FOUNDATION

1.4 Bioenergetics: 10-minute Pack

AQA 8461 · Calculator allowed · about 10 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Respiration also involves gases.

(a) State which gas is used in aerobic respiration and which gas is produced. **(1)**

(Total for Question 1 is 1 mark)

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2 Photosynthesis happens inside a special part of a plant cell.

(a) Name the organelle where most photosynthesis occurs. **(1)**

(Total for Question 2 is 1 mark)

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3 Which factor would be limiting if a plant is grown in dim light but with plenty of water and carbon dioxide?

(a) Name the limiting factor in this situation. **(1)**

(Total for Question 3 is 1 mark)

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4 During the pondweed experiment, a student notices the number of bubbles varies a lot between repeats.

(a) Suggest one improvement to reduce random variation in the number of bubbles counted. **(1)**

(Total for Question 4 is 1 mark)

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5 Light is one factor that affects the rate of photosynthesis.

(a) Explain why a plant's rate of photosynthesis falls if it is kept in the dark. **(2)**

(Total for Question 5 is 2 marks)

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6 Carbon dioxide concentration usually affects photosynthesis.

(a) Predict what will happen to the rate of photosynthesis if the carbon dioxide concentration around a plant is increased (all other conditions unchanged). **(1)**

(Total for Question 6 is 1 mark)

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7 A required practical uses pondweed to measure oxygen production as a measure of photosynthesis. The apparatus includes a cut piece of pondweed, a water-filled tube to collect gas bubbles and a lamp at a fixed distance.

(a) Give two variables that should be kept the same (controlled) during this investigation. **(2)**

(Total for Question 7 is 2 marks)

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Mark scheme · 1.4 Bioenergetics: 10-minute Pack

Question 1

(a) oxygen used and carbon dioxide produced, oe **B1**

(a) Answer: Oxygen is used and carbon dioxide is produced.

Question 2

(a) chloroplast cao **B1**

(a) Answer: Chloroplast

Question 3

(a) light (intensity) cao **B1**

(a) Answer: Light intensity

Question 4

(a) repeat the measurement more times and take an average, oe **B1**

(a) Answer: Repeat the measurement several times and use the average.

Question 5

(a) states that less light means less energy available for the reactions **M1**

(a) rate falls because the light-dependent stage cannot proceed as quickly, so less glucose and oxygen are produced, oe **A1**

(a) Answer: With less light there is less energy for the light-dependent reactions, so the rate of photosynthesis falls and less glucose and oxygen are produced.

Question 6

(a) rate will increase (until another factor becomes limiting) cao **B1**

(a) Answer: The rate will increase, until another factor becomes limiting.

Question 7

(a) temperature, oe **B1**

(a) distance between lamp and pondweed or light intensity (if lamp distance fixed then light intensity), oe **B1**

(a) Answer: Temperature and distance between lamp and pondweed (light intensity).

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