

Modern School

ASSIGNMENT

Class 11 - Biology

MCQ TYPE QUESTIONS

RESPIRATION IN PLANTS

1. Which one is the correct location for Krebs's cycle?

- a) Inner membrane of mitochondria b) Outer membrane of mitochondria c) Matrix of mitochondria d) Cristae

2. Chemiosmotic theory of ATP synthesis in chloroplast and mitochondria is based on:

- a) Accumulation of K^+ ions b) Accumulation of Na^+ ions c) Proton gradient d) Membrane potential

3. Energy releasing enzymatically controlled catabolic process which involves step-wise oxidative breakdown of organic substance inside living cells is called:

- a) Anaerobic respiration b) Decarboxylation c) Fermentation d) Cellular respiration

4. The ultimate electron acceptor of respiration in aerobic organisms is:

- a) Hydrogen b) Oxygen c) Glucose d) Cytochrome

5. In Krebs cycle, isocitric acid is converted into α -keto glutaric acid by:

- a) Decarboxylation b) Dehydration c) Condensation d) Carboxylation

6. Two synonyms are

- a) Citric acid cycle and calvin cycle b) Tricarboxylic acid cycle and citric acid cycle

- c) Tricarboxylic acid cycle and urea cycle d) Krebs cycle and calvin cycle

7. The most common respiratory substrate is _____.

- a) Organic acid b) Protein c) Glucose d) Fat

8. The respiratory ratio of protein is _____.

- a) 0.2 b) 0.8 c) 1.0 d) 0.7

9. The respiratory quotient (RQ) is defined as:

- a) The volume of CO_2 consumed / Volume of O_2 evolved b) The volume of O_2 consumed / Volume of CO_2 evolved

The volume of O_2 evolved / Volume of CO_2 consumed d) The volume of CO_2 evolved / Volume of O_2 consumed

10. During anaerobic respiration, less energy is produced than aerobic respiration because:

- a) Incomplete oxidation of glucose takes place b) It takes place in inert medium
c) Glucose is not available d) It takes place in micrograms

SHORT AND LONG ANSWER TYPE QUESTIONS

1. The maximum concentration of alcohol produced by natural fermentation is 13%. But most of the alcoholic preparations for human consumption contain more than this percentage. How is this higher percentage achieved?

2. Respiratory pathway is believed to be a catabolic pathway. However, nature of TCA cycle is amphibolic. Explain.

3. Differentiate between glycolysis and Krebs' cycle.

4. If a person is feeling dizzy, glucose or fruit juice is given immediately but not a cheese sandwich, which might have more energy. Explain.

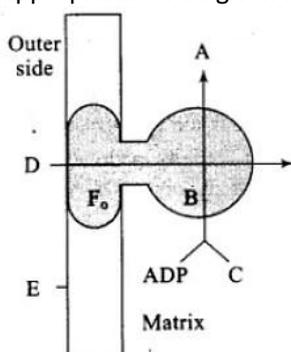
5. Do you know any step in the TCA cycle, where there is substrate-level phosphorylation? Which one?

6. Explain Respiratory Balance sheet.

7. Show the schematic conversion of complex carbohydrates before entering into glycolysis.

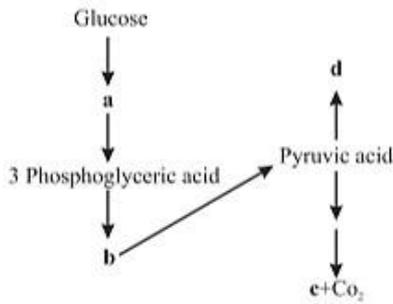
8. What is the significance of step-wise release of energy in respiration?

9. Given below is a diagram showing ATP synthesis during aerobic respiration, replace the symbols A, B, C, D and E by appropriate terms given in the box.



F1, Particle, P_i , $2H^+$, Inner mitochondrial membrane, ATP, F_0 particle, ADP

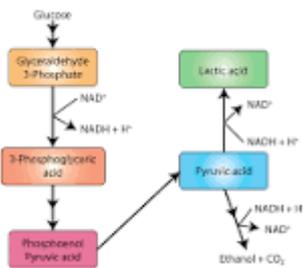
10. In the following flow chart, replace the symbols a, b, c and d with appropriate terms. Briefly explain the process [5] and give any two application of it.



CASE STUDY

Read the following text carefully and answer the questions that follow:

In fermentation, say by yeast, the incomplete oxidation of glucose is achieved under anaerobic conditions by sets of reactions where pyruvic acid is converted to CO₂ and ethanol. The enzymes, pyruvic acid decarboxylase and alcohol dehydrogenase catalyse these reactions. Other organisms like some bacteria produce lactic acid from pyruvic acid. In animal cells also, like muscles during exercise, when oxygen is inadequate for cellular respiration pyruvic acid is reduced to lactic acid by lactate dehydrogenase.



Name the enzyme which facilitate the reactions where pyruvic acid is converted to CO₂ and ethanol.
 Name the process which leads to a complete oxidation of organic substances in presence of oxygen.
 iii. What resulted in animal, when oxygen is inadequate for cellular respiration during muscular exertion?
 With the context of the above provided graph define cellular respiration with equation.

- Assertion (A):** The Krebs cycle is poisoned by malonate.
Reason (R): Malonate decreases oxaloacetate concentration.
- a) Both A and R are true and R is the correct explanation of A
 - b) Both A and R are true but R is not the explanation of A.
 - c) A is true but R is false.
 - d) A is false but R is true.

Assertion (A): Substrate level phosphorylation is present in glycolysis.
Reason (R): Substrate level phosphorylation causes synthesis of ATP.

Assertion (A): 36 ATP molecules are formed from one molecule of glucose in muscles and nerve cells.
Reason (R): Aerobic respiration in prokaryotes, heart, liver and kidneys produced 38 ATP molecules per glucose molecule.