

Foundation Combined — only core Foundation content included.

**Q1. State the THREE main limiting factors of photosynthesis.**

[1 mark]

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**Q2. A student measures O<sub>2</sub> production from pondweed at different light intensities. At high light intensity, increasing the light further has no effect on the rate. Explain this and suggest TWO changes that could increase the rate.**

[4 marks]

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**Q3. Explain why greenhouse growers might use a paraffin heater inside the greenhouse. Refer to TWO effects of burning paraffin.**

[3 marks]

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**Total: 8 marks**

**Q1 (1 mark)**

State the *THREE* main limiting factors of photosynthesis.

- Light intensity, CO<sub>2</sub> concentration, temperature [1] — all three required

**Q2 (4 marks)**

A student measures O<sub>2</sub> production from pondweed at different light intensities. At high lig...

- Another factor has become limiting — even though light is not limiting, something else is [1]
- Possible limiting factors: CO<sub>2</sub> concentration or temperature [1]
- Increase CO<sub>2</sub> (e.g. add NaHCO<sub>3</sub> to water) [1]
- Increase temperature (up to enzyme optimum, ~25°C) [1]

**Q3 (3 marks)**

Explain why greenhouse growers might use a paraffin heater inside the greenhouse. Refer to...

- Burning paraffin releases CO<sub>2</sub> → increases CO<sub>2</sub> concentration → faster rate of photosynthesis (if CO<sub>2</sub> was limiting) [1]
- Burning paraffin generates heat → increases temperature → faster enzyme reactions → faster photosynthesis (if temperature was limiting) [1]
- Both effects can simultaneously remove two limiting factors → significant increase in crop yield [1]