Centre No.						Paper Reference							Surname	Initial(s)
Candidate No.						6	1	0	2	/	0	1	Signature	

Paper Reference(s)

6102/01

Edexcel GCE

Biology

Advanced Subsidiary

Unit Test 2B

Monday 4 June 2007 – Morning

Time: 1 hour

Examiner's use only

Team Leader's use only

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

Materials required for examination
Ruler

Items included with question papers
Nil

Instructions to Candidates

In the boxes above, write your centre number, candidate number, your surname, initial(s) and signature.
The paper reference is shown above.
Check that you have the correct question paper.
Answer ALL EIGHT questions in the spaces provided in this booklet.
Show all the steps in any calculations and state the units. Calculators may be used.
Include diagrams in your answers where these are helpful.

Information for Candidates

The marks for individual questions and parts of questions are shown in round brackets: e.g. (**2**).
The total mark for this paper is 60.

Advice to Candidates

You will be assessed on your ability to organise and present information, ideas, descriptions and arguments clearly and logically, taking account of your use of grammar, punctuation and spelling.

Printer's Log. No.
N25718A
W850/R6102/57570 7/7/7/5/21,600

N 2 5 7 1 8 A 0 1 2 0

Turn over

edexcel
advancing learning, changing lives

BLANK PAGE

Leave blank

Answer ALL questions in the spaces provided.

1. Read through the following passage on digestion of carbohydrates, then complete the passage by writing the most appropriate word or words in the spaces provided.

Digestion of carbohydrates begins in the mouth. Saliva, secreted by the ....., contains the enzyme ....., which begins the digestion of starch.

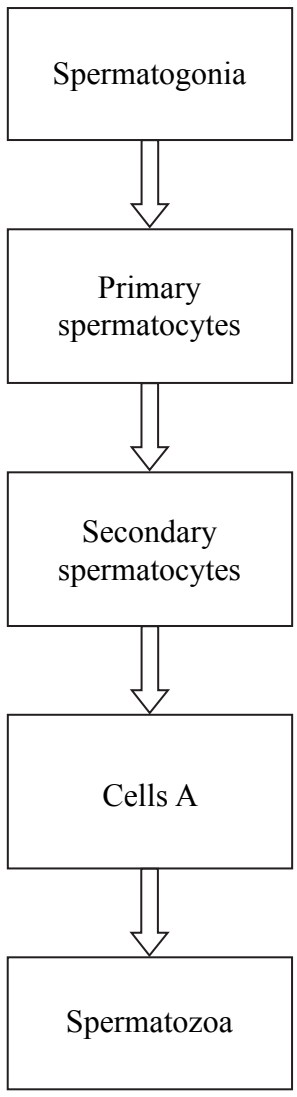
Disaccharides, such as sucrose, are digested in the small intestine by enzymes secreted by the ..... Digestion of sucrose results in the formation of the monosaccharides ..... and .....

(Total 5 marks)

Q1

Leave blank

2. (a) The diagram below shows some of the stages and cells involved in the process of spermatogenesis.



(i) Name **Cells A** shown in the diagram above.

.....

(1)

(ii) State which of the cells named in the diagram are **diploid** (2n).

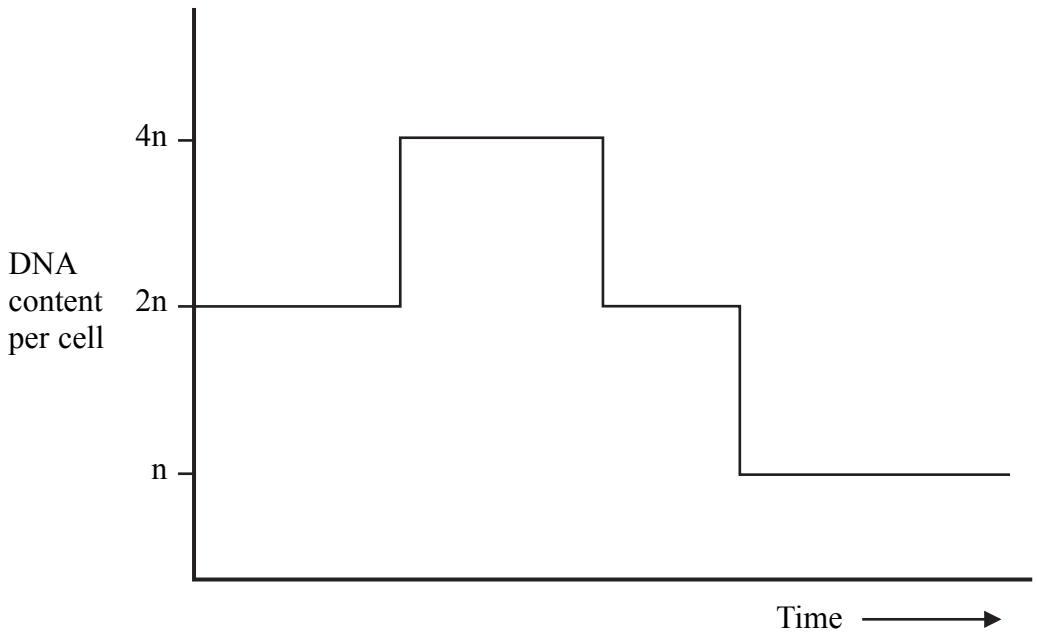
.....

.....

(2)

Leave blank

(b) The graph below shows the changes in the DNA content of cells in the testes, during the formation of spermatozoa.



Name the type of nuclear division shown by the graph and explain why it is important to reduce the DNA content from diploid (2n) to haploid (n), during the formation of spermatozoa.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

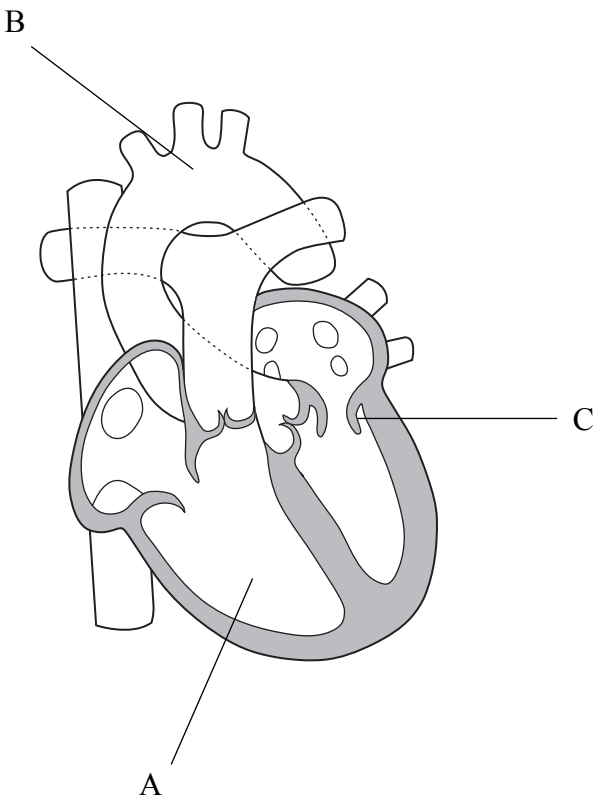
(3)

(Total 6 marks)

Q2

Leave blank

3. (a) The diagram below shows the structure of a heart and associated blood vessels from a mammal.



Name the parts labelled A, B and C.

A .....

B .....

C .....

(3)

Leave blank

(b) Explain what is meant by the term **cardiac cycle**.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

(3)

(c) Heart muscle is described as myogenic. Explain what is meant by the term **myogenic**.

.....

.....

.....

.....

.....

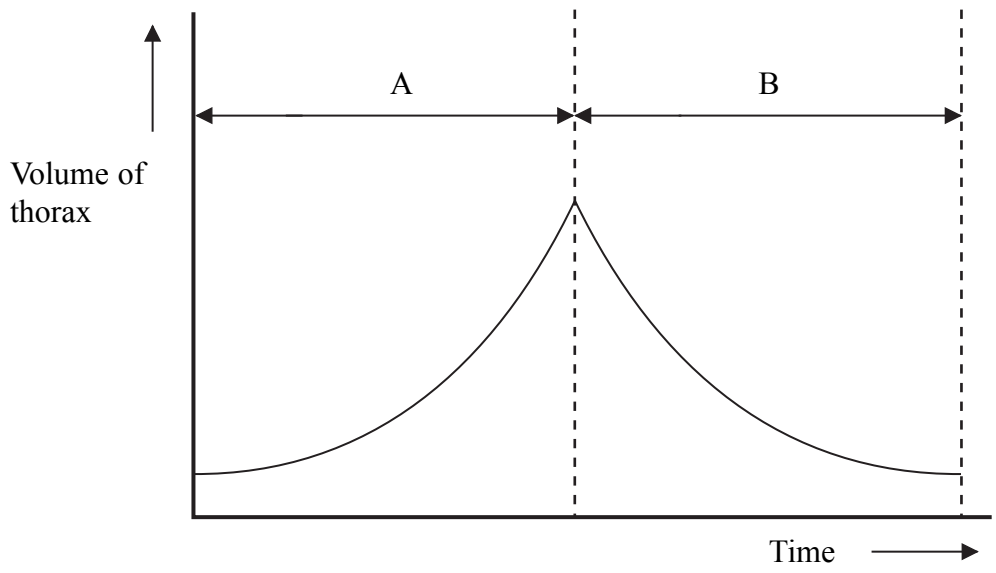
.....

(2) **Q3**

(Total 8 marks)

Leave blank

4. The graph below shows changes in the volume of the thorax during one breath.



(a) State which time period, A or B, represents inspiration.

.....

(1)

(b) Explain how the change in volume of the thorax, during **time period A**, is brought about.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

(4)

Leave blank

(c) Suggest **two** factors that would result in a greater rate and depth of breathing.

1 .....

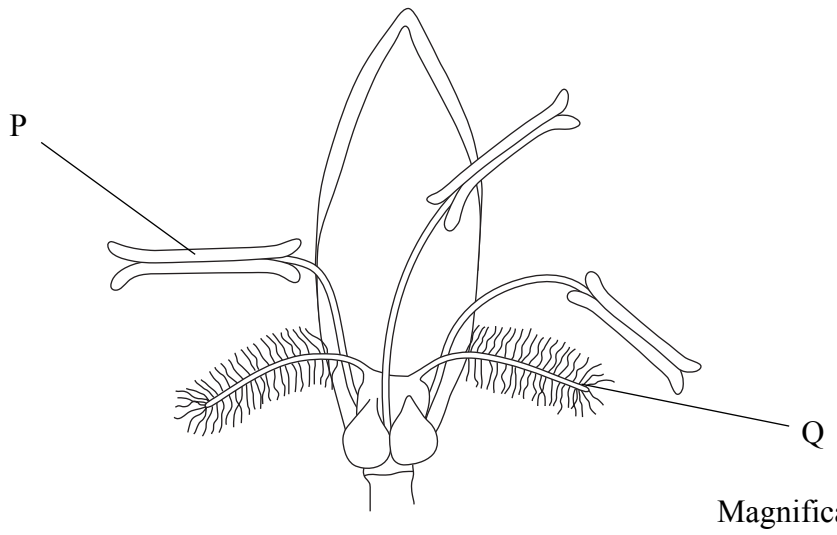
2 .....

(2) **Q4**

(Total 7 marks)

Leave blank

5. The diagram below shows the structure of a grass flower.



Magnification × 10

(a) Name the parts labelled P and Q.

P .....

Q .....

(2)

Leave blank

(b) Suggest how this flower is pollinated, giving reasons for your answer.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

(4)

(c) Suggest **two** ways in which this flower could be adapted to avoid self-pollination.

.....

.....

.....

.....

.....

.....

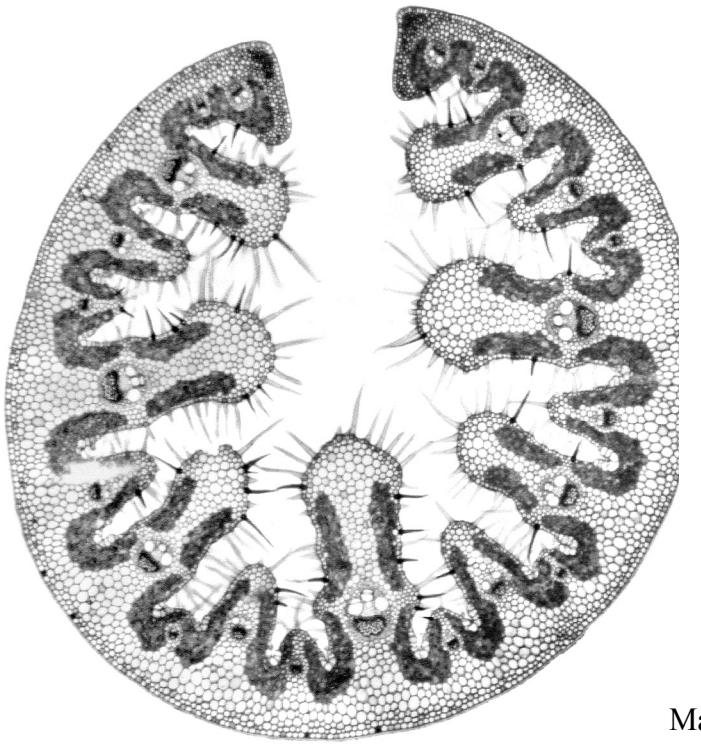
(2)

Q5

(Total 8 marks)

Leave blank

6. The photograph below shows a transverse section through a leaf of *Ammophila*, as seen using a light microscope. *Ammophila* is an example of a plant with xeromorphic adaptations.



Magnification ×40

(a) Explain what is meant by the term **xeromorphic adaptations**.

.....

.....

(1)

Leave blank

(b) Describe and explain **two** features, visible in the photograph, that show how *Ammophila* is adapted to its environment.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

(4)

Q6

(Total 5 marks)

BLANK PAGE

Leave blank

7. (a) Explain how water moves up xylem vessels to the leaves in a flowering plant.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

(3)

Leave blank

(b) An experiment was carried out, using a potometer, to investigate the effect of light intensity and humidity on transpiration of a leafy shoot. The distance moved by the air bubble, along the capillary tube, was recorded every two minutes for a period of twenty minutes.

The results are shown in the table below.

Time / min	Distance moved by the air bubble / mm		
	Exposed to normal light intensity and average humidity	Exposed to high light intensity and average humidity	Exposed to high light intensity and very low humidity
0	0	0	0
2	3	5	11
4	5	7	20
6	8	10	26
8	12	12	35
10	15	15	40
12	17	18	54
14	20	20	60
16	22	24	69
18	25	25	75
20	27	30	85

(i) Describe the relationship between time and the movement of the air bubble when the shoot was exposed to **normal** light intensity and **average** humidity.

.....

.....

.....

.....

.....

.....

(2)

Leave blank

(ii) Suggest an explanation for the difference in the results, at 20 minutes, when the shoot was exposed to high light intensity, but the humidity remained the same.

.....

.....

.....

.....

.....

.....

.....

.....

.....

(3)

(iii) Describe and explain the effect of reducing the humidity on the rate of transpiration, as shown by these results.

.....

.....

.....

.....

.....

.....

.....

.....

.....

(3)

(iv) State **one** environmental factor, other than light intensity and humidity, which should be kept constant during this investigation.

.....

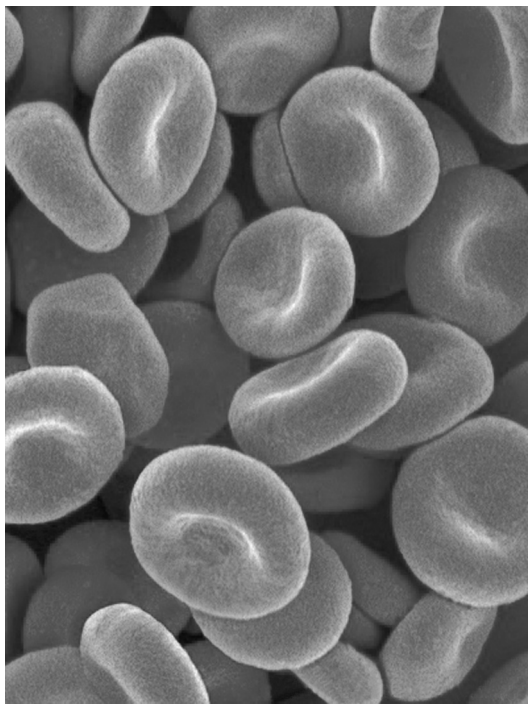
(1)

Q7

(Total 12 marks)

Leave blank

8. The photograph below shows red blood cells as seen using an electron microscope.



Magnification ×3400

Susumu Nishingaga, *Science Photo Library*

(a) Red blood cells transport oxygen from the lungs to all the cells of the body. Describe and explain **two** ways in which these cells are adapted to take up and transport oxygen.

1 .....

.....

.....

.....

2 .....

.....

.....

.....

(4)

Leave blank

(b) Red blood cells are also involved in the transport of **carbon dioxide**. Describe the role of red blood cells in the transport of carbon dioxide.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

(5) **Q8**

(Total 9 marks)

TOTAL FOR PAPER: 60 MARKS

END

BLANK PAGE