



General Certificate of Secondary Education  
2011

## Science: Biology

Paper 1  
Higher Tier

[G0903]

THURSDAY 19 MAY, AFTERNOON

### TIME

1 hour 30 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 eighteen** questions.

### INFORMATION FOR CANDIDATES

The total mark for this paper is 120.

Quality of written communication will be assessed in question **6(c)**.

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

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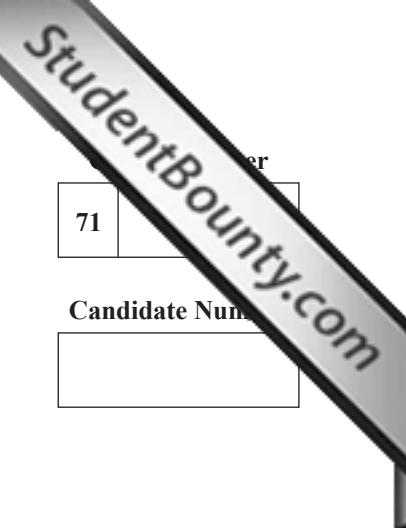
Candidate Number

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For Examiner's use only	
Question Number	Marks
1	
2	
3	
4	
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11	
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15	
16	
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18	

Total Marks	
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2 Breast milk contains all the nutrients a baby needs in the correct proportions.

(a) Name the **food group** needed

to provide energy. \_\_\_\_\_ [1]

for growth. \_\_\_\_\_ [1]

Breast milk also contains antibodies.

(b) Explain the advantage of these to the baby.

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

(c) Suggest **two other** advantages of breast feeding.

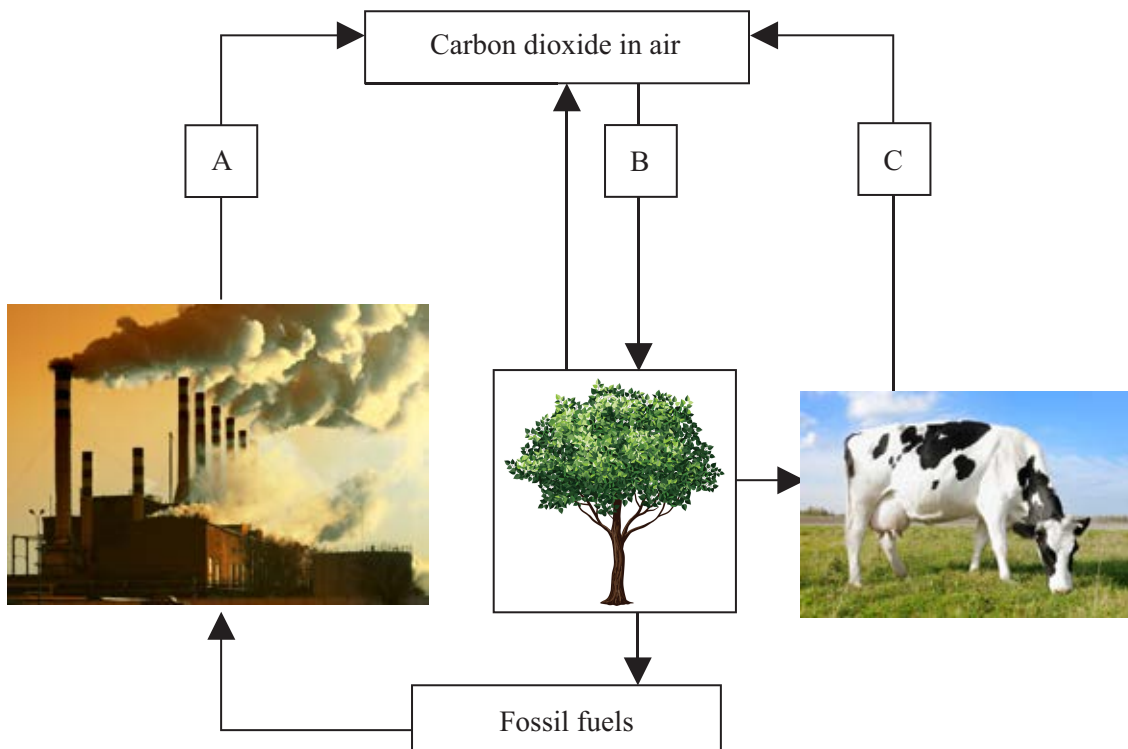
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ [2]

(d) Explain why HIV positive mothers are advised not to breast feed.

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

Examiner Only	
Marks	Remark

3 The diagram shows part of the carbon cycle.



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(a) Name processes A, B and C.

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

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

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

(b) Describe how carbon, present in plant tissue, becomes a named carbon compound in an animal.

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

(c) Name a fossil fuel.

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

Examiner Only	
Marks	Remark



(d) Name the part of the tooth which is strengthened by regular use of fluoride toothpaste.

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

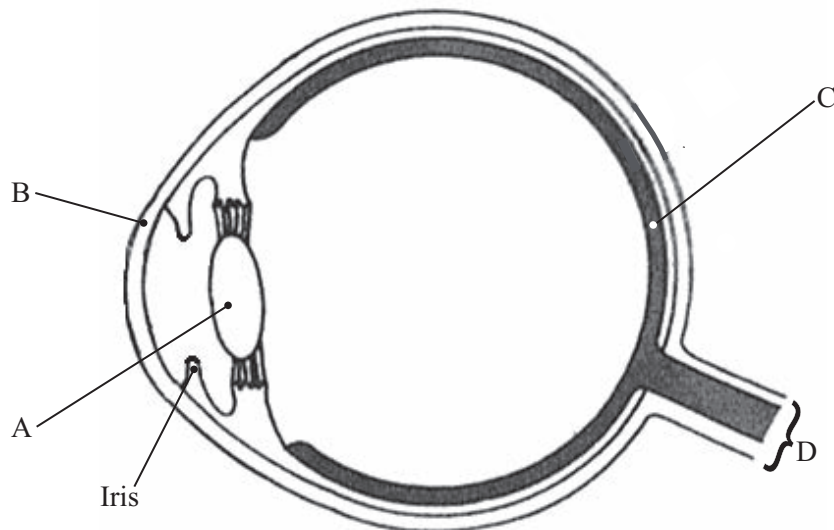
One way of ensuring that people get enough fluoride is to add it to the public drinking water.

(e) Suggest **one** reason why some people may object to this.

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

Examiner Only	
Marks	Remark

5 The diagram shows a simplified cross section of the eye.



(a) Name parts A, B and C.

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

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

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

(b) Name and give the function of part D.

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

(c) Give **one** piece of evidence from the diagram, which suggests this eye is in low light conditions.

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

(d) Name **one** structure which protects the eye from damage.

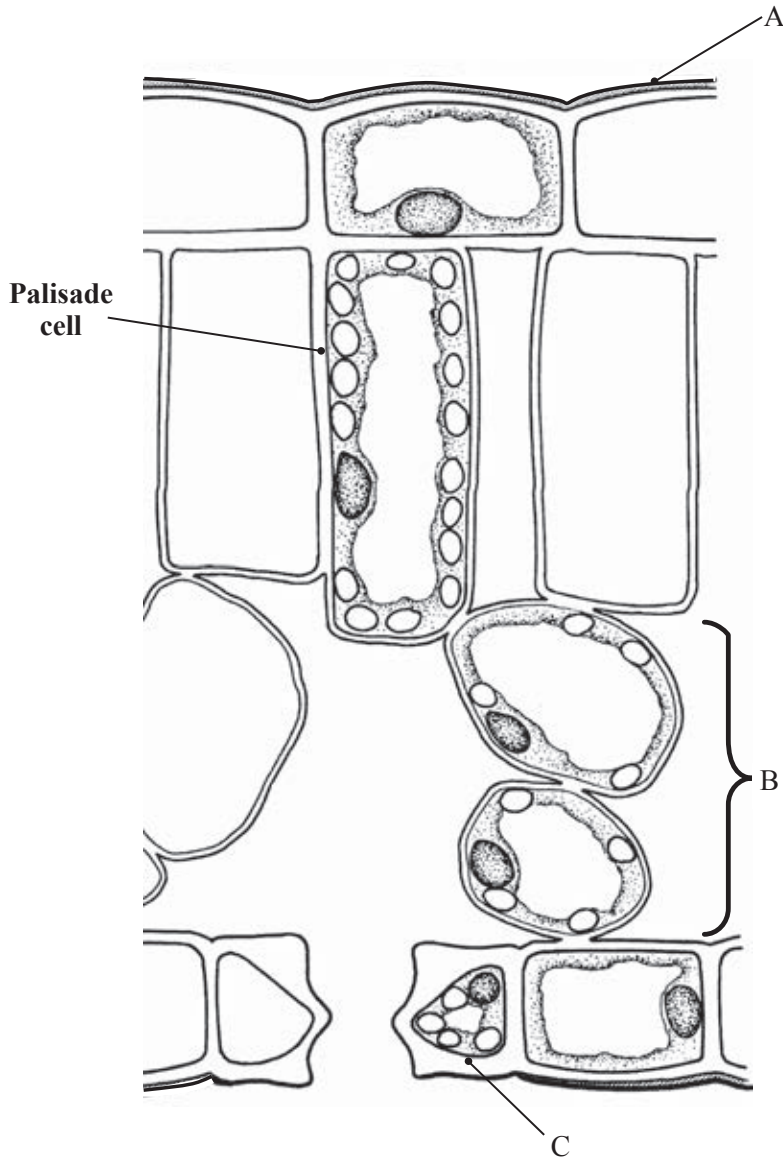
\_\_\_\_\_ [1]

Examiner Only	
Marks	Remark





7 The diagram shows a section through a leaf.



© Biology GCSE by G & M Jones, published by Cambridge University Press, 1984. ISBN 0521285321

(a) Name parts A, B and C.

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

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

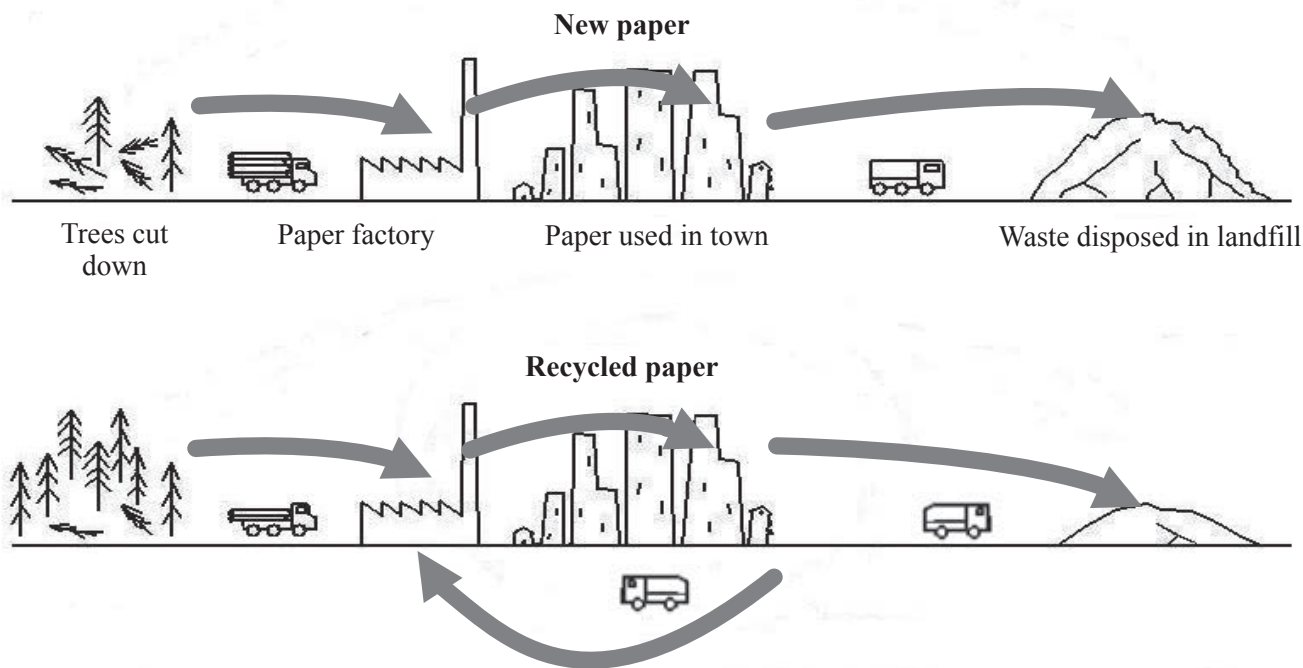
C \_\_\_\_\_ [1]

(b) Describe how the palisade cell is adapted for its function.

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

Examiner Only	
Marks	Remark

8 The diagram compares the production and use of new and recycled paper.



© Giorgio Carboni/Fun Science Gallery [http://www.funsci.com/fun3\\_en/paper/paper.htm#5](http://www.funsci.com/fun3_en/paper/paper.htm#5)

(a) Use the information in the diagram to suggest **two** environmental advantages of using recycled paper.

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

2. \_\_\_\_\_ [1]

(b) Explain how the increased transport required to recycle paper may affect the environment.

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

(c) Give **one other** disadvantage of using recycled paper instead of new paper.

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

Examiner Only	
Marks	Remark

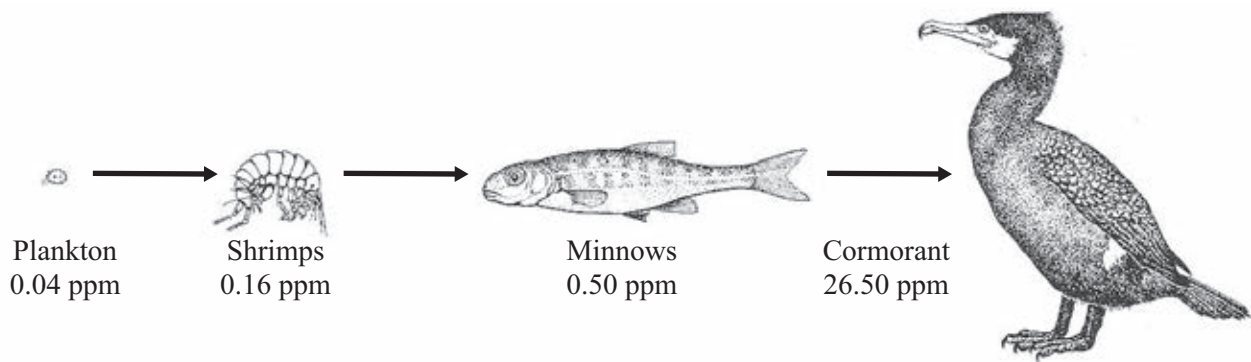








13 The diagram shows the concentration of DDT in each type of organism in a food chain.



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DDT is a pesticide.

(a) What is a pesticide?

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

(b) Calculate the percentage **increase** of the concentration of DDT from the plankton to the shrimps. Show your working.

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

(c) Explain why the concentration of DDT changes along the food chain.

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

(d) Give **two** reasons why, although it is banned in many countries, DDT is still used in some underdeveloped countries.

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

2. \_\_\_\_\_ [1]  
 \_\_\_\_\_

Examiner Only	
Marks	Remark











16 Some women who are sterile may undergo *in vitro* fertilization (IVF).

(a) Describe the effect of the hormones on the ovaries at the start of *in vitro* fertilization.

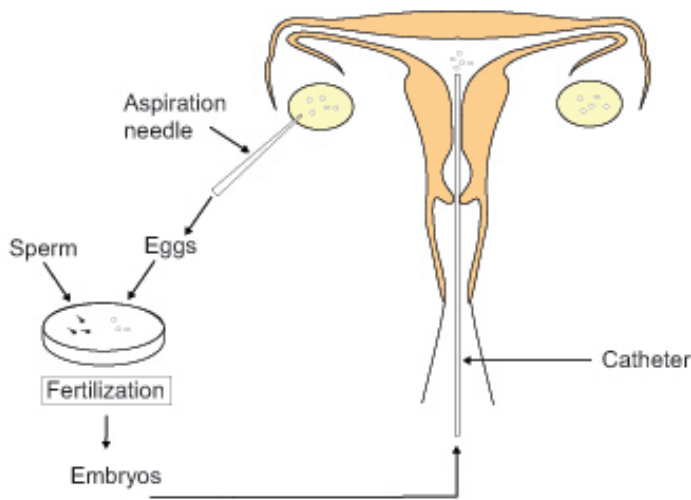
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[2]

The diagram shows the process of *in vitro* fertilization.



© Focus Educational Software Ltd

Use the diagram to help answer the following questions.

(b) Describe how the eggs are obtained.

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[1]

Examiner Only	
Marks	Remark

(c) Explain why eggs are examined after sperm are added to the dish.

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[2]

(d) What happens to the embryos after they are inserted into the uterus using the catheter?

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[1]

(e) Give **two** reasons why females may be sterile.

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

2. \_\_\_\_\_ [1]

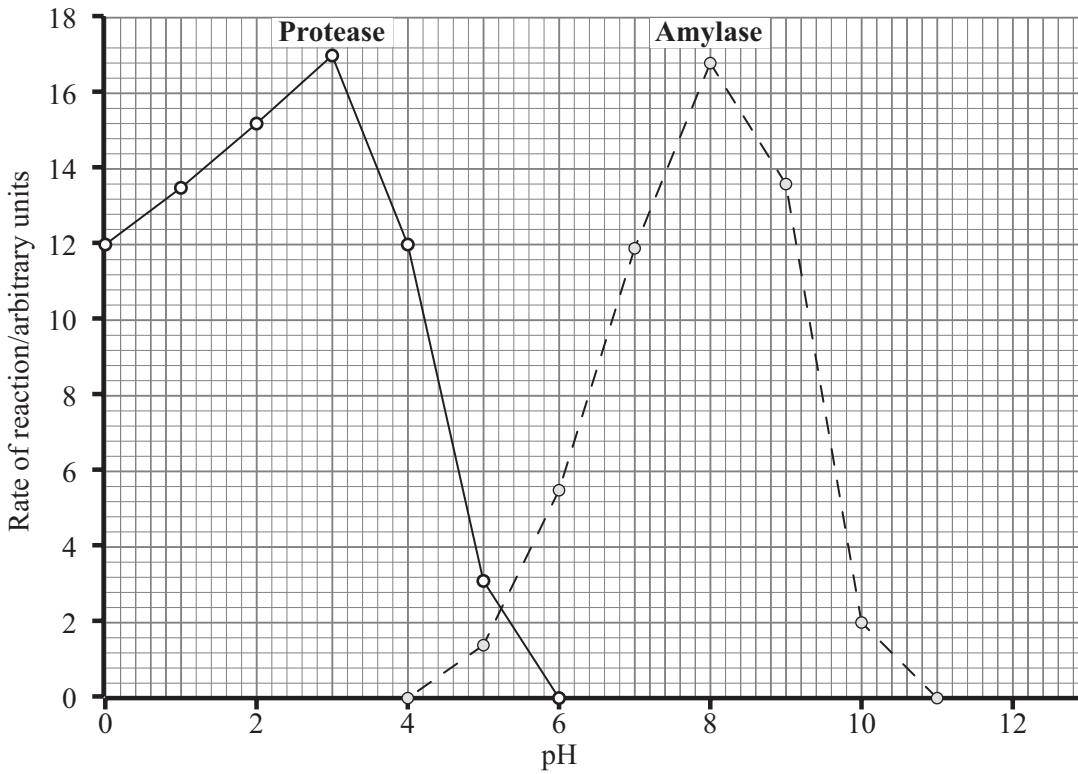
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18 The graph shows how pH affects the activity of two human enzymes.

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Marks	Remark



(a) Describe and explain the change in the rate of reaction of the amylase above pH 8.

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[2]

(b) Where is amylase found in the digestive system?

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[1]

(c) What is a protease enzyme?

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[3]



(d) Use information from the graph to help suggest where the protease enzyme is found in the body.

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[2]

(e) Give **one other** factor which affects the activity of an enzyme.

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[1]

Examiner Only	
Marks	Remark

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

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