

A-Level Biology

Name: _____ Score: _____

1. In a chloroplast, the stacks of thylakoids (grana) are where:
 - ☐ the light-dependent stage happens
 - ☐ the Calvin cycle happens
 - ☐ DNA is stored
 - ☐ respiration happens
2. Water is split in the light-dependent stage by _____.

3. In fixation, the enzyme rubisco:
 - ☐ joins CO_2 to RuBP (5C) to make two molecules of GP (3C)
 - ☐ splits water
 - ☐ makes ATP
 - ☐ breaks down glucose
4. A limiting factor is:
 - ☐ the factor in shortest supply that holds back the rate of photosynthesis
 - ☐ the factor that is always present in excess
 - ☐ the product of photosynthesis
 - ☐ the colour of the leaf
5. The light-dependent stage produces:
 - ☐ ATP and reduced NADP
 - ☐ glucose directly
 - ☐ carbon dioxide
 - ☐ only oxygen, nothing else
6. Cyclic photophosphorylation:
 - ☐ uses photosystem I only and makes only ATP
 - ☐ uses both photosystems and makes ATP and reduced NADP
 - ☐ splits water
 - ☐ happens in the stroma

7. The enzyme that joins CO_2 to RuBP in the fixation step is _____.
- _____
8. Adding carbon dioxide can raise the rate of photosynthesis when CO_2 is the limiting factor.
- ☐ True ☐ False
9. The light-dependent stage happens in the thylakoid membranes, and the Calvin cycle in the stroma.
- ☐ True ☐ False
10. The Calvin cycle is the light-independent stage; it uses the ATP and reduced NADP made by the light-dependent stage.
- ☐ True ☐ False

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1. the light-dependent stage happens

The thylakoid membranes hold the pigments and carry out the light-dependent stage; the stroma runs the Calvin cycle.

2. photolysis

Photolysis releases electrons, H^+ and oxygen — the oxygen we breathe is a by-product.

3. joins CO_2 to RuBP (5C) to make two molecules of GP (3C)

Rubisco catalyses carbon fixation: $CO_2 + RuBP \rightarrow 2 GP$.

4. the factor in shortest supply that holds back the rate of photosynthesis

The limiting factor is whichever requirement is in shortest supply, capping the overall rate.

5. ATP and reduced NADP

It uses light to make ATP and reduced NADP, which power the Calvin cycle.

6. uses photosystem I only and makes only ATP

Cyclic photophosphorylation uses PSI alone and produces ATP only (no NADP reduced, no water split).

7. rubisco

Rubisco is the most abundant enzyme on Earth — it fixes nearly all the carbon in the living world.

8. True

Only the factor in shortest supply limits the rate, so increasing it speeds things up.

9. True

Light reactions need the membranes (pigments); the Calvin cycle uses the enzymes dissolved in the stroma.

10. True

It does not need light directly, but it cannot run without the ATP and reduced NADP from the light reactions.