



General Certificate of Secondary Education
2010–2011

Centre Number

71

Candidate Number

Science: Single Award (Modular)

Staying Alive
Module 1

Higher Tier

[GSC12]



WEDNESDAY 23 FEBRUARY 2011, MORNING

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	
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- 1 (a) (i) Describe the roles the pancreas and the liver play in keeping blood glucose levels constant.

[3]

- (ii) Name the condition which results in the loss of the control of blood glucose levels.

[1]

- (b) Cystic fibrosis is an inherited disease.

The gene which causes it (f), is recessive to the normal gene (F).

Complete the genetic diagram below to show how two parents who do not suffer from cystic fibrosis can have a child who does.

		f
F		

[3]

- (c) Scientists are trying to clone lungs which would replace lungs damaged by cystic fibrosis. Some people do not agree with cloning. Suggest **one** reason for this.

[1]

Examiner Only	
Marks	Remark

- 2 (a) The table below shows the cost of treating patients for some medical conditions.

Condition	Cost/£
Diabetes type 1	4000
Knee cartilage operation	2000
Heart attack	20000
Cystic fibrosis	5000

- (i) Suggest **two** ways that some of the money is used to treat people with diabetes type 1.

_____ [2]

- (ii) Suggest **three** reasons why a knee cartilage condition is the cheapest to treat.

_____ [3]

- (b) Apart from the cost of treating heart attacks suggest **two** other ways that they can affect society.

_____ [2]

- (c) Explain how regular exercise benefits the circulatory system.

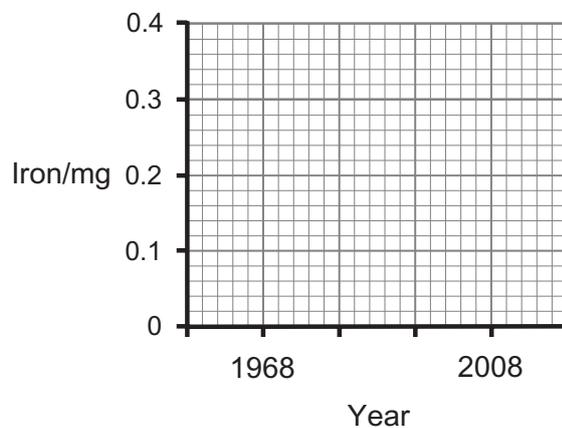
_____ [2]

Examiner Only	
Marks	Remark

- 3 According to some nutritionists, the mineral content of cheese is less today than it was forty years ago. The table below shows their analysis of two cheeses.

Mineral	Year	Cheddar	Mozzarella
Iron/mg	1968	0.21	0.24
	2008	0.10	0.07
Calcium/mg	1968	210	212
	2008	189	120

- (a) (i) Draw a bar chart on the grid below to show how the iron content of both cheeses has changed.



[3]

- (ii) Calculate the reduction in iron content for mozzarella cheese between 1968 and 2008.

_____ mg [1]

Examiner Only	
Marks	Remark

(b) (i) For each mineral suggest one way that a low intake may affect human health.

Iron _____ [1]

Calcium _____ [1]

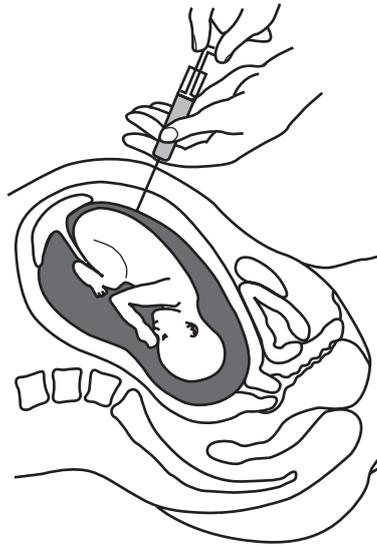
The nutritionists who produced these results make and sell mineral supplements.

(ii) Explain why this might make you question their results.

_____ [2]

Examiner Only	
Marks	Remark

- 5 Jane and Tom are going to become parents for the first time and have decided that Jane should have an amniocentesis test.



- (a) Suggest a reason for wanting the test.

[1]

- (b) Describe the process of amniocentesis.

[3]

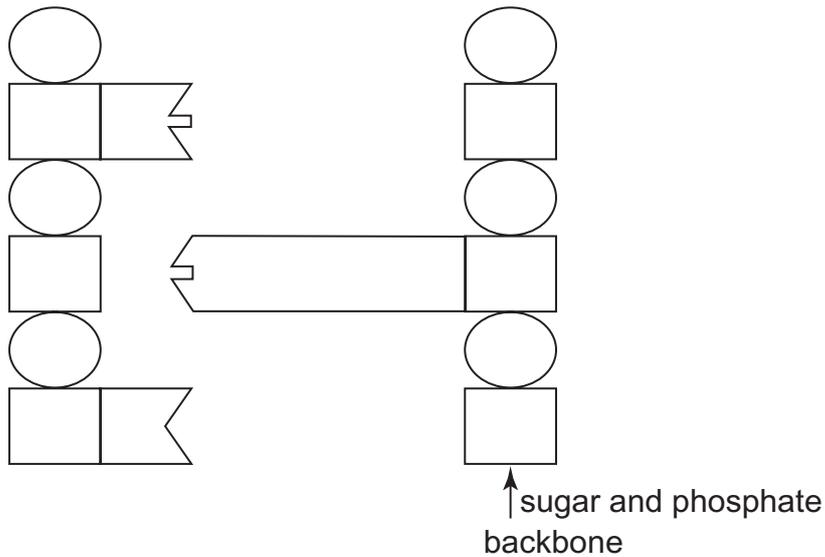
- (c) Sometimes the results of genetic screening lead to genetic counselling. Explain why this is necessary.

[2]

Examiner Only	
Marks	Remark

6 (a) Below is a partially completed diagram of the structure of DNA.

(i) Complete the diagram by drawing in the missing bases. [1]



(ii) How many different bases does your completed diagram show?

_____ [1]

(iii) State **one** fact that Watson and Crick discovered about these bases.

_____ [1]

(iv) Name **one** other scientist who researched the bases in DNA.

_____ [1]

(b) State how the **base triplet hypothesis** explains the link between the DNA code and the formation of proteins.

_____ [3]

THIS IS THE END OF THE QUESTION PAPER

Examiner Only	
Marks	Remark

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