

Ce	ntre	Number

71				
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Candidate	Number
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General Certificate of Secondary Education 2011–2012

Science: Single Award (Modular)

Staying Alive Module 1

Higher Tier

[GSC12]

TUESDAY 8 NOVEMBER 2011 1.30 pm-2.15 pm



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 seven** 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					
7					

T	
lotal	
Marks	
-	



1 (a) The picture below shows cuttings of plants.

Examiner Only				
Marks	Remark			



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The statements below give advice on taking cuttings.

- A Select cuttings from a healthy plant.
- B Quickly insert the cuttings into a pot containing moist compost and place in a large sealed plastic bag.
- (i) For each statement suggest why it is necessary to follow this advice.

Α		
В		

______[2]

(ii) Taking cuttings is an example of cloning. Name the type of reproduction involved in taking cuttings.

______[1]

(iii) State two advantages of growing plants from cuttings.

1._____

2._____ [2]

(b) Suggest two reasons why many people find cloning of humans unacceptable.

1. ______

2. ______[2]

2 The table below shows the results of the first recorded clinical experiment carried out by James Lind to investigate cures for scurvy.

Examiner Only

Marks Remark

He divided ten sailors who had scurvy into five groups. They all received the same diet but each group had a different addition as shown.

Group	Added to diet	Effect	
1	Apple cider	Some improvement	
2	Sulphuric acid	None	
3	Vinegar	None	
4	Seawater	None	
5	2 oranges 1 lemon	Complete recovery	

(a)	Describe and explain fully the results of this investigation.				
		_ [3]			

(b) (i)	Name the chemical reaction that takes place in all living cells.	
		[1]

(ii)	Write	the	word	equation	for	this	reaction
•	•••	VVIILO	uic	WOIG	cquation	101	uiio	Caotion

[2]

3 (a) Tom is heterozygous for eye colour and has brown eyes. His wife Sinead has blue eyes.

Examiner Only

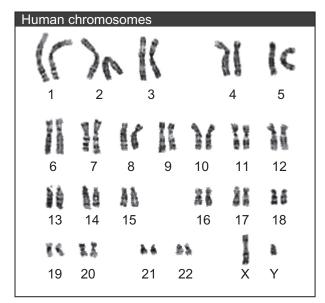
Marks Remark

Let (B) represent the allele for brown eyes and (b) the allele for blue eyes.

Draw a genetic diagram below to show the possible genotypes of their children.

[3]

(b) The diagram below shows the chromosomes in a normal body cell.



Source: news.bbc.co.uk/2/hi/science/nature/1717396.stm

(i) These chromosomes consist of DNA molecules. What name is given to the shape of DNA?

[1]

	the reason for this difference.		
	[2]		
Bel	ow is a diagram of the female reproductive system.		
(a)	Sperm is deposited in the vagina and moves from there to fertilise an ovum. List, in order, the names of the three structures that the sperm will travel through before fertilisation can take place.		
	[2]		
(b)	Name the structures that are cut and tied during an operation to sterilise females.		
	[1]		
(c)	This method of sterilising is permanent. Why might this be considered a disadvantage?		
		1 1	

5	(a)	mak	lass wanted to find out if light is needed for photosynthesis to ke starch. On the first day they set up the investigation and the owing day they tested for starch.		Examine Marks	er Only Remark
		(i)	Describe how the investigation is set up on the first day.			
		(ii)	State how you would test for starch describing and explaining results you would expect to get.	the		
				[3]		
	(b)		te where most chloroplasts are found in a leaf and explain the efit of this to the plant.			
				[2]		

6	(a)		urvey was carried out to investigate people's attitude to GM croe of the questions asked was:		Examiner Only Marks Remark
			you believe that GM crops pose a serious health hazard to sumers?		
		The	answers to this question are shown in the bar chart below.		
			■ United States		
		_	33% 41% 51% 47%		
			Yes No Source: http://www.gallup.com/poll/19261/britons-show-distaste-biotech-foods.aspx		
			Coards Miphin Miganaproom point to 20112.110.10 or or allocated 2100001. 100001.		
		(i)	Which group (Americans, Canadians or British) were least concerned about the safety of GM crops?		
				[1]	
		(ii)	Suggest one thing you would need to know before you could conclude that the results were reliable.		
				_ [1]	

(b)		present, the two main types of GM crops being grown are ones thave been inserted with a gene that:		Examino Marks	er Only Remark
	1.	makes them resistant to herbicides (chemicals that kills weeds)			
	2.	makes them toxic to pests that live on them.			
	(i)	Explain how these features (1 and 2) will be advantageous for the farmer.			
			_ [4]		
	(ii)	Many people are opposed to the use of GM crops.			
		Give two reasons for this.			
		1	_		
		2	[2]		

The relative percentages of the bases in DNA, in different organisms, are shown in the table below.

Examiner Only					
Marks	Remark				

	%			
Organism	Α	G	Т	С
Chicken	28.0	22.0	28.0	22.0
Rat	28.6	21.4	28.6	21.4
Human	29.3	20.7	29.3	20.7
Octopus	32.4	17.6	32.4	17.6

(a)	What pattern for the relative percentage of bases is shown by the information in the table?		
		[1]	
(b)	What is meant by the base triplet hypothesis?		
		[2]	
(c)	The shape of DNA was discovered using the processes of X-ray diffraction and modelling. For each process state the scientist(s) involved and describe how their research helped work out the structure of DNA.		
		 [4]	

THIS IS THE END OF THE QUESTION PAPER

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