Bioenergetics

Biology Paper 1 | 5 questions, 6 marks each

GCSE science 6-mark questions

This topic online

Name: _____ **Date:** _____ **Score:** _____ **/ 30**

Plan before you write: jot down the 6 or more ideas you need, then put them in a sensible order. For compare questions give both sides of each point; for evaluate questions use the information and finish with a conclusion.

1 Oliver measured the rate of photosynthesis of a pondweed at different light intensities and at two concentrations of carbon dioxide. The temperature was kept at 25 °C.

Light intensity in arbitrary units	Rate at low CO_2 in bubbles per minute	Rate at high CO_2 in bubbles per minute
1	6	6
2	12	12
3	15	18
4	15	24
5	15	26

Use the data to explain which factor limits the rate of photosynthesis at different light intensities.

(6 marks)

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2 **Higher tier**

Grace runs a 400 m race as fast as she can. At the end she is breathing very hard, and she keeps breathing deeply for several minutes after she has stopped.

Explain what happens in Grace's muscles during the race and why her deep breathing continues after it.

(6 marks)

3 Respiration happens in human muscle cells and in yeast cells. It can be aerobic or anaerobic.

Compare aerobic respiration with anaerobic respiration in muscle cells and in yeast cells.

(6 marks)

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4 **Higher tier**

Mr Hussain grows tomatoes in a greenhouse in Lincolnshire during the winter. He records the yield per week under different conditions and the extra cost of each change.

Condition	Yield in kg per week	Extra cost per week in £
No changes	40	0
Extra lighting	44	30
Heater (15 to 25 °C)	52	45
Heater and extra CO_2	70	60

Tomatoes sell for £3 per kg. Evaluate which condition Mr Hussain should use. Give a justified conclusion.

(6 marks)

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5 An oak tree makes glucose by photosynthesis in its leaves.

Describe how the tree uses the glucose it makes.

(6 marks)

End of questions | Total 30 marks

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