

Centre No.						Surname	Initial(s)
Candidate No.						Signature	

Paper Reference(s)

**7040/01**

Examiner's use only

--	--	--

# London Examinations GCE

Team Leader's use only

--	--	--

## Biology

### Ordinary Level

#### Specimen Paper 1

Time: 1 hour 30 minutes

Materials required for examination

Nil

Items included with question papers

Nil

Question Number	Leave Blank
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
Total	

### Instructions to Candidates

---

In the boxes above, write your centre number, candidate number, your surname, initial(s) and signature.  
Answer ALL questions in the spaces provided in this book.

### Information for Candidates

---

Calculators may be used.  
The total mark for this paper is 100.  
The mark allocation is indicated at the end of each question.  
The marks for parts of questions are shown in round brackets: e.g. (2).  
This paper has ten questions. Any blank pages are indicated.

### Advice to Candidates

---

Write your answers neatly and in good English.  
In calculations, show **all** the steps in your working.

This publication may be reproduced only in accordance with Edexcel Limited copyright policy.  
©2006 Edexcel Limited.

Printer's Log No.  
**N25299A**

W850/U7040/57570 4/5/5/3/



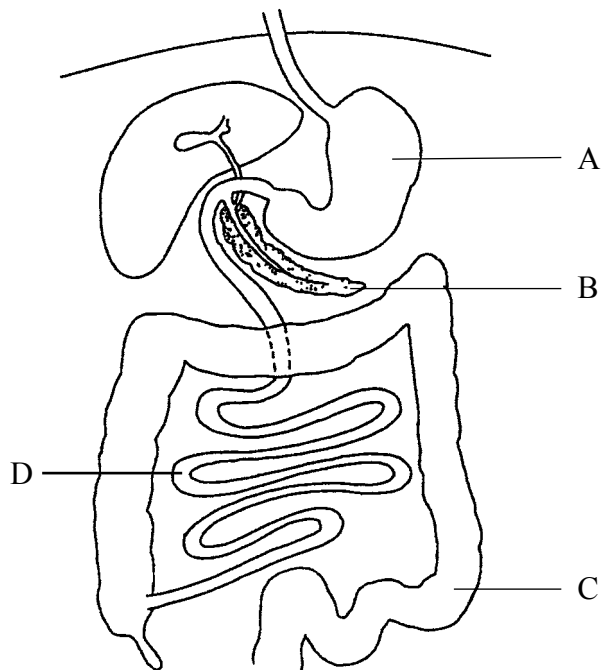
*Turn over*



**BLANK PAGE**



1. The diagram below shows the structure of the human gut.



(a) Name the parts labelled A, B and C.

A .....

B .....

C .....

(3)

(b) Name **two** processes carried out in structure D.

1 .....

2 .....

(2)

(c) Humans require fibre in their diet. State **one** function of fibre in the diet.

.....

.....

(1)

(d) Name the process by which food is moved through the gut.

.....

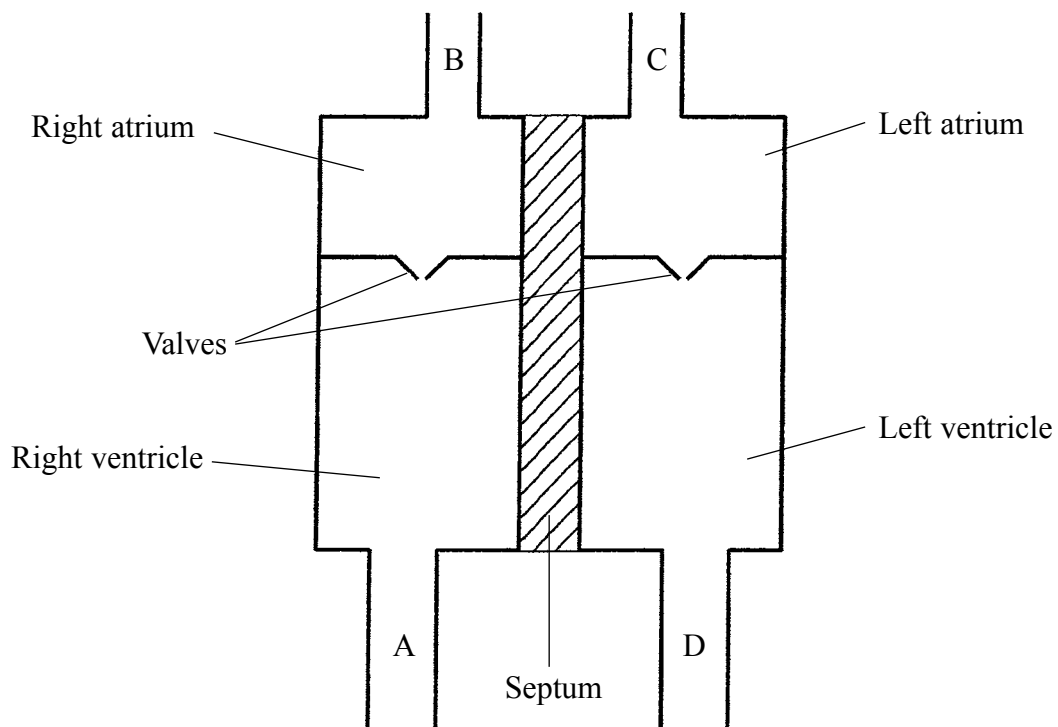
(1)

(Total 7 marks)

Q1



2. The diagram below is a simplified plan of the human heart.



(a) Name the blood vessels labelled A, B, C, and D.

- A .....
- B .....
- C .....
- D .....

(4)

(b) State **one** way that the blood in vessel B differs from the blood in vessel C.

- .....

(1)



Leave  
blank

- (c) When a person exercises for a short period of time, the heart responds to the increased level of activity.

What is the heart's response to exercise and how does it enable greater physical activity?

.....

.....

.....

.....

.....

**(3)**

- (d) Some babies are born with a heart defect, in which there is a hole in the septum between the left and right ventricles. Suggest how this might affect the functioning of the heart and the response of the body to exercise.

.....

.....

.....

.....

.....

**(3)**

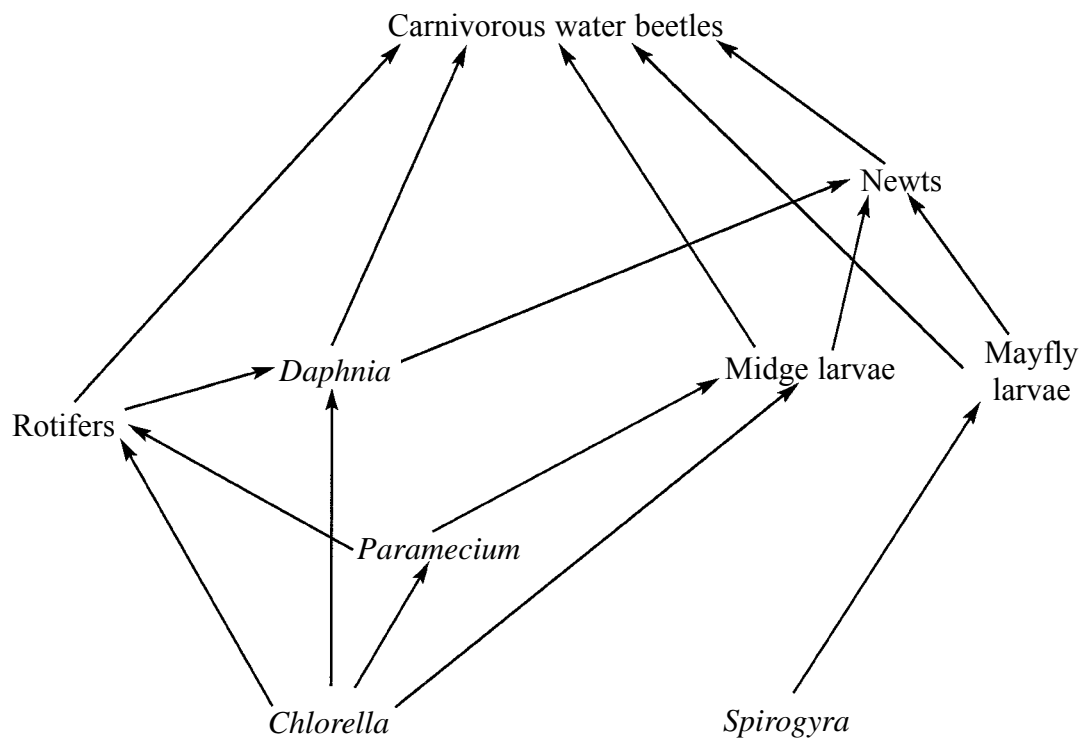
**(Total 11 marks)**

**Q2**

--	--



3. The food web below shows feeding relationships in a freshwater pond.



(a) (i) Name **two** primary consumers in this food web.

1 .....

2 .....

(2)

(ii) Name **one** organism that appears as a primary consumer and as a secondary consumer.

.....

(1)

(b) From the food web write down one food chain that includes *Paramecium* and has a total of **four** trophic levels.

(2)



Leave blank

(c) Some fertiliser drained into this pond from the surrounding fields. Suggest how this would affect the numbers of each of the following.

(i) *Chlorella* .....  
.....  
(1)

(ii) *Daphnia* .....  
.....  
(1)

(d) The data below were obtained for the following food chain, in a field of lettuces.

Lettuce plants → Slugs → Thrushes

Organism	Number of organisms per 100 m <sup>2</sup>
Lettuce plants	850
Slugs	2100
Thrushes	2

Draw a pyramid of numbers to represent these data.

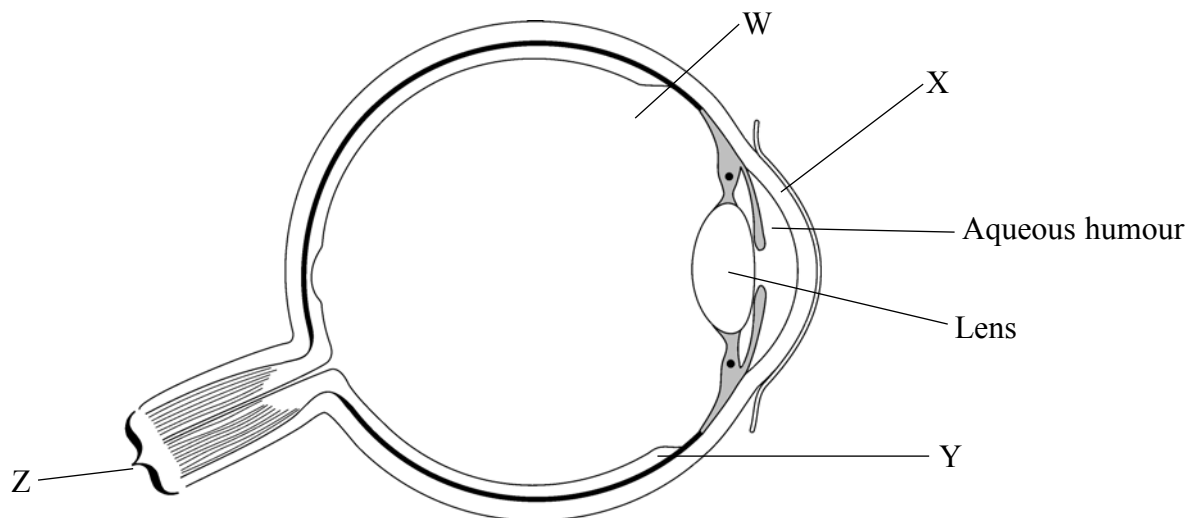
(2)

Q3

(Total 9 marks)



4. The diagram below shows a section through a human eye.



(a) Name the parts labelled W, X, Y and Z.

W .....

X .....

Y .....

Z .....

**(4)**

(b) The lens is made mainly of protein. In some people, part of the lens may become cloudy and this is known as a cataract.

(i) Describe a test for protein.

.....

.....

.....

**(2)**

(ii) Suggest how a cataract would affect the function of the lens.

.....

.....

.....

**(2)**





Leave  
blank

(c) People who are unable to produce insulin are at risk of developing cataracts. In these people the concentration of glucose in the aqueous humour is abnormally high. Because of this, glucose enters the lens. The cells in the lens then convert this excess glucose into sorbitol. Sorbitol increases absorption of water into the lens. The lens swells and becomes cloudy.

(i) Name the organ that produces insulin.

.....  
(1)

(ii) Describe how glucose moves from the aqueous humour into the lens.

.....  
.....  
(2)

(iii) Name the process by which water moves into the cells of the lens.

.....  
(1)

(d) A person with a cataract can have their cloudy lens replaced with one made from a special material.

Suggest **two** properties the material would need to have to be successful as a lens.

1 .....

2 .....

(2)

Q4

(Total 14 marks)



5. (a) Explain what is meant by the term **heterozygous**.

.....  
.....  
.....

(2)

(b) Certain varieties of cattle can exist in three colours: 'red', 'white' and 'roan'. When a red bull is mated with a white cow the calves have a mixture of red and white hairs, giving them an overall colour called roan. These roan calves are different in colour from both parents.

(i) State the type of dominance shown by colour in these cattle.

.....

(1)

(ii) Using the symbols  $C^R$  for the allele for red hair, and  $C^W$  for the allele for white hair, state the genotypes of the red bull and the white cow.

Red bull ..... White cow .....

(2)

(iii) Give the genotypes of the gametes produced by each parent.

Gametes from red bull .....

Gametes from white cow .....

(2)

(iv) Give the genotype of the offspring from a cross between a red bull and a white cow.

.....

(1)



(c) By means of a genetic diagram, show the results of a cross between a roan bull and a roan cow. Your diagram should show the genotypes of the parents, the gametes they produce and the genotypes and phenotypes of all the possible offspring.

Leave  
blank

(4)

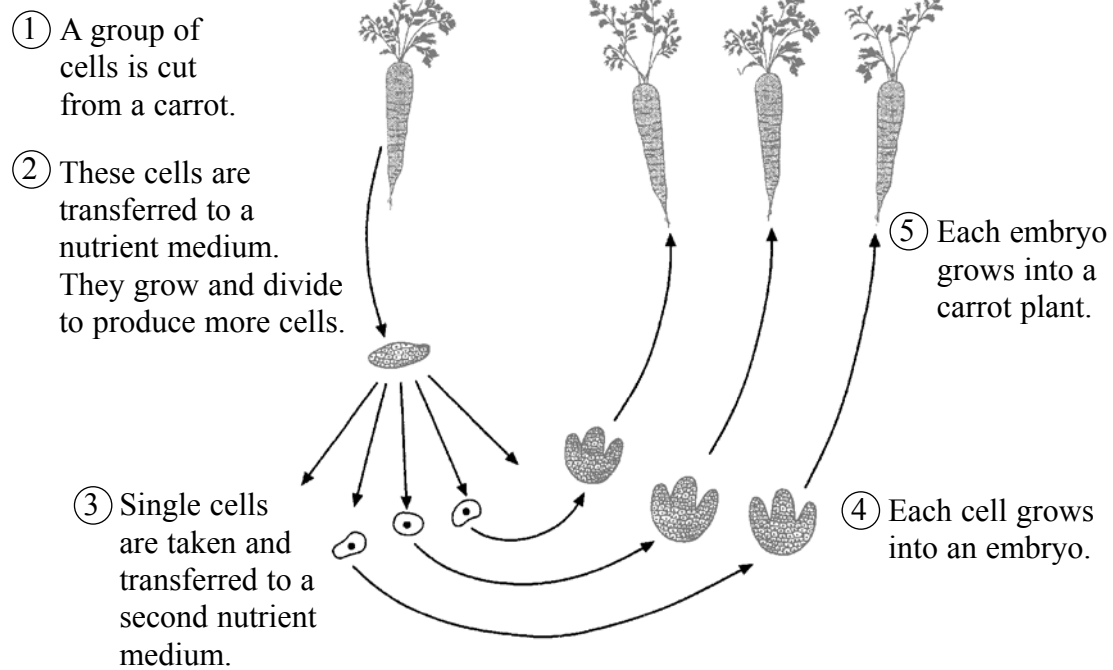
Q5

(Total 12 marks)

--	--



6. The diagram below shows a method that can be used to clone a carrot plant.



(a) Suggest **two** substances, other than water, that might be present in the nutrient medium. For each substance you name, give a reason why it is needed.

Substance	Reason needed
1	
2	

(4)



Leave  
blank

(b) (i) **Cloning** is an example of what type of reproduction?

.....  
(1)

(ii) Carrots can also be produced from seed. How would carrots produced by cloning differ from those grown from seed?

.....  
.....  
.....  
.....  
(2)

(c) Suggest **one** way in which cloning could be exploited or used commercially.

.....  
.....  
(1)

**(Total 8 marks)**

Q6



Leave  
blank

**BLANK PAGE**



7. (a) The table below gives some of the components required in a balanced diet. Complete the table to show a suitable source of the component and give one function for each component.

Component	Source	Function
Protein		
Lipid		
Iron		

(6)

(b) Humans also require vitamins as additional substances in their diet.

Name **one** vitamin and describe the symptoms associated with a diet lacking enough of this vitamin.

Name .....

Symptoms .....

(2)

(c) Some individuals may become so overweight that it adversely affects their health. This condition is known as obesity.

(i) Describe the dangers of being obese.

.....  
.....  
.....

(2)

(ii) How might obesity be prevented?

.....  
.....

(1)

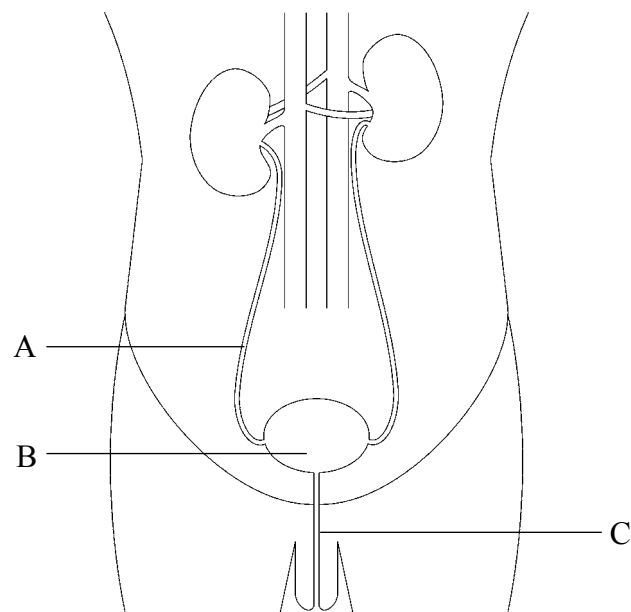
(Total 11 marks)

Q7

--	--



8. The diagram below shows the human urinary system including the kidneys and their blood vessels.



(a) Name the structures labelled A, B and C.

A .....

B .....

C .....

(3)

(b) (i) State **three** substances found at a greater concentration in the liquid stored in structure B than in the blood entering the kidney.

1 .....

2 .....

3 .....

(3)

(ii) Name **two** substances found in the blood that are not normally present in the liquid stored in structure B.

1 .....

2 .....

(2)





Leave  
blank

(c) (i) Name the process carried out by the kidney that helps to control the regulation of water in the body.

.....  
(1)

(ii) Name **one** hormone that is involved in this process.

.....  
(1)

(iii) A person drinks a large quantity of water. How would this affect the liquid stored in structure B?

.....  
.....  
.....  
(2)

**(Total 12 marks)**

Q8

--	--



9. (a) What type of organism causes cholera?

..... (1)

(b) (i) Describe how cholera is transmitted.

.....  
..... (1)

(ii) Describe **two** steps that have been taken to prevent the spread of this disease.

1 .....  
.....  
2 .....  
..... (2)

(c) The HIV virus has spread through many parts of the world causing the disease AIDS.

(i) Describe **two** symptoms of AIDS.

1 .....  
.....  
2 .....  
..... (2)

(ii) Why is AIDS such a difficult disease to treat?

.....  
..... (1)



(iii) Why is prevention of the disease likely to be more successful than attempts to cure it?

.....  
.....  
.....  
.....

(2)

(Total 9 marks)

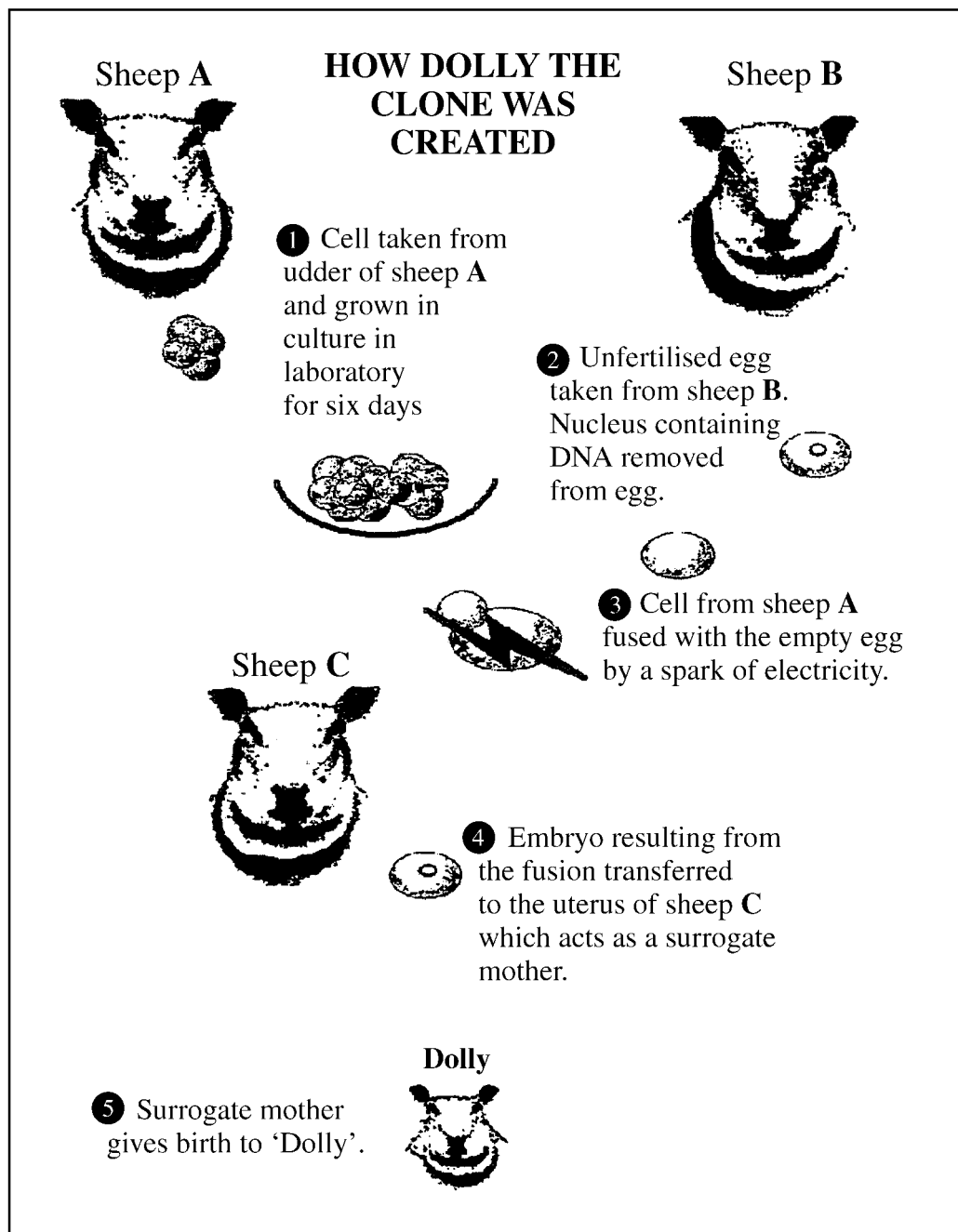
Leave blank

Q9



N 2 5 2 9 9 A 0 1 9 2 4

10.



(a) (i) Dolly was produced with the help of an unfertilised egg. Where did the scientists get the DNA from to put into this egg?

.....  
(1)

(ii) How does the nucleus in a cell from the embryo differ from the nucleus removed from the egg?

.....  
.....  
(1)

(iii) Dolly is genetically identical to another sheep in the diagram. Which one?

.....  
(1)

(b) Give **two** ways in which this method is different from the normal method of sheep reproduction.

1 .....  
2 .....  
(2)

(c) Suggest **two** advantages of producing animal clones.

1 .....  
2 .....  
(2)

Q10

(Total 7 marks)

**TOTAL FOR PAPER: 100 MARKS**

**END**



**BLANK PAGE**



**BLANK PAGE**



N 2 5 2 9 9 A 0 2 3 2 4

**BLANK PAGE**

