

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS International General Certificate of Secondary Education

* 0 0	CANDIDATE NAME				
	CENTRE NUMBER	CANDIDATE			
	BIOLOGY		0610/22		
	Paper 2 Core	Oct	tober/November 2013		
~ _			1 hour 15 minutes		
7	Candidates ans	wer on the Question Paper.			
	No Additional M	laterials are required.			
	READ THESE I	INSTRUCTIONS FIRST			
	Write your Centre number, candidate number and name on all the work you hand in.				
	Write in dark blu	ue or black pen.			
	You may use a pencil for any diagrams or graphs.				

Do not use staples, paper clips, highlighters, glue or correction fluid.

DO NOT WRITE IN ANY BARCODES.

Answer **all** questions.

Electronic calculators may be used. You may lose marks if you do not show your working or if you do not use appropriate units.

At the end of the examination, fasten all your work securely together. The number of marks is given in brackets [] at the end of each question or part question.

This document consists of 18 printed pages and 2 blank pages.



2

(a)	Def	ine the term <i>photosynthesis</i> .	For Examiner's
		[3]	
(b)	Son	ne plants store starch in underground storage organs.	
	(i)	Explain how starch in a leaf is transported to an underground storage organ.	
		[2]	
	(ii)	Suggest one advantage to the plant of storing starch in an underground storage organ.	
		[1]	

(c) Fig. 1.1 shows the underground storage organs of five plants.



Use the key to identify which storage organ, shown in Fig. 1.1, is produced by which plant.

Write the letter of each storage organ on the correct line in the key.

Key	

	name of plant	letter of storage organ
1 (a) Approximately round	go to 2	
(b) Longer than it is wide	go to 3	
2 (a) Has a ring of roots at the base	Allium	
(b) No ring of roots	Colocasia	
3 (a) Has shoots or leaves	go to 4	
(b) No shoots or leaves	Cassava	
4 (a) Branched	Zingiber	
(b) Not branched	Solanum	

[Total: 10]

For Examiner's

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2 Fig. 2.1 shows an external view of a human heart seen from the front. Examiner's Δ В right side of left side of the heart the heart Fig. 2.1 (a) (i) Name blood vessel A. [1] (ii) Blood vessel B supplies blood to the muscle of the heart wall. Name blood vessel B. [1] (iii) State what happens if blood vessel B becomes blocked.[1] (iv) Describe and explain how the structure of the left ventricle differs from the structure of the right ventricle. [2]

For

(b)	Exercise affects pulse rate.	For
	Describe how you would measure a person's pulse rate.	Use
	[2]	
	[Total: 7]	



3 Fig. 3.1 shows the relative growth of the brain, reproductive organs and the whole body.

For

(b)	Na	me the hormone which controls the start of puberty in:	For Examiner's
	(i)	males;	Use
		[1]
	(ii)	females.	
		[1]
	(iii)	Reproductive organs are affected by an increase of the male sex hormone.	
		Name two other structures affected by this increase.	
		1	
		2 [2]
(c)	Soi	me athletes use the male sex hormone as a drug.	
	The	ey inject this hormone.	
	The	e use of such drugs is banned in athletics.	
	Su ath	ggest two ways that the male sex hormone could improve the performance of ar lete.	1
	1		
	······ •		
	Ζ		
		[2	
		[lotal: 9	ני

4 Fig. 4.1 is a section through the fruit of a pea plant showing some of its seeds.



(a) Explain why the cells of the fruit pod, as shown in Fig. 4.1, are genetically different from the cells of the embryo in the seeds.

[3]

(b) (i) Fig. 4.2 shows a pea seedling after germination has begun.



Name the structures labelled **A** and **B**. Write your answers on Fig. 4.2.

[2]

For Examiner's Use

(ii) State three external conditions that are always required for germination.

1	
2	
3	 [3]

(c)	Define the terms growth and development.	For Examiner's Use
	growin	
	development	
	[3]	
	[Total: 11]	

Fig. 5.1 shows a section through the human eye. Examiner's ciliary muscle D lens C · В Ε Х Α suspensory ligaments Fig. 5.1 (a) (i) Name the structures labelled **A**, **B**, **C** and **D**, shown in Fig. 5.1. Α В С D [4] (ii) State the function of structure E. _____ [1] (iii) Give one reason why area X is called the blind spot. [1]

11

5

For

(b) A girl looks at a distant tree and then looks at a small plant very close to her.

Describe the changes that take place in the ciliary muscles, the suspensory ligaments and the lens to allow the girl to focus on the small plant.

ciliary muscles		 	 	
suspensory ligar	nents	 	 	
lens				
		 	 	[3]

[Total: 9]

For Examiner's Use



(a) In Table 6.1, write the letter from Fig. 6.1 which labels the structure that carries out each of the functions.

13

X

С

One has been completed for you.

Fig. 6.1 shows a section through human skin.

6

В

Tab	e	6.	1
-----	---	----	---

function	letter
helps to prevent dehydration of the body	В
detects changes in the external temperature	
dilates when body temperature rises	
prevents most heat loss from the body	
produces a fluid to help the body lose heat	

- (b) Name the structure labelled X on Fig. 6.1.
 - Х

D

Ε

F

For Examiner's

[4]

[1]

[Total: 5]



(iii) Suggest why top carnivores, such as the arctic wolf, are usually only present in very small numbers in an area. Examiner's Use [2] (c) The number of lemmings in an area undergoes a rapid decrease every few years. Explain how a decrease in lemmings may affect the number of arctic foxes and arctic hares. (i) arctic foxes (ii) arctic hares [3] [Total: 9]

For



nitrate fertiliser added/kg per ha

Fig. 8.1

[4]

Table 8	3.1
---------	-----

nitrate fertiliser added	yield of crop
/ kg per ha	/ tonnes per ha
0	3.0
50	4.8
100	7.0
150	8.6
200	8.2

(b) (i) Calculate by how much the crop yield increased when 50kg per ha of nitrate fertiliser was added.

tonnes per ha [1]

(ii) Use your graph to determine how much nitrate fertiliser must be added to double the unfertilised crop yield.

kg per ha [1]

(iii) Some farmers add more than 150 kg per ha of nitrate fertiliser.

Suggest **two** reasons why this is **not** a good idea.

1	
2	
	[2]

(iv) A farmer has only 100 kg of nitrate fertiliser available, but 2 ha of land.

He has to decide whether to put all of the fertiliser on one field of 1 ha or to spread it evenly over both fields of 1 ha each.

Use the data in Table 8.1 to calculate which decision would give the farmer the highest yield, in total.

calculation decision [2]

(c) Explain why the yield of a crop can be increased by adding nitrate fertilisers. [3] [Total: 13] When a mass of still air becomes trapped over a city, pollutants build up in the air next to the ground. (a) (i) Name two chemical pollutants that might build up over a busy city centre. 1 2 [2] (ii) Vehicles such as cars burn fossil fuels. Explain why vehicles may be banned from the city if pollution becomes severe. [3]

18

For Examiner's Use

(b) If air pollution is very severe, warnings may be given not to take young babies into the city centre and for any people with heart and respiratory problems to stay inside.

For Examiner's Use

Suggest two reasons for this advice.

	1
	2
[2]	
[Total: 7]	

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