

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

Paper Reference(s)

**6112/01**

**Edexcel GCE**

**Biology (Human)**

**Advanced Subsidiary**

**Unit Test 2H**

**Tuesday 3 June 2008 – Morning**

**Time: 1 hour**

Examiner's use only

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Team Leader's use only

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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.

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**Answer ALL questions in the spaces provided.**

1. Read through the following account of the human menstrual cycle, and then write on the dotted lines the most appropriate word or words to complete the account.

At the start of the menstrual cycle, the ..... pituitary gland secretes ....., which stimulates the growth and development of a number of primordial .....

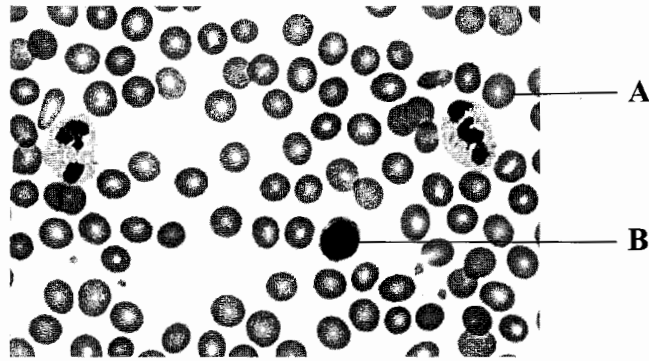
Usually, only one of these reaches full maturity and, on about day 14 of the cycle, this ruptures to release a .....

**(Total 4 marks)**

Q1



2. The photograph below shows human blood cells, as seen using a light microscope.



Magnification  $\times 1000$

(a) Name the cells labelled **A** and **B**.

**A** .....

**B** .....

(2)

(b) Explain how the shape of cell **A** is related to its functions.

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(2)

(c) Describe the roles of leucocytes (white blood cells) in defence against disease.

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(3)

(Total 7 marks)

Q2



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3. Tissue fluid is formed as a result of the blood pressure forcing water and dissolved solutes, such as glucose and mineral ions, out of capillaries.

(a) Explain how the structure of a capillary is related to the formation of tissue fluid.

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(3)

(b) Suggest why proteins are present in the plasma but are not normally present in tissue fluid.

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(2)

(c) Tissue fluid is reabsorbed back into capillaries as a result of the osmotic effect of the plasma proteins. Suggest why this reabsorption is reduced in a person on a protein-deficient diet.

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(2)

(Total 7 marks)

Q3



4. (a) Describe how starch is digested in humans.

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(3)

(b) Most of the absorption of monosaccharides occurs in the small intestine. The small intestine has a number of features to increase the efficiency of absorption. Explain how each of the following assists in the uptake of monosaccharides.

(i) Presence of a highly-folded mucosa

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(2)

(ii) Presence of capillaries within the villi

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(2)



(c) The table below shows the relative rates of absorption of three monosaccharides, galactose, glucose and fructose.

Monosaccharides	Relative rates of absorption (compared with glucose)
Fructose	0.4
Galactose	1.1
Glucose	1.0

(i) Compare the rates of absorption of these three monosaccharides.

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(2)

(ii) Suggest a reason for the difference between the rates of absorption of glucose and fructose.

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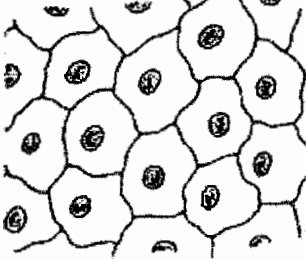
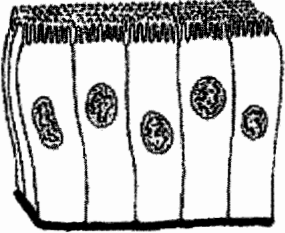
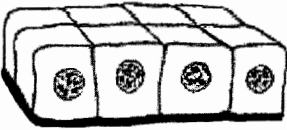
(1)

(Total 10 marks)

Q4



5. The diagrams below show the structures of three different types of epithelia. Complete the table by naming each type of epithelium and giving **one** location in the body for each type.

Epithelia	Name	One location
		
		
		

(Total 6 marks)

Q5





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6. (a) At high environmental temperatures, the rate of sweating in humans increases. Explain how sweating is involved in the regulation of body temperature.

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(2)

- (b) In an investigation, a healthy volunteer measured his body temperature. After 5 minutes, he got into a bath of water at a temperature of 18 °C. He stayed in the bath for 10 minutes, then got out and sat on a chair. During the investigation, he recorded his body temperature at regular time intervals.

The results of this investigation are shown in the table below.

Time / min	Activity	Body temperature / °C
0	Started investigation	37.0
5	Got into bath	36.9
10	Lying in bath	36.7
15	Got out of bath	36.5
20	Sitting on a chair	36.8
25	Sitting on a chair	37.0

- (i) Describe the changes in body temperature that occurred during this investigation.

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(3)



(ii) Suggest explanations for the changes in body temperature that occurred between the following time intervals.

5 to 10 minutes

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15 to 25 minutes

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(3)

(Total 8 marks)

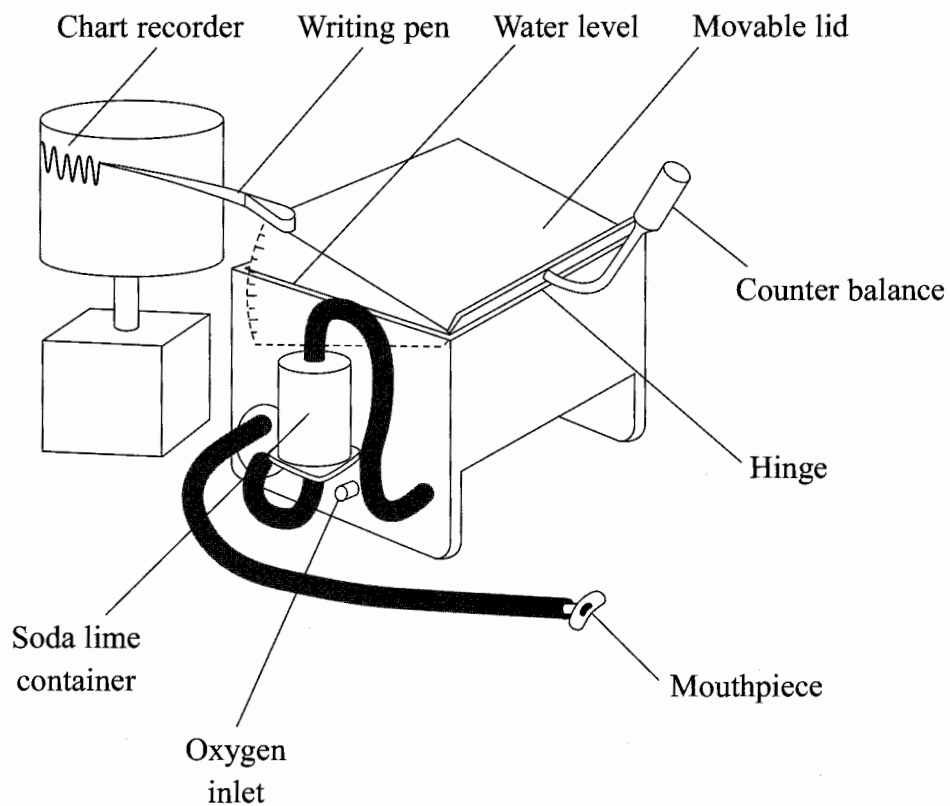
Q6



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7. (a) The diagram below shows the structure of a spirometer, which can be used to measure lung volumes in humans.



(i) Explain the importance of the soda lime in the spirometer.

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(2)



(ii) Suggest how you could use this spirometer to measure the **vital capacity** of a person.

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(3)

(b) An investigation was carried out into the effect of cycling speed on the breathing rate of a healthy student. In this investigation, an exercise bicycle was used.

The breathing rate of the student was measured at rest. He then cycled at 10 km per hour for 2 minutes and, immediately after, his breathing rate was recorded. He rested for 5 minutes, before cycling at 15 km per hour for 2 minutes, after which his breathing rate was again measured.

This investigation was repeated at cycling speeds of 20 and 25 km per hour. The student rested for 5 minutes between each period of cycling.

The results are shown in the table below.

Cycling speed / km h <sup>-1</sup>	Breathing rate / breaths min <sup>-1</sup>
0 (rest)	12
10	14
15	17
20	20
25	27



- (i) Calculate the percentage increase in breathing rate, as the cycling speed increased from 10 km per hour to 25 km per hour. Show your working.

Answer = ..... %  
**(2)**

- (ii) Suggest an explanation for these results.

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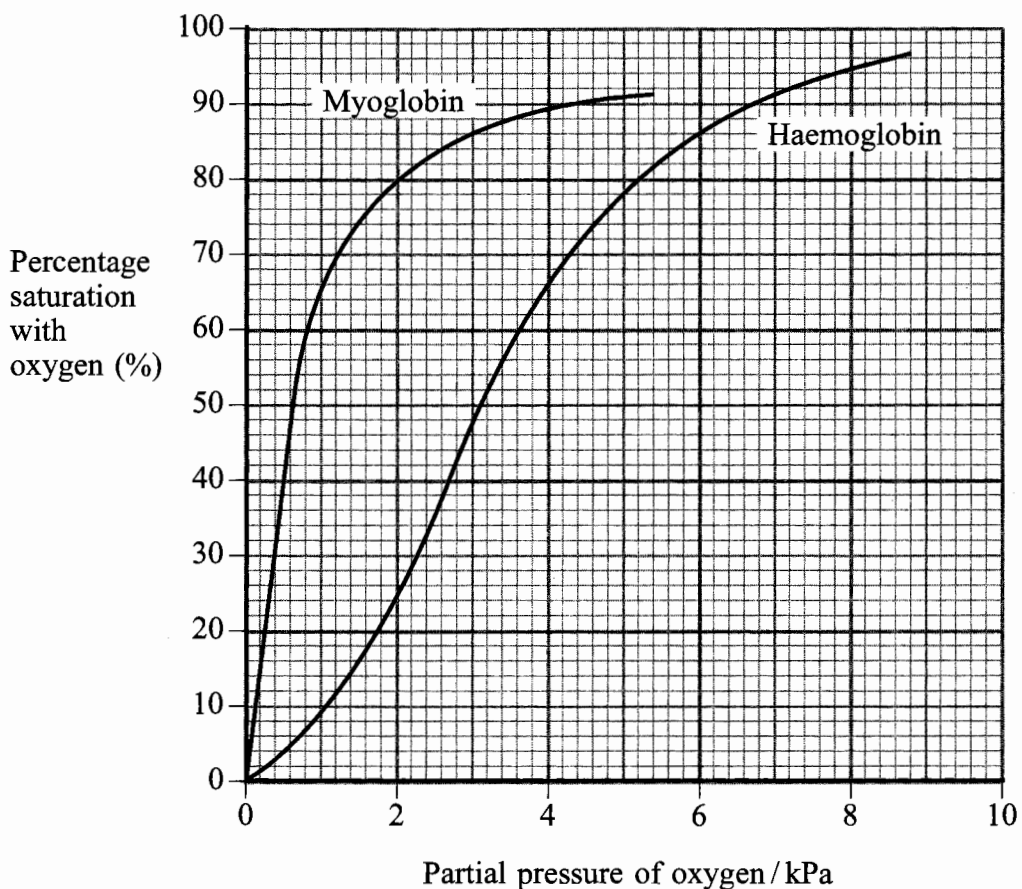
**(2)**

**(Total 9 marks)**

**Q7**



8. (a) The graph below shows oxygen dissociation curves for human myoglobin and human haemoglobin.



From the graph, find the partial pressure of oxygen at which myoglobin and haemoglobin are 50% saturated with oxygen.

(i) Myoglobin ..... kPa (1)

(ii) Haemoglobin ..... kPa (1)





(b) Describe the role of **myoglobin**.

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(3)

(c) At increased partial pressures of carbon dioxide, the oxygen dissociation curve for haemoglobin moves to the right. This is known as the Bohr effect.

Explain the importance of the Bohr effect.

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(4)

Q8

(Total 9 marks)

**TOTAL FOR PAPER: 60 MARKS**

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