Surname		Other Names	
Centre Number			Candidate Number				
Candidate Signature		Date	

Leave blank

General Certificate of Secondary Education
June 2008 / June 2009

BIOLOGY **BLYC/B3.1**
ISA B3.1 Transpiration

ASSESSMENT and QUALIFICATIONS ALLIANCE

To be conducted before 4 May 2009
For submission in May 2008 or May 2009 or May 2010

For this paper you must have:
- results tables and charts or graphs from your own investigation.

You may use a calculator.

For Teacher's Use	
Section	Mark
1	
2	
Total (max 34)	

Time allowed: 45 minutes

Instructions
- Use blue or black ink or ball-point pen.
- Fill in the boxes at the top of this page.
- Answer **all** questions in **Section 1** and **Section 2**.
- Answer the questions in the spaces provided.
- Do all rough work in this book. Cross through any work you do not want to be marked.

Information
- The maximum mark for this paper is 34.
- The marks for questions are shown in brackets.
- You are reminded of the need for good English and clear presentation in your answers.

Did this candidate take part in the practical activity?	**YES / NO**

Signature of teacher marking this ISA ..... Date .....

LEAVE MARGIN BLANK

SECTION 1

These questions are about the investigation that **you** did.

Answer **all** questions in the spaces provided.

1 What were you trying to find out in your investigation?

.....

.....

.....

.....

(2 marks)

2 (a) What was the **dependent** variable in your investigation?

.....

.....

(1 mark)

(b) What instrument did you use to measure the dependent variable?

.....

(1 mark)

3 In your investigation, which term describes the **independent** variable (the variable that you deliberately changed)?

Put a tick (✓) in the box next to your choice.

Categoric ☐

Continuous ☐

Control ☐

(1 mark)

4 State **one** variable that you were **not** able to control.

.....

(1 mark)

LEAVE MARGIN BLANK

5 How could you have improved the **precision** of any measurements that you took?

.....

.....

(1 mark)

6 (a) Suggest **one** way of checking the **reliability** of your results.

.....

.....

(1 mark)

(b) Explain why this improves the reliability.

.....

.....

(1 mark)

7 Before you carried out your investigation, either you or your teacher may have done a preliminary trial.

What is the reason for doing a preliminary trial?

.....

.....

(1 mark)

8 What did you find out from your investigation?

I found out that .....

.....

.....

.....

(2 marks)

9 Make sure that **your** results tables and charts or graphs are handed in with this paper. You will be awarded up to 6 marks for these. *(6 marks)*

18

LEAVE MARGIN BLANK

SECTION 2

These questions are about an investigation that may be similar to the one that you did.

Answer **all** questions in the spaces provided.

'Shiny Plants' is a small company which produces a liquid called 'Shiny Leaves'. This is a solution which must be diluted by the customer. It is sprayed onto plants to make the leaves shiny.

The company received this complaint from a customer:

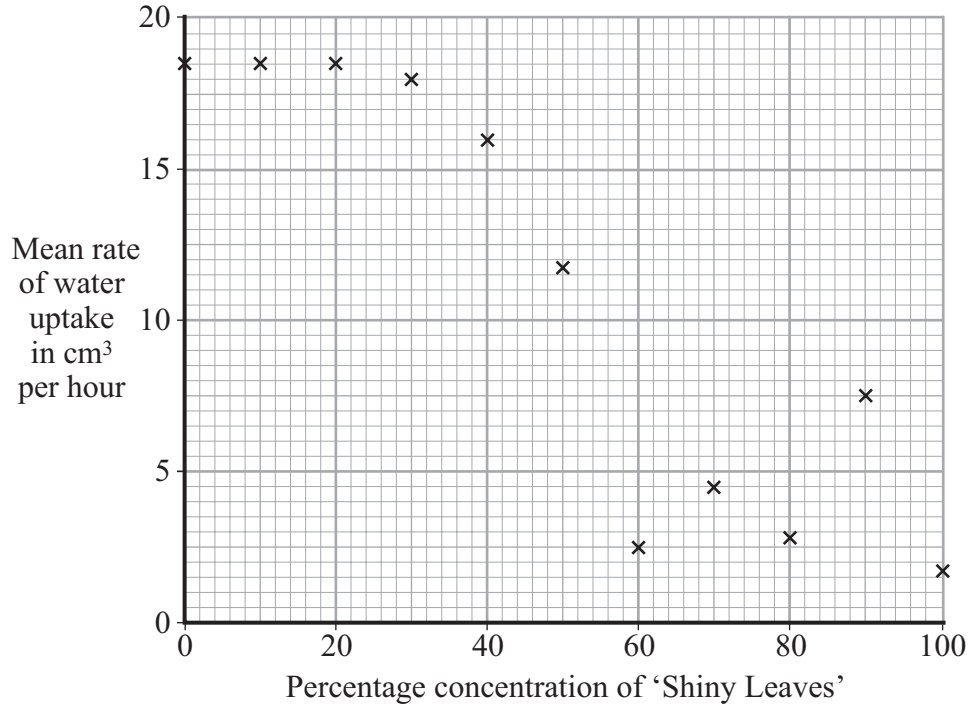
"After spraying my rubber plants with 'Shiny Leaves', they stopped growing well."

'Shiny Plants' thinks that the spray blocks stomata, causing a reduction of water uptake.

The company investigated how different concentrations of 'Shiny Leaves' affect the water uptake of plants.

Graph 1 shows the company's results.

Graph 1



10 (a) (i) On **Graph 1**, draw a ring around any results that do not fit the pattern.

(1 mark)

LEAVE MARGIN BLANK

(ii) Explain what the company should have done with any results that did not fit the pattern.

.....

.....

(2 marks)

(b) Draw a line of best fit on **Graph 1**.

(1 mark)

(c) What was the measurement interval for the percentage concentration of 'Shiny Leaves' used by the company?

.....%

(1 mark)

(d) The values for water uptake are given as **mean** rate of water uptake.

Explain how a mean value would be calculated.

.....

.....

(2 marks)

11 The owner of 'Shiny Plants' wrote back to the customer.

> We have tested the solution. We recommend that 'Shiny Leaves' is diluted to a concentration of less than 50 %.

Do you agree with this?

Draw a ring around your answer. **Yes / No**

Explain your answer.

.....

.....

.....

.....

(2 marks)

LEAVE MARGIN BLANK

12 The customer was not happy with the reply. She sent some 'Shiny Leaves' to scientists at the National Standards Testing Laboratory (NSTL), for testing.

Why was it a good idea to send the solution to the National Standards Testing Laboratory?

Put a tick (✓) in **two** boxes next to your choices.

A second test would make the results more accurate. ☐

Scientists at NSTL are likely to have more experience of testing products. ☐

Two tests will reduce the number of systematic errors. ☐

'Shiny Plants' manufactures the solution, so it may be biased. ☐

(2 marks)

13 The National Standards Testing Laboratory results are shown in **Table 1**.

Table 1

Percentage concentration of 'Shiny Leaves'	**Mean rate of water uptake in cm^3 per hour**		
	Fig plant	Rubber plant	Cactus plant
0	34	22	2.5
20	33	22	2.5
40	33	20	2.3
60	34	19	2.3
80	35	18	2.3
100	33	10	2.2

(a) Explain how the data for cactus plants differs from the data for rubber plants.

.....

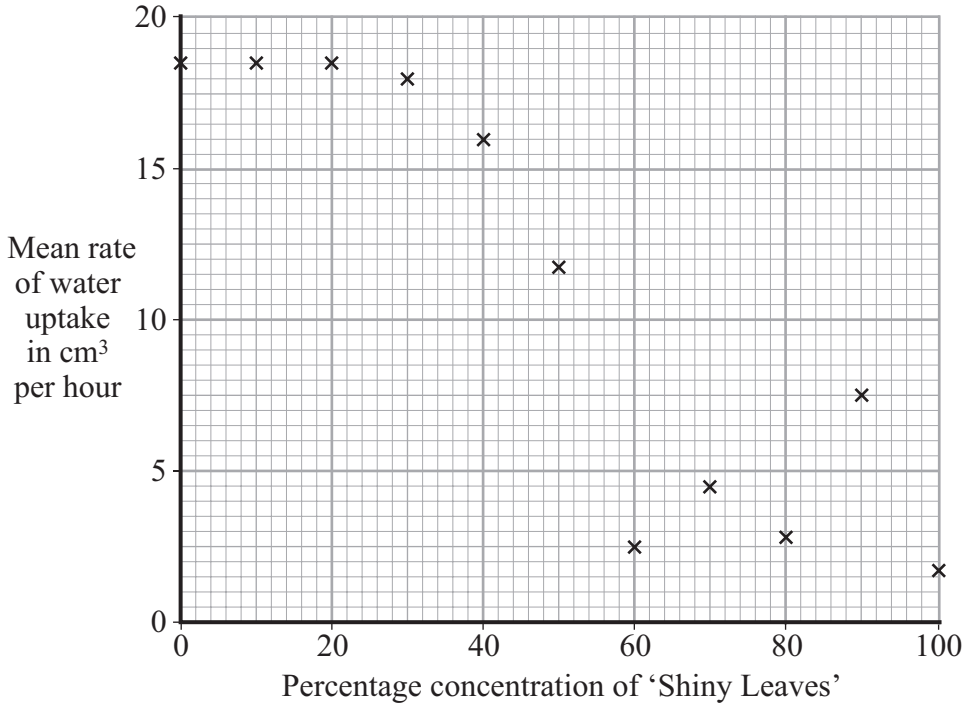
.....

.....

(2 marks)

LEAVE MARGIN BLANK

To help you with this question, **Graph 1** is reprinted here.



(b) Compare **Graph 1** produced by 'Shiny Plants' with **Table 1** produced by the National Standards Testing Laboratory.

What evidence is there that the National Standards Testing Laboratory used better techniques than 'Shiny Plants'?

To gain full marks in this question you should write your ideas in good English. Put them into a sensible order and use the correct scientific words.

.....

.....

.....

.....

.....

.....

(3 marks)

16

END OF QUESTIONS

There are no questions printed on this page

Copyright © 2007 AQA and its licensors. All rights reserved.