



Centre Number

71

Candidate Number

General Certificate of Secondary Education
2010–2011

Science: Single Award (Modular)

Staying Alive

Module 1

Higher Tier

[GSC12]



TUESDAY 9 NOVEMBER 2010, AFTERNOON

TIME

45 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 six** questions.

INFORMATION FOR CANDIDATES

The total mark for this paper is 45.

Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

For Examiner's use only

Question Number	Marks
1	
2	
3	
4	
5	
6	

Total Marks



- 1 (a) Complete the table below by naming a structure in the body that carries out each function.

Function	Name of structure
co-ordinator	
effector	
receptor	

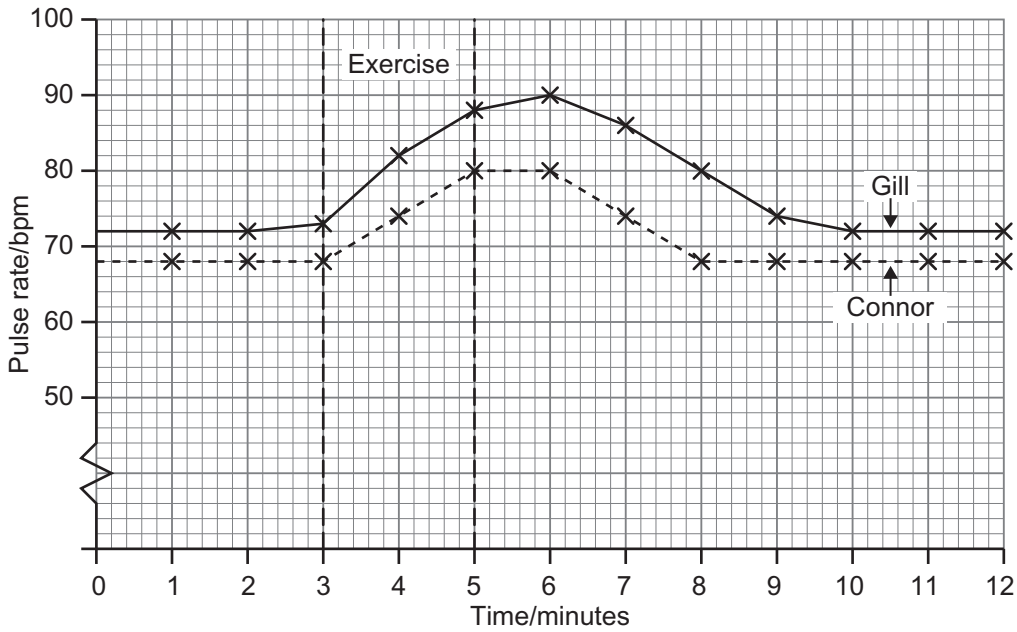
[3]

- (b) Explain fully how a reflex action helps to avoid a severe burn if you accidentally touch something hot.

_____ [2]

Examiner Only	
Marks	Remark

(c) The graph shows the pulse rate of two 15 year old students before, during and after exercise. Exercise took place from 3–5 minutes.



(i) How many minutes after starting exercise did Gill's pulse rate reach its peak?

_____ minutes [1]

(ii) Which pupil (Gill or Connor) recovered quicker from exercise? Explain your answer.

 _____ [1]

(iii) Gill continued to exercise every day for a number of weeks but Connor stopped exercising. Suggest how this would affect their recovery rates.

 _____ [1]

Examiner Only	
Marks	Remark

- 3 (a) (i) Parent X is heterozygous for brown eyes and Parent Y is homozygous for blue eyes. Using 'B' to represent the allele for brown eyes and 'b' the allele for blue eyes complete the Punnett square below.

		Parent X	
		B	
Parent Y	b		

[2]

- (ii) What phenotype will the genotype Bb give?

_____ [1]

- (iii) What percentage of the children are likely to have the genotype Bb?

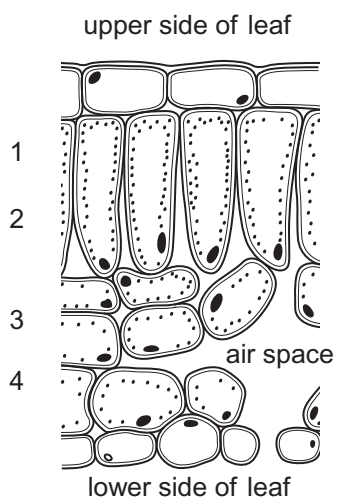
_____ [1]

- (b) Doctors can now diagnose genetic abnormalities in babies before they are born. This is called genetic screening. State **one** advantage and **one** disadvantage of genetic screening.

 _____ [2]

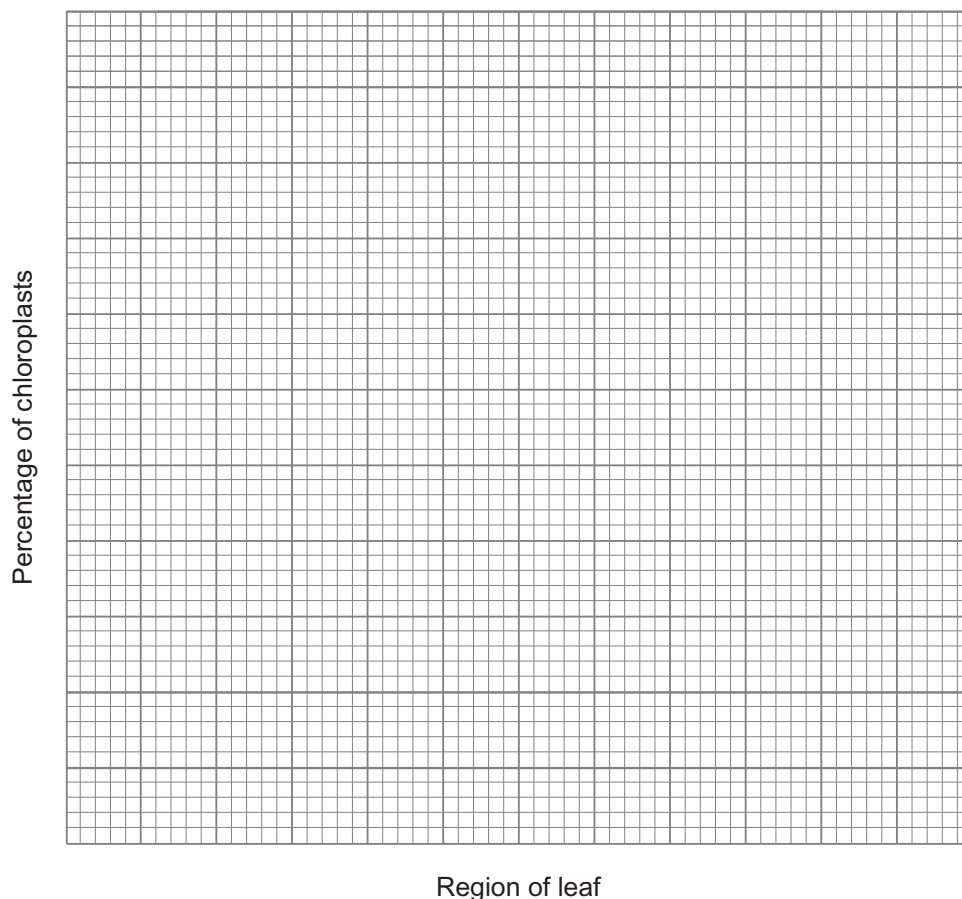
Examiner Only	
Marks	Remark

- 4 (a) Below is a diagram of a section through a leaf and the percentage of chloroplasts in the different regions of a leaf.



Region of leaf	Percentage of chloroplasts
1	42
2	36
3	14
4	8

- (i) Scale the grid below and draw a bar chart of these results.



[3]

Examiner Only

Marks Remark

(ii) Describe the trend shown by the results.

[1]

(iii) Explain fully the reason for this trend.

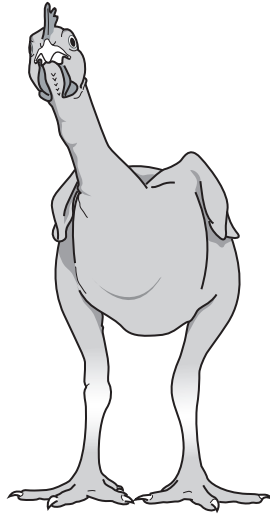
[2]

(b) Write the word equation for the process of photosynthesis below.

[2]

Examiner Only	
Marks	Remark

5 (a) Scientists have bred a controversial fast growing, featherless chicken which is shown below.



(i) In terms of respiration, explain why the fast growing chicken will need more food per day than a normal chicken.

_____ [2]

(ii) Suggest **two** advantages of this breed for chicken farmers.

_____ [2]

(iii) Suggest a reason why some people may not agree with breeding animals like this.

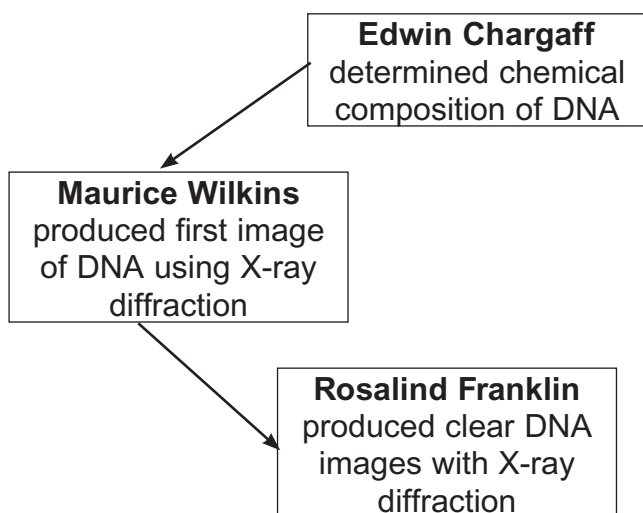
_____ [1]

(b) Some of the plants that we eat have had their genes changed. Name this process and state **two** advantages.

_____ [3]

Examiner Only	
Marks	Remark

- 6 (a) The diagram below shows some of the steps which led to the discovery of the structure of DNA.



Name the two scientists who built on Franklin's discovery.
Name the process they used and state what they discovered about DNA structure.

_____ [3]

- (b) Draw a short, labelled length of DNA to show how the different components including the bases link together.

[3]

Examiner Only	
Marks	Remark

(c) Explain the base triplet hypothesis.

[2]

Examiner Only	
Marks	Remark

THIS IS THE END OF THE QUESTION PAPER

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