

Cellular Respiration Assignment

I. **MULTIPLE CHOICES.** Select the best answer. Write the letter of your choice on the space provided.

- _____ 1. Electron transport chain allows the electron to _____.
- a) transfer from grana to stroma.
 - b) transfer from sun energy to chlorophyll.
 - c) transfer into carotene.
 - d) release energy.
- _____ 2. Citric acid cycle starts by combining acetyl group with four-carbon compound to form _____.
- a) citric acid
 - b) acetic acid
 - c) adenine
 - d) malic acid
- _____ 3. Muscle fibers which perform vigorous exercise form a great percentage of _____.
- a) pyruvic acid
 - b) lactic acid
 - c) citric acid
 - d) acetic acid
- _____ 4. In cellular aerobic respiration, oxidation of glucose occurs through _____.
- a) combining glucose with oxygen
 - b) glucose losing oxygen
 - c) combining glucose with hydrogen
 - d) glucose losing electrons
- _____ 5. CO₂ is released as a result of _____.
- a) glycolysis
 - b) fermentation of lactic acid
 - c) alcoholic fermentation
 - d) dehydration of glycogen

Cellular Respiration Assignment

_____ 6. Electron transport chain is described as _____.

- a) molecular carrier which change by enzyme changing
- b) oxidative phosphorylation cycle
- c) sequences of oxidation and reduction
- d) exothermic reaction

II. Explain the following.

1. 38 molecules of ATP are produced from the complete oxidation of one glucose molecule.

2. Cellular respiration differs from burning process.

3. Photosynthesis is linked by respiration in plants.

4. Anaerobic respiration is called alcoholic fermentation in case of yeast fungus.

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III. The inner membrane of the mitochondria is folded. What would happen if it was straight?

IV. Compare between:

1. Aerobic respiration and anaerobic respiration.

2. Acidic fermentation and alcoholic fermentation.

Cellular Respiration Assignment

ANSWERS

I. **MULTIPLE CHOICES.** Select the best answer. Write the letter of your choice on the space provided.

1. Electron transport chain allows the electron to _____.
 - a) transfer from grana to stroma.
 - b) transfer from sun energy to chlorophyll.
 - c) transfer into carotene.
 - d) **release energy.**

2. Citric acid cycle starts by combining acetyl group with four-carbon compound to form _____.
 - a) **citric acid**
 - b) acetic acid
 - c) adenine
 - d) malic acid

3. Muscle fibers which perform vigorous exercise form a great percentage of _____.
 - a) pyruvic acid
 - b) **lactic acid**
 - c) citric acid
 - d) acetic acid

4. In cellular aerobic respiration, oxidation of glucose occurs through _____.
 - a) combining glucose with oxygen
 - b) glucose losing oxygen
 - c) combining glucose with hydrogen
 - d) **glucose losing electrons**

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5. CO₂ is released as a result of _____.
- a) glycolysis
 - b) fermentation of lactic acid
 - c) alcoholic fermentation**
 - d) dehydration of glycogen
6. Electron transport chain is described as _____.
- a) molecular carrier which change by enzyme changing
 - b) oxidative phosphorylation cycle**
 - c) sequences of oxidation and reduction
 - d) exothermic reaction

V. Explain the following.

1. 38 molecules of ATP are produced from the complete oxidation of one glucose molecule.

In glycolysis: 2 molecules of ATP are produced.

In citric acid cycle: 2 molecules of ATP are produced.

In electron transport chain: 34 molecules of ATP are produced.

2. Cellular respiration differs from burning process.

In cellular respiration, the energy carried on hydrogen molecules on NADH and FADH₂ is released in a fashion manner that make it easy to make oxidative phosphorylation and store the energy on ATP.

In burning process, the energy is released in enormous amount that make it hard to store it.

3. Photosynthesis is linked by respiration in plants.

The results of photosynthesis process are sugars and oxygen gas. The sugars are burnt in respiration to give energy and carbon dioxide. The oxygen is also used in the respiration.

The carbon dioxide gas released from respiration is used in photosynthesis process.

4. Anaerobic respiration is called alcoholic fermentation in case of yeast fungus.

Because anaerobic respiration in yeast fungus produce ethyl alcohol.

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VI. The inner membrane of the mitochondria is folded. What would happen if it was straight?

The folding of the inner membrane of the mitochondria increases the surface area of the chemical reaction of the cellular respiration. If the inner membrane was straight, there wouldn't be enough surface area for those chemical reactions which could result in slowing down the chemical reactions and the cellular respiration.

VII. Compare between:

3. Aerobic respiration and anaerobic respiration.

Aerobic respiration occurs in sufficient amount of oxygen in all the cells of living organisms. It produces 38 ATP molecules for each glucose molecule.

Anaerobic respiration occurs in lack of oxygen in the cells of muscles, some fungi and plant cells. The amount of ATP produced is small compared with the aerobic respiration.

4. Acidic fermentation and alcoholic fermentation.

Acidic fermentation happens in case of animal cells, especially muscle fibers and Bacteria, when the muscles exert vigorous efforts or exercises, they consume most of the oxygen. The cells tend to convert pyruvic acid into lactic acid after its reduction by combining with hydrogen on NADH. If oxygen becomes available, lactic acid is converted into pyruvic acid again and then into acetyl co-A.

Alcoholic fermentation happens in case of yeast fungus, or in some plant cells, pyruvic acid is reduced into ethyl alcohol and carbon dioxide.