   c) ATP
   d) NADH

CHAPTER 7

CELLULAR ENERGY

SOLUTION PAPER

Resources

- *The Immune System, Chapter 37, from Glencoe Biology ©2017*

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