

ASSIGNMENT

Q-1) Write 4 points of difference between aerobic and anaerobic respiration.

Ans)

Aerobic Respiration

Anaerobic Respiration

(i) Aerobic respiration refers to complete breakdown of metabolic fuels in presence of oxygen.

(i) Anaerobic respiration refers to partial breakdown of metabolic ~~waste~~ fuel (glucose) in absence of oxygen.

(ii) It includes glycolysis, citric acid cycle and oxidative phosphorylation. The first two processes take place in the cytoplasm while the last one occurs in mitochondria.

(ii) Glycolysis is followed by ethanol fermentation (occurs in yeast) or lactic acid fermentation (in muscles and microbes like lactic acid bacteria).

(iii) The end products are carbon dioxide and water.

(iii) End products are ethanol + CO_2 for ethanol fermentation and lactic acid for lactic acid fermentation.

(iv) Owing to complete oxidation of glucose a large amount of energy is produced (36-38) ATP Molecules.

(iv) Incomplete oxidation of glucose does not release all stored energy and only 2 ATP molecules are produced.

Q-2) What are the different ways in which glucose is oxidised to provide energy in various organisms?

Ans) Breaking down of glucose involves two processes. In the first step, it is broken into three-carbon molecules called pyruvate. The pyruvate is further broken down into energy in the following different ways:

(a) Aerobic Respiration: In this case, pyruvate is broken down into water and carbon dioxide along with the release of energy. It commonly occurs in the mitochondria of cells.

(b) Anaerobic Respiration: In anaerobic respiration, the breakdown of pyruvate takes place in the presence of oxygen to give rise to 3 molecules of carbon dioxide and water. And ~~pyruvate~~ pyruvate is converted into ethanol and carbon dioxide.

Q-3-> The autotrophic mode of nutrition requires:

(d) All of the above

- (a) Carbon dioxide ~~and~~ and water
- (b) Sunlight
- (c) Chlorophyll

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(b) Glycolysis is followed by ethanol fermentation or lactic acid fermentation (in muscles and microbes like lactic acid bacteria).

(c) End products are carbon dioxide and water.

(c) End products of ethanol fermentation are ethanol and carbon dioxide and that of lactic acid fermentation ~~are~~ is lactic acid.

(d) Owing to complete oxidation of glucose, a large amount of energy is produced (36-38 ATP molecules)

(d) Incomplete oxidation of glucose does not release all stored energy and only 2 ATP molecules are produced.

Organisms : Multicellular organisms like human beings, dogs, cats, etc.

Organisms : Yeast, lactic acid bacteria, E. Coli, Staphylococci, etc.