



Rewarding Learning

General Certificate of Secondary Education  
2010–2011

Centre Number

71

Candidate Number

## Science: Single Award (Modular)

Staying Alive  
Module 1

Higher Tier

[GSC12]



THURSDAY 19 MAY 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.

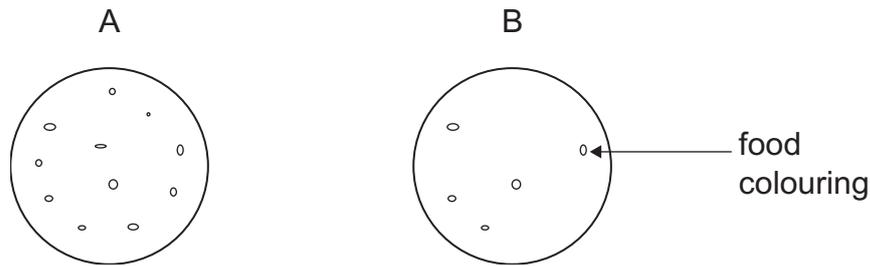
### INFORMATION FOR CANDIDATES

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	
<b>Total Marks</b>	



- 1 To investigate their tastebuds two people (A and B) put food colouring on their tongues. A piece of filter paper was then pressed onto the tongue to pick up the colour on the tastebuds. The results are shown below.



- (a) (i) State which person (A or B) has the better sense of taste and give a reason for your choice.

\_\_\_\_\_ [1]

- (ii) Give two things that had to be done to ensure these results are valid.

1. \_\_\_\_\_

2. \_\_\_\_\_ [2]

- (b) A tastebud is an example of a receptor. Name one **effector** in the body.

\_\_\_\_\_ [1]

Examiner Only	
Marks	Remark

- (c) The child in the drawing below has just tasted lemon juice and her facial expression shows how sour it was.



Describe the role the brain played in co-ordinating her voluntary response to the sour taste.

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[3]

Examiner Only

Marks Remark

- 2 The table below shows how much energy teenagers need to do certain activities for one hour.

Activity	Energy needed/kJ
sleeping	400
watching TV	600
walking	1200
running	2400

- (a) State **two** ways that the body uses energy when sleeping.

\_\_\_\_\_ [2]  
\_\_\_\_\_

- (b) Explain fully why the body uses the greatest amount of energy when running.

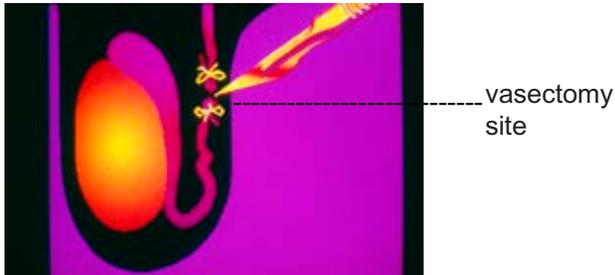
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ [3]

- (c) Name the process which releases energy from food and state where it is carried out in the body.

\_\_\_\_\_  
\_\_\_\_\_ [2]

Examiner Only	
Marks	Remark

- 3 The diagram below shows part of the sex organs of a man who has had a vasectomy.



© Mehau Kulyk / Science Photo Library

- (a) A vasectomy is one method of birth control; others include condoms and 'the pill'. What general name is given to all birth control methods?

\_\_\_\_\_ [1]

- (b) Describe what is done during a vasectomy and explain how this prevents fertilisation.

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_ [2]

- (c) Suggest **two** advantages of using a condom rather than having a vasectomy.

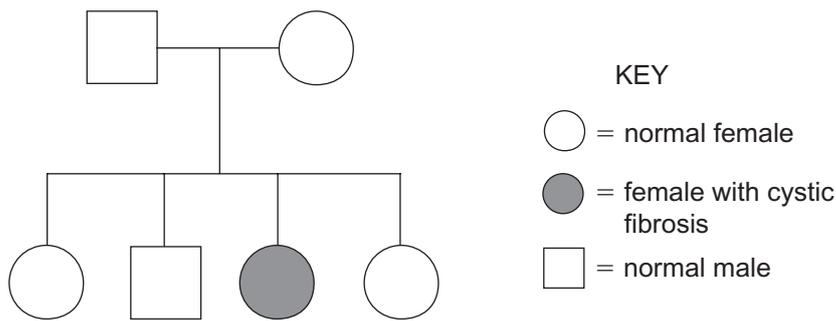
\_\_\_\_\_  
 \_\_\_\_\_ [2]

- (d) Suggest a reason why some people disapprove of birth control.

\_\_\_\_\_ [1]

Examiner Only	
Marks	Remark

- 4 (a) The diagram shows the pedigree of a family in which there is a history of cystic fibrosis.



- (i) Using the letter *f* to represent the cystic fibrosis allele state the genotype of the child with cystic fibrosis.

\_\_\_\_\_

[1]

- (ii) Draw a genetic diagram below to show how these parents can have a child who suffers from cystic fibrosis.

[3]

Examiner Only	
Marks	Remark

- (b) Genetic screening for Down's syndrome is done by examining the chromosomes in foetal cells following amniocentesis which is shown below.



© Monica Schroder / Science Photo Library

State **two** reasons why some parents will choose to have an abortion when there is a diagnosis of Down's syndrome.

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[2]

- (c) (i) Suggest **two** reasons why it is important that the Government passes laws which allow only medical conditions that could be harmful to the baby to be genetically screened.

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[2]

- (ii) It is important that the Government takes advice on the development of genetic screening. Suggest **one** type of expert whose knowledge will be useful.

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[1]

Examiner Only	
Marks	Remark

5 Below is a fish tank containing fish and a large plant.



© Ingram Publishing / Thinkstock

(a) Explain fully why the owner has been bubbling carbon dioxide from a cylinder into the tank.

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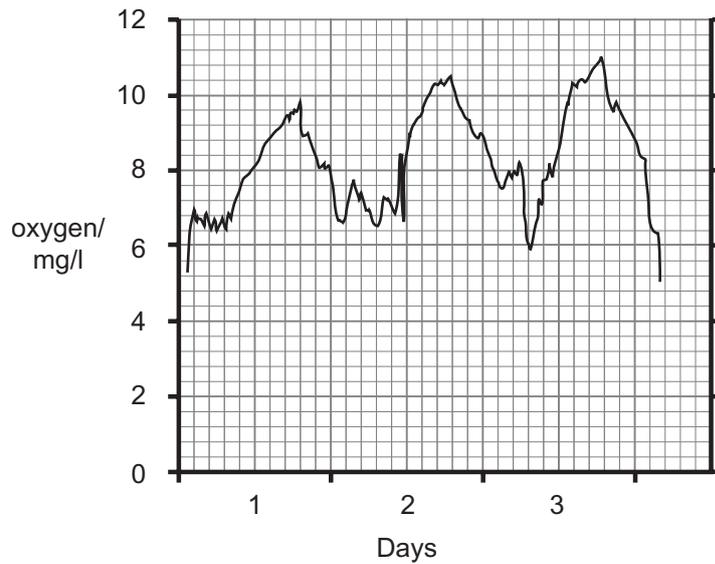
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[2]

Examiner Only	
Marks	Remark

The graph below shows the oxygen levels in the fish tank over a 3 day period.



- (b) Use the graph and your knowledge to explain fully the pattern of oxygen levels in the fish tank.

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[4]

- (c) Describe an experiment to show how light intensity affects the rate of photosynthesis.

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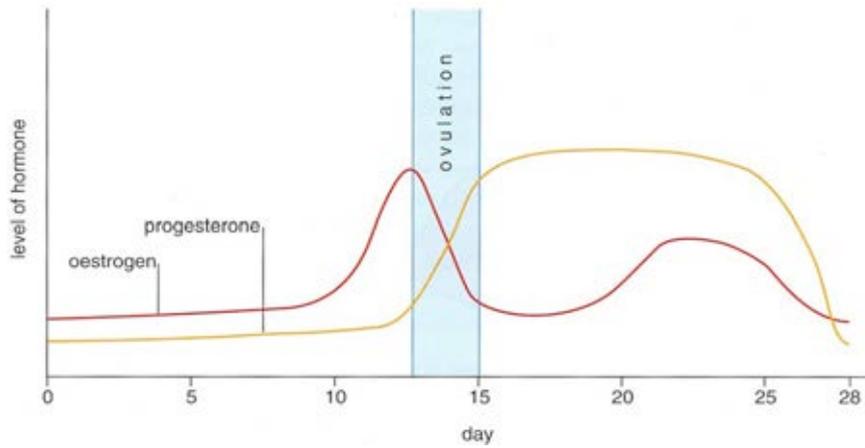


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[3]

Examiner Only	
Marks	Remark

6 The graph below shows the relative levels of female hormones during the menstrual cycle.



© GCSE Science for CCEA by T Lavery, J Napier & R White, published by Hodder Murray, 2006. Reproduced by permission of Hodder Education.

(a) Use the graph and your knowledge to:

(i) name the hormone which stimulates ovulation.

\_\_\_\_\_ [1]

(ii) describe how and why menstruation happens.

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_ [3]

(b) Describe the role testosterone plays in preparing the male body for reproduction.

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_ [3]

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**THIS IS THE END OF THE QUESTION PAPER**

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Examiner Only	
Marks	Remark



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