

Centre Number				
71				

Candidate Number

General Certificate of Secondary Education 2010

# Science: Double Award (Modular)

Paper 1 Foundation Tier

[G8201]

## FRIDAY 21 MAY, MORNING

	3201
	ö

### TIME

1 hour.

#### **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 four questions.

#### **INFORMATION FOR CANDIDATES**

The total mark for this paper is 80.

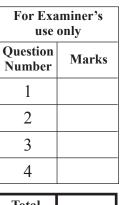
Quality of written communication will be assessed in question **3(d)**.

Figures in brackets printed down the right-hand side of pages indicate

the marks awarded to each question or part question.

Details of calculations should be shown.

Units must be stated in numerical answers where appropriate.



Total Marks

(a) Photosynthesis occurs in plant leaves. 1 Examiner Only Marks Rema (i) Name the chemical in leaves that absorbs light for photosynthesis. [1] (ii) Complete the word equation for photosynthesis. Light + $\rightarrow$ Glucose +[3] (b) The diagram shows the apparatus used to investigate if carbon dioxide is needed for photosynthesis. The plant was destarched and then the leaves were sealed in glass flasks. The plant was then left in sunlight for 12 hours. Flask 1 Flask 2 Normal conditions Chemical which removes carbon dioxide  $(CO_2)$ from the air (i) How was the plant destarched? [1]

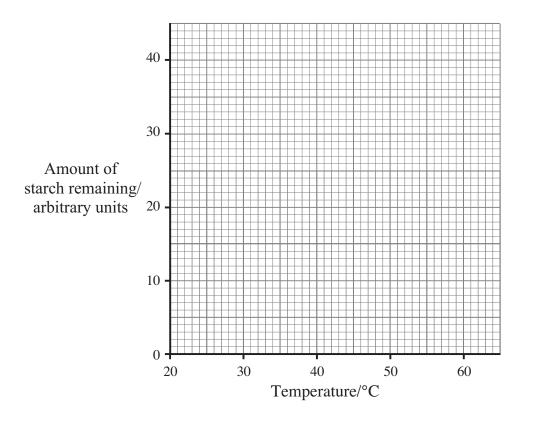
The diagrams show the stages in the starch test on the leaves from the Examiner Only Marks Rem plant. Alcohol Water Step 1 Step 2 Step 3 Step 4 Boil in water Heat in alcohol Rinse in warm water Test for starch © GCSE biology for CCEA by R McIlwaine & J Napier, published by Hodder & Stoughton, 2003, ISBN 9780340858257. 'Reproduced by permission of Hodder Education' (ii) What is the purpose of Step 2 \_\_\_\_\_ Step 3? [2] (iii) Why is the Bunsen burner turned off before Step 2? [1] (iv) In Step 4, iodine solution is added to the leaves to test for starch. What colour would you expect to obtain when iodine is added to the leaf from Flask 1 Flask 2? \_\_\_\_\_ [2]

(c) The enzyme amylase breaks down starch. John carried out an experiment with amylase to see how much starch remained after 15 minutes at different temperatures.

The table gives his results.

Temperature/°C	Amount of starch remaining/ arbitrary units after 15 minutes
20	30
30	16
40	10
50	25
60	35

### (i) Draw a line graph of the results.





**Examiner Only** Rem

Marks

	Use	the graph ar	nd your know	ledge to answer	the following q	uestion.	Examiner Only Marks Remark
	(ii)	At what tem	nperature was	this enzyme lea	st effective?		
						°C [1]	
		Explain you	ir answer.				
						[1]	
(d)	The	body needs	a variety of r	ninerals to stay	healthy.		
	(i)	Choose two levels.	foods from t	he list below that	at contain high c	calcium	
		Cheese	Beef	Oily fish	Chicken	Lamb	
				and		[2]	
	(ii)	Suggest wh	y pregnant wo	omen need to ea	t calcium rich f		
						[1]	
(e)	The	blood transp	ports digested	foods to the cel	lls of the body.		
	(i)	Name the m	ineral needed	to make red bl	ood cells.		
						[1]	
	(ii)	What is the	function of re	ed blood cells?			
						[1]	
	(iii)	The blood the body.		hrough the hear	t for one comple	ete circuit	
		What term of	describes this	type of circulat	ion?	[1]	

The diagram shows a cross section of the heart and its blood ves	5015.	Marks	Rei
Pulmonary artery Vena			Re
cava			
Use the diagram to help answer the following questions.	- 1		
(i) Name the blood vessel that carries blood from the heart to th	[1] [1]		
(ii) Which two blood vessels shown carry oxygenated blood?			
and	[2]		

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(Questions continue overleaf)

2 (a) The diagram shows a food web for an island in the Arctic.

Examiner Only Marks Remark

(ii)	Use the food web to name
	a primary consumer
	a secondary consumer [2]
(iii)	) Use the food web to give a food chain with <b>only</b> five types of organisms. [3]
(iv)	$\rightarrow$
	[2]
(v)	Suggest why the numbers of zooplankton may decrease during winter.
(v)	
	<ul> <li>winter.</li> <li>[2]</li> <li>On the grid draw a pyramid of numbers for your food chain in (iii). Use the numbers of organisms shown in the food web.</li> </ul>
	<ul> <li>winter.</li> <li>[2]</li> <li>On the grid draw a pyramid of numbers for your food chain in (iii).</li> </ul>
	<ul> <li>winter.</li> <li>[2]</li> <li>On the grid draw a pyramid of numbers for your food chain in (iii). Use the numbers of organisms shown in the food web.</li> </ul>
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	<ul> <li>winter.</li> <li>[2]</li> <li>On the grid draw a pyramid of numbers for your food chain in (iii). Use the numbers of organisms shown in the food web.</li> </ul>

(vii)Explain why it is an advantage to the polar bear to have more than one food source.

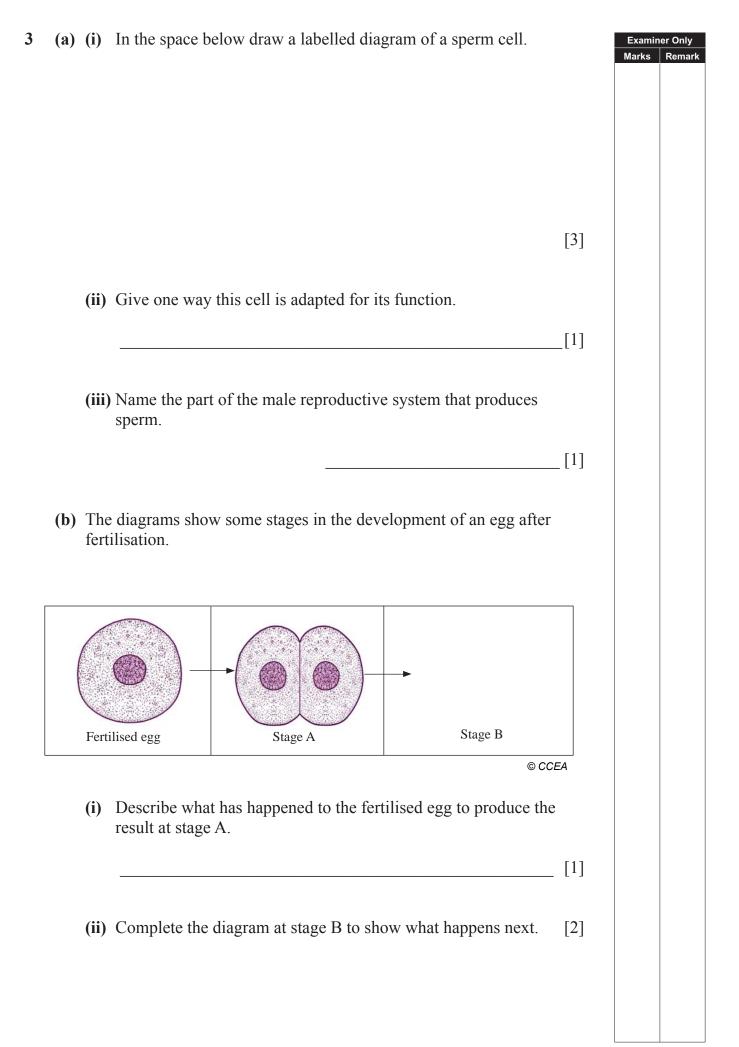
[1]

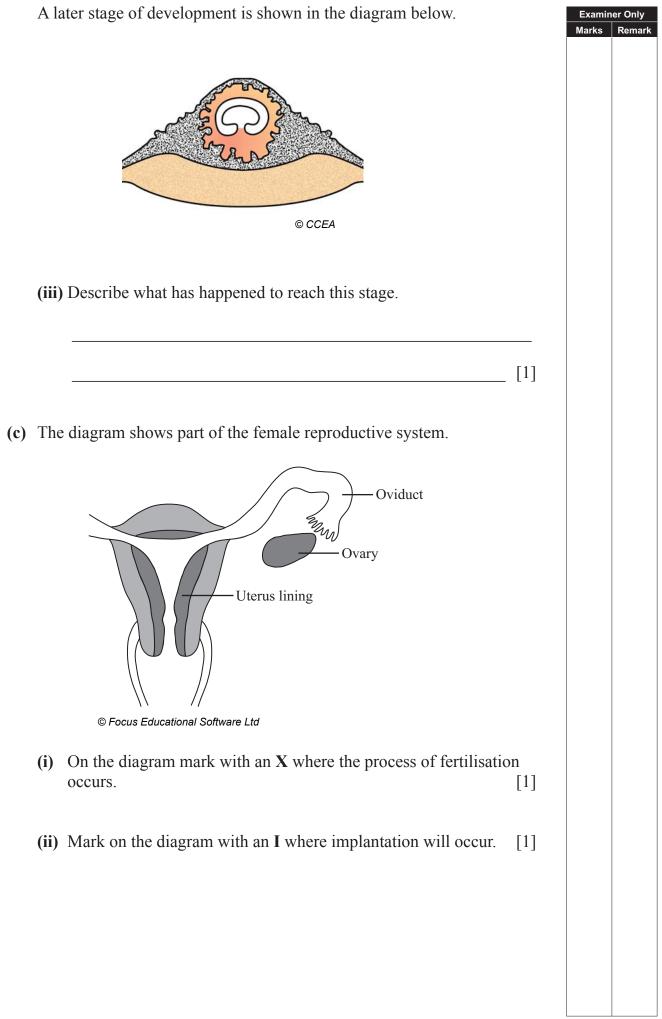
Examiner Only Marks Remar

(b) The flow diagram shows the effects of artificial fertiliser run-off in rivers. Artificial fertiliser run-off into river Increased growth of water plants/algae Plants die and are decomposed Fish die (i) Complete the empty box in this process. [1] (ii) Name one other substance that could cause the same effect if it entered a river. [1] (iii) Explain how hot water from cooling processes can lead to the death of fish if added to a river. [1]

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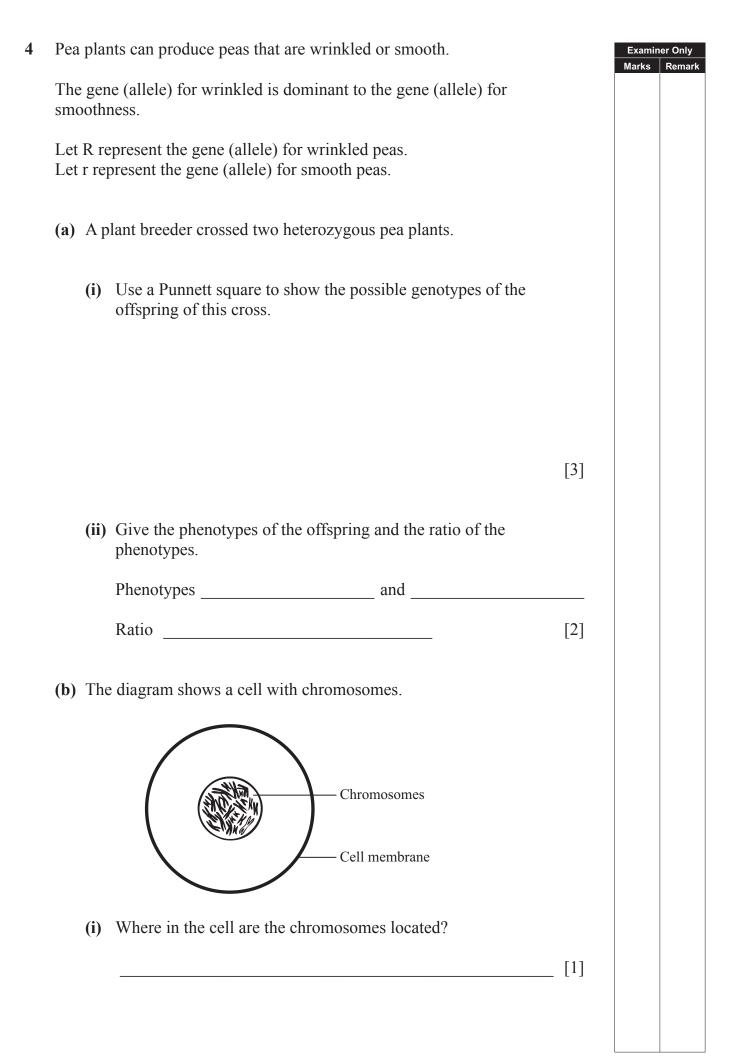
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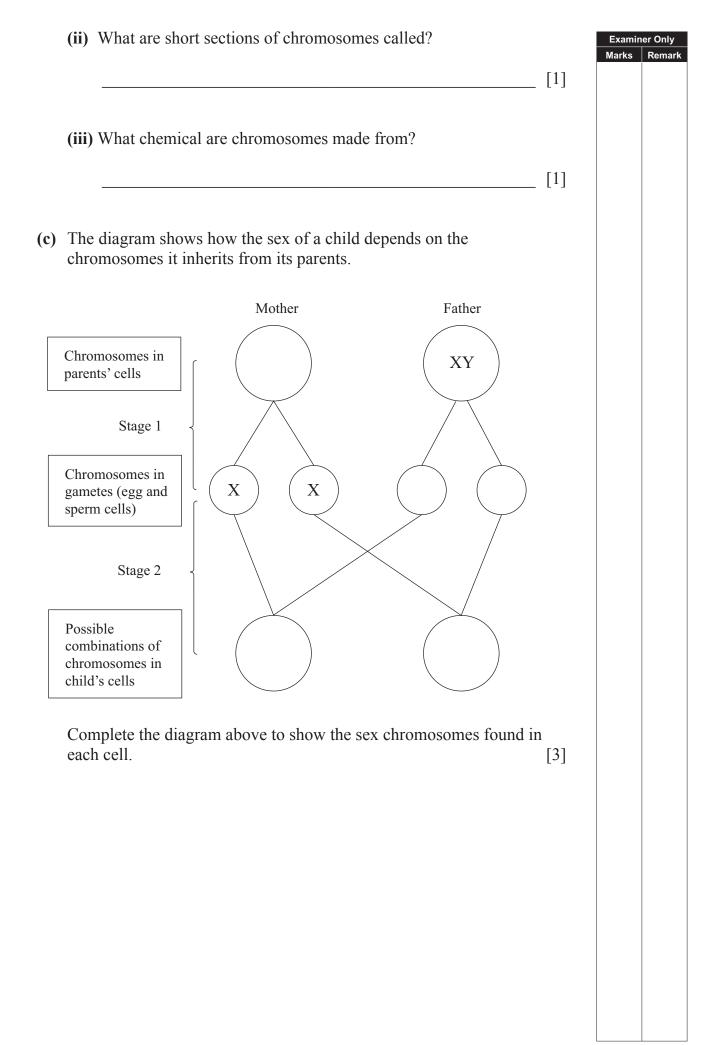




(iii) Following implantation the placenta develops. Examiner Only Marks Remar Give **two** functions of the placenta. 1. \_\_\_\_\_ 2. \_\_\_\_\_ [2] Describe one way in which the placenta is adapted for its role. [1] (iv) Name the structure that protects the developing baby. \_\_\_\_\_[1] (d) Describe the process of birth. You will be assessed on the quality of written communication in this question. \_\_\_\_\_ \_\_\_\_\_ [3] Quality of written communication [2]

(e)	Gor	norrhoea is a sexually transmitted disease.		Examin Marks	er Only Remark
	(i)	Name the type of organism that causes gonorrhoea.			
	(ii)	The incubation period between getting the disease and showing symptoms can be up to 14 days. How might this lead to the spre of the disease?			
			[1]		
	(iii)	What is the treatment for this disease?	[1]		
	(iv)	Suggest one way in which the spread of this disease may be prevented.			
			[1]		





(d) Down's syndrome is one example of an inherited disease where all the Examiner Only Marks Rema cells of the individual have 47 chromosomes rather than 46. The histogram shows how the risk of having a child with Down's syndrome increases with the age of the mother. 30 of Down's syndrome/ Number of cases 1000 births 20 10 0. 45-49 20-24 30-34 35–39 40-44 25 - 29Age of mother/years Use the histogram to calculate how many times more likely it is for a 42 year old woman to have a Down's syndrome baby than a 32 year old woman. Show your working. times [2]

# THIS IS THE END OF THE QUESTION PAPER

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