Department of Education
Alcides Figueroa Specialized Bilingual School
Añasco, P.R.

Name _____ Date _____
10th grade-Biology Score: ___ /50 points

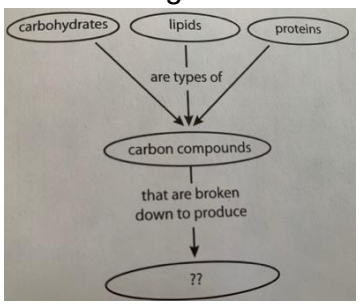
Special Assessment: Cellular Respiration

Objective: After reading the presentations Photosynthesis Overview and Photosynthesis in Detail, students will answer this module and explain the process of photosynthesis.

Instructions: Answer all parts of this module after reading the presentations sent by the teacher. Email assignment or hand in when classes are resumed. This assignment is worth 50 points and substitutes half or your exam. If you have any questions, please email your teacher: nmercsoto@gmail.com

I. Multiple Choice: Read carefully each question and choose the correct answer. Write the letter in the left side column (20 points)

____1. The following concept map shows some of the carbon-based molecules in the cells. Some of these can be broken down to produce usable chemical energy. Which of the following terms best completes this concept map?



a. electrons
b. ATP
c. lactic acid
d. hydrogen ions

____2. Which of the following groups of organisms uses cellular respiration in mitochondria to produce ATP for their energy needs?

a. plants only
b. eukaryotes
c. animals only
d. prokaryotes

____3. A process that needs oxygen to take place is called

a. anaerobic
b. oxygenic
c. photosynthetic
d. aerobic

____ 4. Releases chemical energy from sugars and other carbon-based molecules to make ATP when oxygen is present.

a. cell cycle
b. photosynthesis
c. fermentation
d. cellular respiration

____5. Glycolysis takes place

a. in the cytoplasm
b. in the mitochondria
c. only if oxygen is present
d. only if oxygen is absent

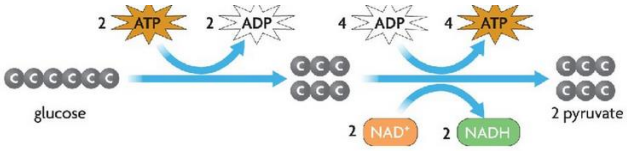
____ 6. A process that does not require oxygen to happen is

a. aerobic
b. spontaneous
c. exotermic
d. anaerobic

____ 7. Two ways in which cell respiration seems to be the opposite of photosynthesis

a. reactions occur at same places
b. Cell respiration breaks down sugars to make ATP, while photosynthesis uses ATP to make sugars
c. One produces O_2

____8. The following process is called



a. Fermentation
b. Krebs Cycle
c. Glycolysis
d. Photosynthesis

____9. The Krebs Cycle produces

a. Two molecules of CO_2
b. A six-carbon molecule from six molecules of CO_2
c. most of the ATP produced in aerobic respiration

____10. The electron transport chain of aerobic respiration

a. generates O_2
b. Produces NADH4 by chemiosmosis
c. pumps protons in mitochondria
d. pumps H^+ against a gradient

II. Questions: Read and answer each question in the space provided (30 points)

1. In the box below write the chemical equation for the overall process of **cellular respiration**, identify reactants and products. In the lines, explain what the equation means and the meaning of several arrows. (6 points)

_____
_____
_____
_____
_____

2. In the following table, compare differences between photosynthesis and cellular respiration. Write down 3 for each. (6 points)

Photosynthesis	Cellular Respiration

3. What is an **ATP synthase** and its function? Explain (3 points)

_____
_____
_____

4. Use the space below to sketch and label a **mitochondrion**. Identify the **inner membrane, outer membrane, matrix and intermembrane space** (8 points)

III. **Sequence of events**: Read the following events and number from 1-7 according to the cellular respiration process.

_____ Pyruvate from glycolysis is broken down
_____ Hydrogen ions are transported across the inner mitochondrial membrane
_____ ADP is transformed into ATP when ions flow through ATP synthase
_____ Citric acid is formed
_____ NADH and FADH2 are formed at the end of Krebs Cycle
_____ Citric acid is broken down
_____ Glycolysis breaks glucose into 2 three-carbon molecules called pyruvate. NADH and ATP are also produced.