QB365 Question Paper Software
11th Standard - Biology
Respiration in Plants Assertion and reason

Exam Time: 00:20 Hrs | Date: 2025-10-10
Total Marks: 10

Questions:

Assertion and reason

1. **Assertion:** The process of glycolysis is also known as EMP pathway.
Reason: It is the only process of respiration in aerobic organisms.
Codes:
(a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
(b) If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
(c) If Assertion is true but Reason is false.
(d) If both Assertion and Reason are false.

2. **Assertion :** Banking industry makes use of yeasts such as Saccharomyces cerevisiae.
Reason : Carbon dioxide produced during fermentation causes bread dough to rise by thermal expansion.
Codes:
(a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
(b) If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
(c) If Assertion is true but Reason is false.
(d) If both Assertion and Reason are false.

3. **Assertion :** Under aerobic conditions, pyruvate gives rise to lactate.
Reason : Under anaerobic condition, pyruvate gives rise to acetyl CoA.
Codes:
(a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
(b) If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
(c) If Assertion is true but Reason is false.
(d) If both Assertion and Reason are false.

4. **Assertion :** In alcoholic fermentation, the hexose molecule is converted into glucose and fructose.
Reason : Alcoholic fermentation is anaerobic respiration brought about by enzyme zymase
Codes:
A) If both the assertion and the reason are true and the reason is a correct explanation of the assertion.
B) If both the assertion and reason are true but the reason is not a correct explanation of the assertion.
C) If the assertion is true but the reason is false.
D) If both the assertion and reason are false.
E) If the assertion is false but reason is true.

5. **Assertion :** Power house of cell is mitochondria.
Reason : ATP is produced in mitochondria.
Codes:
A) If both the assertion and the reason are true and the reason is a correct explanation of the assertion.
B) If both the assertion and reason are true but the reason is not a correct explanation of the assertion.
C) If the assertion is true but the reason is false.
D) If both the assertion and reason are false.
E) If the assertion is false but reason is true.

6. **Assertion :** The inner membrane of mitochondria contains systems involving electron transport.
Reason : The mitochondrial matrix contains enzymes of Kreb's cycle.
Codes:
A) If both the assertion and the reason are true and the reason is a correct explanation of the assertion.
B) If both the assertion and reason are true but the reason is not a correct explanation of the assertion.
C) If the assertion is true but the reason is false.
D) If both the assertion and reason are false.
E) If the assertion is false but reason is true.

7. **Assertion :** Both hexokinase and glucokinase require divalent cation
Mg++
or
Mn++
Reason : The divalent cations act as catalysts.
Codes:
A) If both the assertion and the reason are true and the reason is a correct explanation of the assertion
B) If both the assertion and reason are true but the reason is not a correct explanation of the assertion
C) If the assertion is true but the reason is false
D) If both the assertion and reason are false
E) If the assertion is false but reason is true

8. **Assertion :** Substrate level phosphorylation is present in glycolysis.
Reason : Substrate level phosphorylation causes synthesis of ATP.
Codes:
A) If both the assertion and the reason are true and the reason is a correct explanation of the assertion.
B) If both the assertion and reason are true but the reason is not a correct explanation of the assertion.
C) If the assertion is true but the reason is false.
D) If both the assertion and reason are false.
E) If the assertion is false but reason is true.

9. **Assertion :** In electron transport chain, there is a gain of energy at each step.
Reason : At each step of ETC, there are electron carriers.
Codes:

A) If both the assertion and the reason are true and the reason is a correct explanation of the assertion.
B) If both the assertion and reason are true but the reason is not a correct explanation of the assertion.
C) If the assertion is true but the reason is false.
D) If both the assertion and reason are false.
E) If the assertion is false but reason is true.

10. **Assertion (A):** Acetyl Co.A is popularly known as the la "connecting link compound" between glycolysis and Krebs cycle.
Reason (R): Pyruvic acid formed as the end product of glycolysis, enters the Krebs cycle in the form of acetyl Co.A.
Codes:
a) Both (A) and (R) are true and (R) is the correct explanation of (A)
b) Both (A) and (R) are true and (R) is not the correct explanation of (A)
c) (A) is true but (R) is false
d) Both (A) and (R) are false

Answers Key:

Assertion and reason

1. (c) If Assertion is true but Reason is false.
Explanation:
Glycolysis is also known as EMP pathway, as it was discovered by three German scientists-Gustav Embden, Otto Meyerhof and J. Parnas in 1930. In glycolysis, partial oxidation of glucose takes place that form two molecules of pyruvic acid. It occurs in the cytoplasm of the cell and is present in almost all living organisms. Aerobic respiration consists of different processes i.e., (i) glycolysis, (ii) oxidative decarboxylation of pyruvic acid, (iii) Krebs' cycle and (iv) terminal oxidation and oxidative phosphorylation.
2. (a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
Explanation:
Baker's yeast (Saccharomyces cerevisiae) is added to flour during kneading. Yeast secretes enzymes like amylase (changes some starch to maltose), maltase (maltose to glucose) and zymase (glucose to ethyl alcohol and carbon dioxide). The dough swells up or leavens. Leavened dough is baked and both alcohol and carbon dioxide evaporate, the bread becomes soft and porous.
3. (d) If both Assertion and Reason are false.
Explanation:
Under aerobic conditions, the products are pyruvate and coenzyme NADH. Pyruvate directly enters the mitochondrial matrix and is converted into acetyl-CoA. Under anaerobic conditions, pyruvate is used as a hydrogen acceptor and converted into lactate. In anaerobic conditions, pyruvate remains in the cytosol.
4. E) If the assertion is false but reason is true.
Explanation:
Alcoholic fermentation is the respiration in absence of O2.
In this process, hexose molecule is changed to ethyl alcohol and CO2.
In presence of zymase enzyme. In this less amount of energy is released as compared to aerobic respiration.
5.

A) If both the assertion and the reason are true and the reason is a correct explanation of the assertion.

Explanation:

Mitochondria are the sites of aerobic respiration and ATP is produced here. Hence, it is called power house of cell.

6. B) If both the assertion and reason are true but the reason is not a correct explanation of the assertion.

   Explanation:

   The inner membranes of mitochondria contain all systems involving electron transport. The systems involving electron transport. The mitochondrial matrix contains all the soluble enzymes of the citric acid or Kreb's cycle and those involved in the oxidation of fatty acids.

7. C) If the assertion is true but the reason is false

   Explanation:

   Both kinases require a divalent cation

   $$(Mg2+orMn2+)$$

   which first combines with ATP to form the true substrate,

   $$MgATP2-$$

   or

   $$MnATP2-$$

8. B) If both the assertion and reason are true but the reason is not a correct explanation of the assertion.

   Exolanation:

   One of the two phosphates of diphosphoglycerate is linked by high energy bond. It can synthesize ATP and form 3-phosphoglycerate. The enzyme is phosphoglycerate kinase. The direct synthesis of ATP from metabolites is called substrate level phosphorylation. During formation of phosphoenol pyruvate the phosphate radical pick up energy. It helps in the production of ATP by substrate level.

9. E) If the assertion is false but reason is true.

   Explanation:

   The passage of electrons from one enzyme or cytochrome to the next is a downhill journey with a loss of energy at each step. At each step the electron carriers include flavins, iron sulphur complexes, quinones and cytochromes.

10. a) Both (A) and (R) are true and (R) is the correct explanation of (A)