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

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

Questions:

Assertion and reason

1. **Assertion :** Cyclic pathway of photosynthesis first appeared in some eubacterial species.
Reason : Oxygen started accumulating in the atmosphere after the non-cyclic pathway of photosynthesis evolved.
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 :** Plants utilize 5-10 of the absorbed water in photosynthesis.
Reason : Reduced leaf hydration decrease the photosynthesis.
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:** 686,000 calories energy are produced in the formation of one molecule of glucose.
Reason: The energy is provided by a total of 12 NADPH and 18 ATP.
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 :** Sciophytes require higher light intensity than heliophytes.
Reason : Sciophytes grow below the canopy of trees.
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.
(e) If the assertion is false but reason is true.

5. **Assertion :** The movement of photosynthates is unidirectional.
Reason : Movement of photosynthates occurs with the water.
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.

6. **Assertion :** Plants utilize 5-10% of the absorbed water in photosynthesis.
Reason : Reduced leaf hydration decrease the photosynthesis.
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.
(e)If the assertion is false but reason is true.

7. **Assertion (A):** Oxygen is not evolved during cyclic electron transport.
Reason (R) : Photolysis of water does not occur during cyclic electron transport.
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 (R) is false
d) Both (A) and (R) are false

8. **Assertion (A):**Head piece of coupling factor is the site of photophosphorylation.
Reason (R) : Active site is located in the head piece.
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 (R) is false
d) Both (A) and (R) are false

9. **Assertion (A) :** Bell pepper and tomatoes are allowed to grow in CO_2 enriched atmosphere which leads to higher yields.
Reason (R) : In C_3 plants CO_2 saturation point occur beyond 450 ppm.
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 (R) is false
d) Both (A) and (R) are false

10. **Assertion (A):** OEC is responsible for photolysis.
Reason (R) : OEC is always associated with PS-II.
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 (R) is false
d) Both (A) and (R) are false

Answers Key:

Assertion and reason

1. (b) If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
   Explanation:
   Cyclic pathway of photosynthesis appeared first in some eubacterial species. It is supposed to be the first evidence of production of ATP in the presence of light. During non-cyclic photophosphorylation photolysis of water takes place. Under the influence of light energy and the catalytic action of chlorophyll, water a substance of low energy value, is split up into oxygen and hydrogen. Oxygen is used in the chloroplast. Non-cyclic photophosphorylation is the only natural process which adds molecular oxygen to the atmosphere.
2. (d) If both Assertion and Reason are false.
   Explanation:
   Less than 1% of the total water absorbed is utilized in photosynthesis. The rest is lost in transpiration. Even a slight increase in transpiration reduces the leaf hydration that cuts down photosynthesis by causing stomatal closure and hence decreased CO2 absorption, loss of leaf turgidity, reduced absorption of solar radiations and decrease in enzymatic activity.
3. (a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
4. (e) If the assertion is false but reason is true.
   Explanation:
   Plants are grouped into two groups depending upon their inability or ability to tolerate high light intensity-shade plants (Sciophytes) and sun plants (Heliophytes). Sciophytes grow in poorly illuminated conditions as below the canopy of tall plants in seek of shade. Heliophytes grow in the open.
5. (a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
   Explanation:
   The movement of organic materials in the plant is bidirectional that is, substances are translocated in opposite directions in the stem simultaneously. The movement of photosynthates is independent of water translocation as it takes place through phloem whereas latter takes place through xylem.
6. (e)If the assertion is false but reason is true
   Explanation:
   Less than 1% of the total water absorbed is utilized in photosynthesis. The rest is lost in transpiration. Even a slight increase in transpiration reduces the leaf hydration that cuts down photosynthesis by causing stomatal closure and hence decreased CO2 absorption, loss of leaf turgidity, reduced absorption of solar radiations and decrease enzymatic activity.
7. d) Both (A) and (R) are false
8. c) (A) is true (R) is false
9. a) Both (A) and (R) are true and (R) is the correct explanation of (A)

10. b) Both (A)and (R)are true and (R) is not the correct explanation of (A)