Name: .....

Date: .....

Class: .....

IGCSE BIOLOGY EDEXCEL 9-1

CHAPTER WORKBOOK

Gas Exchange in Flowering Plants

Leaves and Gas Exchange

1. The image below is taken from the underside of a leaf using an electron microscope.

a) On the image above label the stoma and a guard cell.

b) The length of one guard cell is 15µm. Determine the magnification of the above image. *Show your working*.

Magnification: .....

2. Describe how the guard cells control gas exchange.

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3. Explain why it is necessary for guard cells to be closed at times.

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4. By what method of transport does carbon dioxide enter a leaf? *(Circle the correct answer)*.

A. Osmosis

B. Active Transport

C. Diffusion

D. School bus

5. Explain **four** ways in which leaves are adapted for gas exchange.

1. .....

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2. .....

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3. .....

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4. .....

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Gas Exchange for Respiration and Photosynthesis

1. Write the word equations for respiration and photosynthesis:

Photosynthesis:

Respiration:

2.

a) Explain why photosynthesis can only take place in the daytime.

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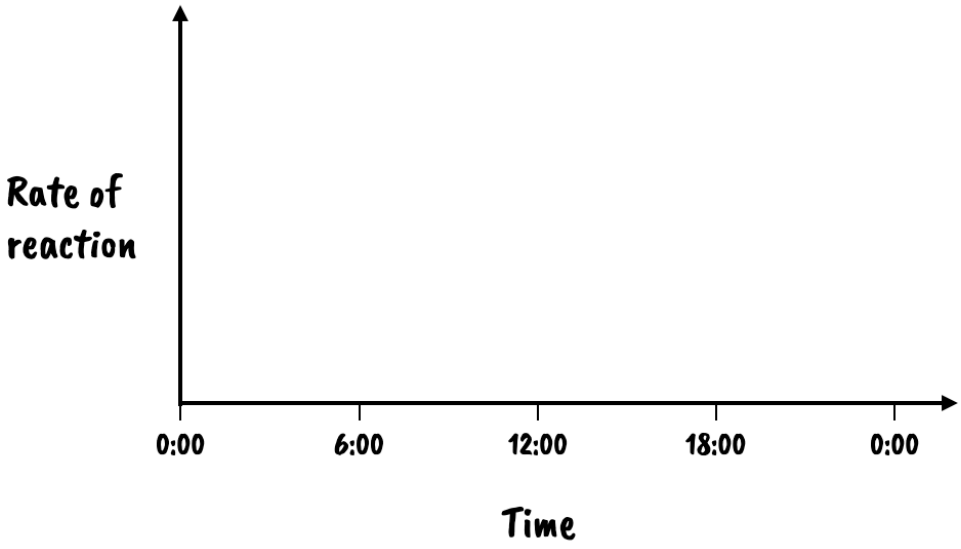
b) On the graph below draw lines to show the approximate rates of respiration and photosynthesis. Assume that sunrise as at 6:00 and sunset is at 18:00.



Investigating Gas Exchange

A student has the following materials:

- A water plant (in water)
- Boiling tubes and bungs
- Hydrogen carbonate indicator
- A lamp

1. Describe a method the student could use to show how the rate of gas exchange in the water plant is affected by light intensity.

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2.

a) Name the dependent and independent variables in this investigation

Independent variable

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Dependent variable

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b) Name **two** control variables the student should have.

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2. How can the student ensure their results are reliable?

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