



General Certificate of Secondary Education
2014

Double Award Science: Biology

Unit B2

Higher Tier

[GSD42]



FRIDAY 6 JUNE 2014, AFTERNOON

TIME

1 hour 15 minutes.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.
Write your answers in the spaces provided in this question paper.
Answer **all ten** questions.

INFORMATION FOR CANDIDATES

The total mark for this paper is **90**.
Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.
Quality of written communication will be assessed in **questions 5(b) and 7(b)**.

Centre Number

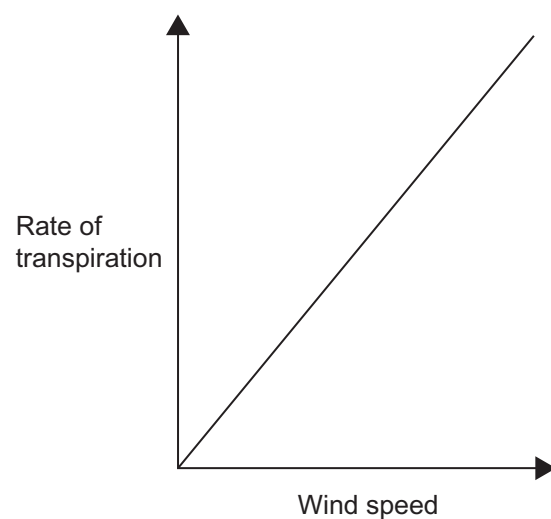
71

Candidate Number

For Examiner's use only	
Question Number	Marks
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
Total Marks	

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- 4 (a) The graph below shows the effect of increasing wind speed on the rate of transpiration in plants.

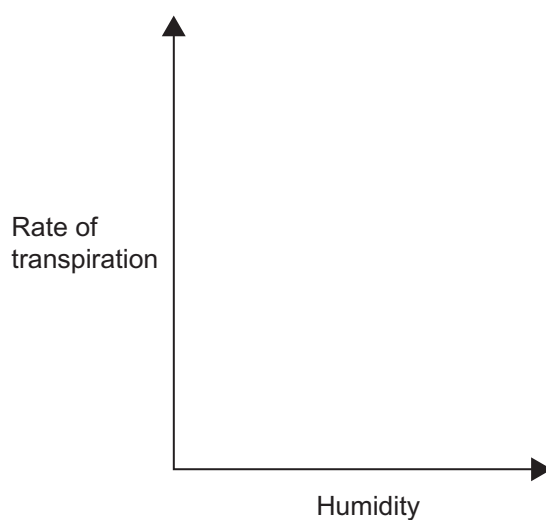
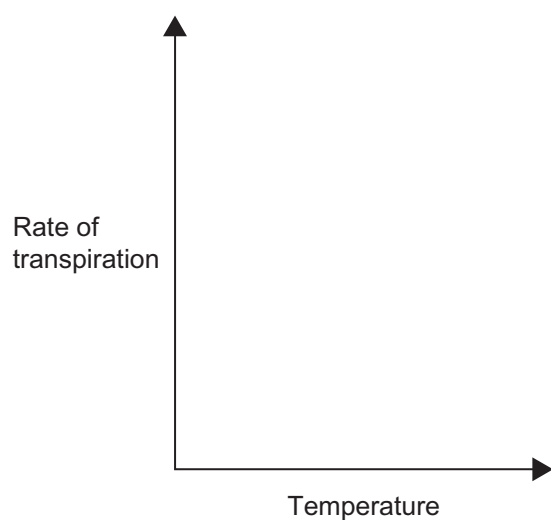


- (i) Using the graph, describe the trend shown.

[1]

Temperature and humidity are two other factors that have an effect on the rate of transpiration in plants.

- (ii) On the axes below, draw a line to show the effect of increasing temperature and a line to show the effect of increasing humidity on the rate of transpiration.



[2]

(iii) Explain why the rate of transpiration is lower when some leaves were removed.

_____ [2]

(iv) Plants use water in transpiration.

Give two **other** uses of water by a plant.

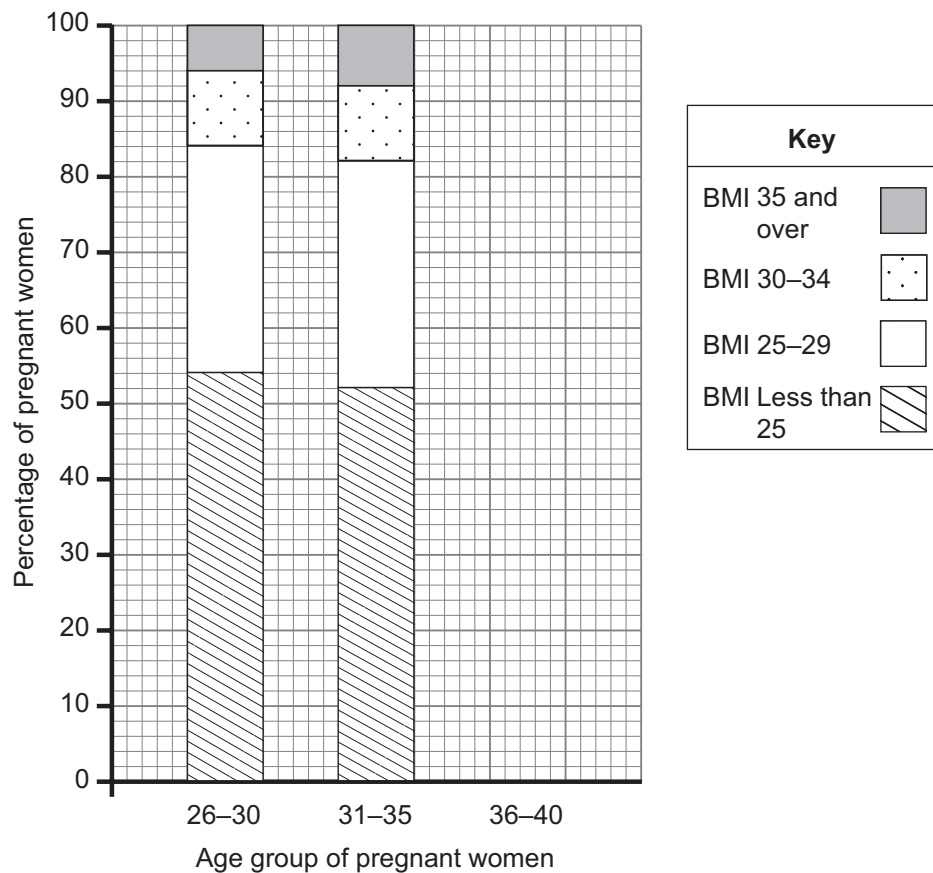
1. _____
2. _____ [2]

Examiner Only	
Marks	Remark

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- 5 (a) Obesity in pregnant women can increase the risk of health problems in the developing baby.

The graph below shows the BMI (body mass index) of pregnant women, in different age groups, in Northern Ireland in 2010–2011.



Women are defined as being obese if they have a BMI of 30 and over.

- (i) What percentage of pregnant women aged 31–35 were classed as being obese?

Show your working.

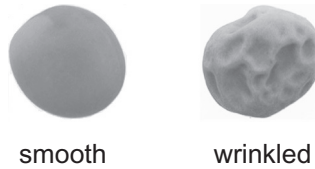
_____ % [2]

Examiner Only	
Marks	Remark

(b) Genes control characteristics in organisms.

Peas can be smooth or wrinkled.

This characteristic is shown in the photograph below.



© Walter Eberhart, Visuals Unlimited/ Science Photo Library

Let H represent the allele for smooth peas.

Let h represent the allele for wrinkled peas.

- (i) Using a Punnett square, show the possible offspring produced when a heterozygous, smooth pea plant is crossed with a wrinkled pea plant.

[4]

- (ii) Using your Punnett square, give the ratio of smooth pea plants to wrinkled pea plants.

[1]

- (c) Explain how a test (back) cross could be used to determine the possible genotypes of a smooth pea plant.

[3]

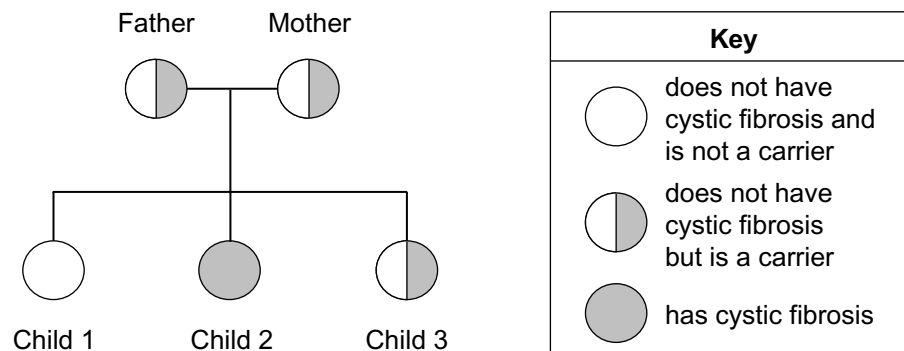
Examiner Only	
Marks	Remark

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- (c) Cystic fibrosis is an inherited condition. The diagram below shows how two parents who are carriers can have a child with cystic fibrosis.

A carrier is a person who has an allele for a condition but does not have the condition.



- (i) Using the diagram and your knowledge, explain how two parents who are carriers can have a child with cystic fibrosis.

[2]

- (ii) Anne and Niall have a child with cystic fibrosis.

Anne is pregnant with a second baby and has asked her doctor for information on genetic screening.

Suggest two ethical issues associated with genetic screening during pregnancy.

1. _____
 2. _____
- [2]

- (iii) Cystic fibrosis is caused by a change in the genes.

Name one genetic condition that is caused by a change in the **number of chromosomes**.

_____ [1]

THIS IS THE END OF THE QUESTION PAPER

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