



**BOTSWANA EXAMINATIONS COUNCIL**  
 in collaboration with  
**UNIVERSITY OF CAMBRIDGE LOCAL EXAMINATIONS SYNDICATE**  
 Botswana General Certificate of Secondary Education

LEVELATION

CANDIDATE  
NAME

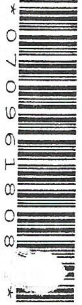
[Empty box for Candidate Name]

CENTRE  
NUMBER

B	W	8	0	3
---	---	---	---	---

CANDIDATE  
NUMBER

[ ]	[ ]	[ ]	[ ]
-----	-----	-----	-----



**BIOLOGY**

Paper 3

0572/03

October/November 2010

1 hour 15 minutes

Additional Materials: Answer Paper

**Read the following carefully before you start.**

Write your Centre number, candidate number and name in the spaces provided at the top of this page.  
**DO NOT WRITE IN ANY BARCODES.**

**Section A**

Answer **all** questions.

Write your answers in the spaces provided on the question paper.

**Section B**

Answer **both** questions.

Write your answers on the separate answer paper provided.

Write your Centre number, candidate number and name on each sheet of answer paper you use.

At the end of the examination fasten all sheets of answer paper to this question paper using the string provided.

You may use a calculator.

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

The number of marks is given in brackets [ ] at the end of each question or part question.

You are advised to spend no longer than 40 minutes on Section A.

For Examiner's Use	
<b>Section A</b>	
1	
2	
3	
4	
5	
<b>Section B</b>	
6	
7	
<b>TOTAL</b>	

This document consists of **10** printed pages and **2** blank pages.

## Section A

Answer **all** the questions in this section in the spaces provided.

- 1 Fig. 1.1 shows apparatus used to investigate movement of molecules across Visking tubing.

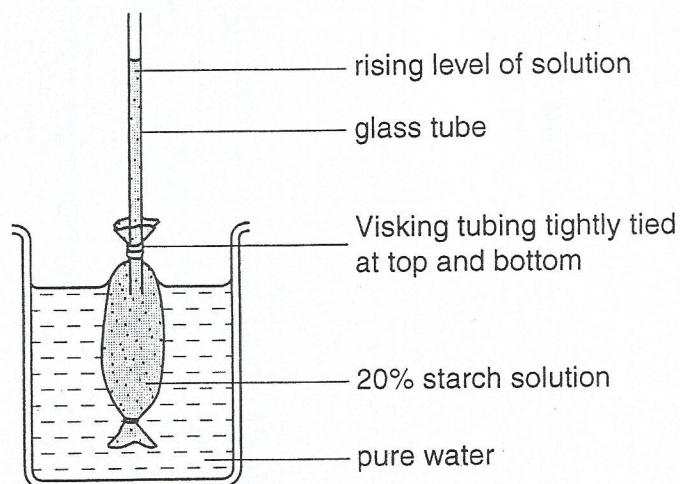


Fig. 1.1

The investigation was carried out three times using liquids of different concentrations. The level of the liquid in the glass tube was recorded at the start and at the end of the investigation (after 40 minutes). The results are shown in Table 1.1.

Table 1.1

experiment	contents of beaker	contents of Visking tubing	level of liquid in the glass tube /mm	
			start	end
1	distilled water	20% starch solution	50	100
2	2% starch solution	20% starch solution	50	75
3	distilled water	20% starch solution and 2% amylase (enzyme)	50	50

(c) Explain the difference in the levels of liquids in the glass tubes of experiment 2 and 3.

.....

.....

.....

.....

.....

..... [4]

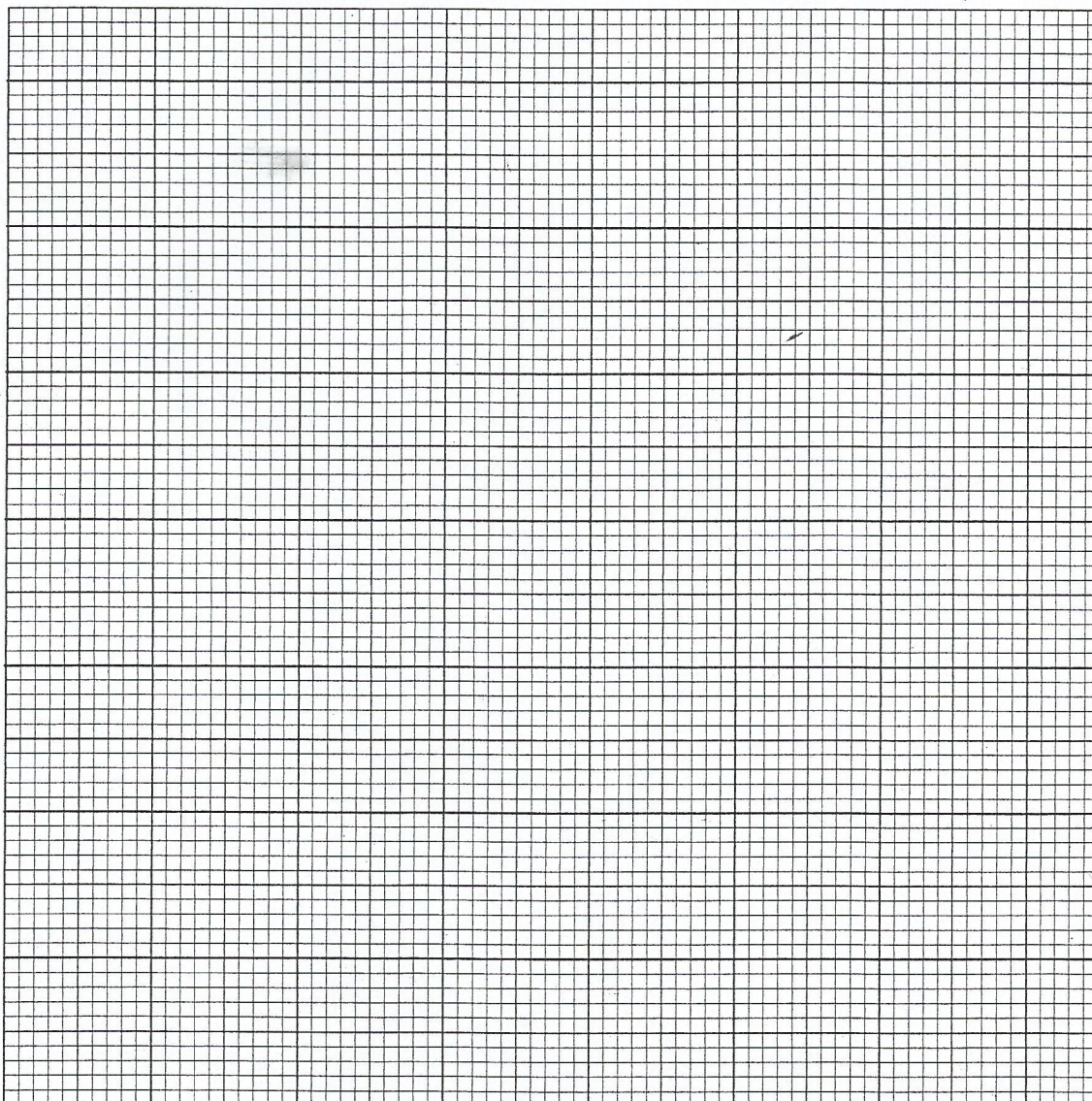
[Total: 9]

- 2 Table 2.1 shows transpiration rates of the same group of plants under different environmental conditions of temperature and relative humidity.

**Table 2.1**

air temperature/°C	transpiration rate /mg water per min	
	20% relative humidity	70% relative humidity
5	15	5
10	19	7
20	23	8
25	26	10
30	29	11

- (a) Use the information in Table 2.1 to plot a graph on the grid provided showing the effect of temperature on transpiration rate at 20% and 70% relative humidity.



[5]

(b) (i) Using your graph, describe the effect of relative humidity on the rate of transpiration.

.....  
.....[1]

(ii) Giving evidence from your graph, describe how the change in temperature affects transpiration rate at 20% and 70% relative humidity.

.....  
.....  
.....[2]

[Total: 8]

3 Fig. 3.1 shows the human brain.

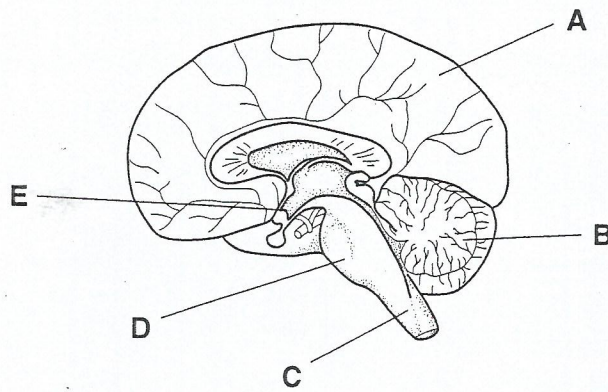


Fig. 3.1

(a) Give the part of the brain, A–E, which is responsible for:

(i) intelligence and memory,

A  
.....

(ii) controlling heart beat and breathing rate.

.....[2]

(b) Name part B and suggest how its damage would affect the body.

B: .....

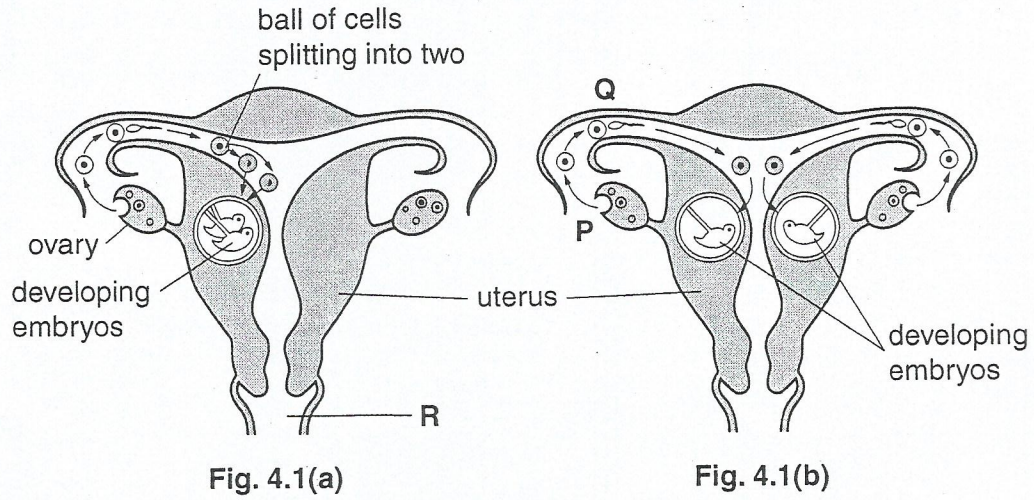
effect: .....

.....[2]

[Total: 4]

- 4 Fig. 4.1 shows diagrams of the female reproductive system showing changes leading to two different methods of forming twins.

Fig. 4.1



- (a) Complete Table 4.1 by:
- (i) naming the two types of twins shown by Fig. 4.1(a) and Fig. 4.1(b);
  - (ii) describing **two** differences between these two types of twins.

Table 4.1

	Fig. 4.1 (a)	Fig. 4.1 (b)
(i)	.....	.....
(ii)	1. ....	1. ....
	.....	.....
	2. ....	2. ....
	.....	.....

[4]

(b) Identify structure **R** in Fig. 4.1(a) and state its function.

structure: .....

function: .....

..... [2]

(c) State the processes taking place at **P** and **Q** on Fig. 4.1(b).

**P** .....

**Q** ..... [2]

(d) During pregnancy, the placenta performs functions of the lungs and digestive system for the foetus.

Describe how the placenta functions as:

(i) lungs .....

.....

.....

.....

(ii) digestive system. ....

.....

.....

..... [3]

[Total: 11]

5 Fig. 5.1 shows different stages of meiosis in an animal cell.

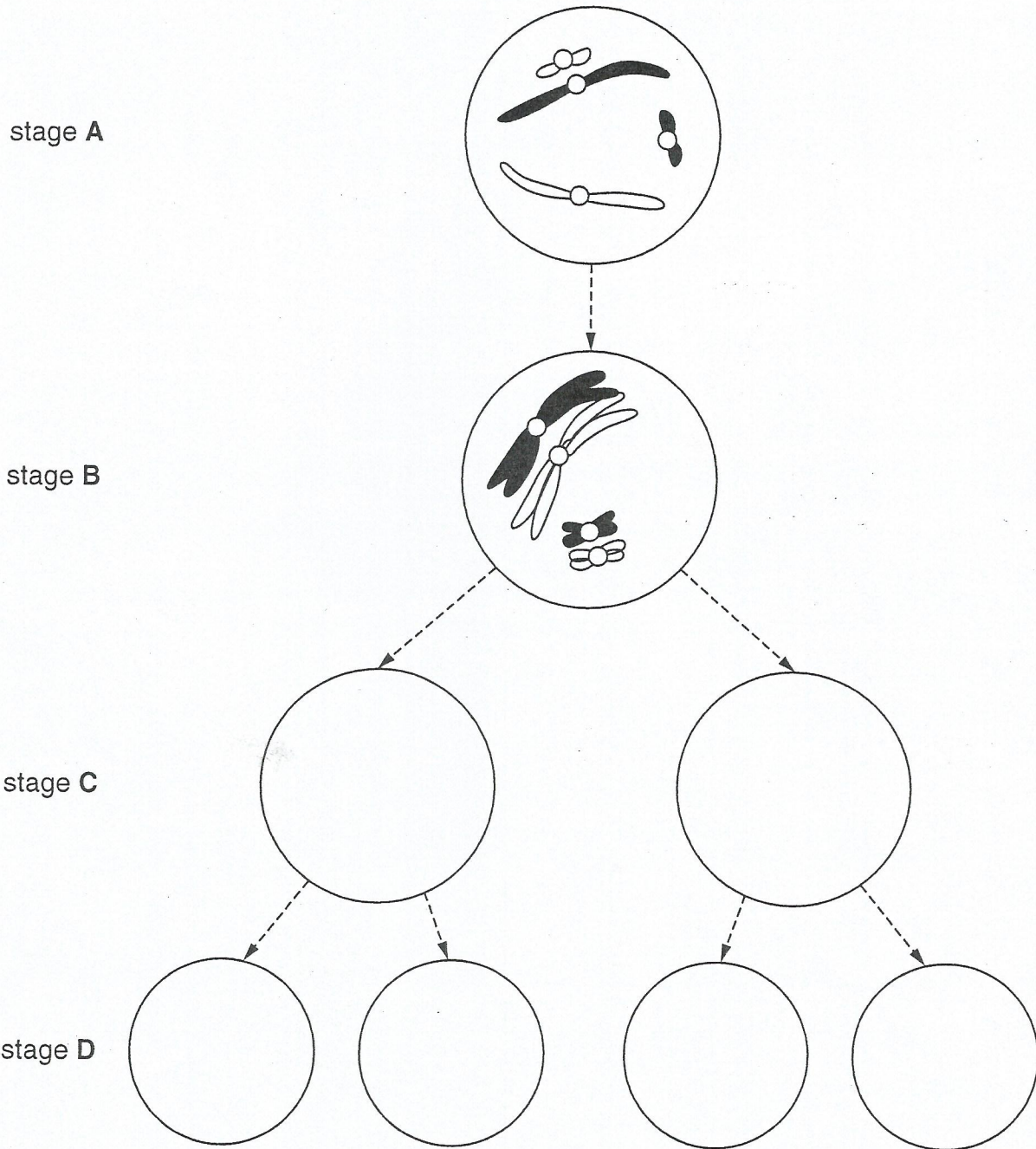


Fig. 5.1

(a) State the diploid number of chromosomes of the animal cell in stage **A**.

.....[1]

(b) Suggest a name of an organ in a mammal, where the different stages of meiosis shown in Fig. 5.1 take place.

.....[1]

(c) Name the stage of cell division shown at **B** and give **one** reason for your answer.

.....  
.....[2]

(d) On Fig. 5.1, draw the chromosomes that could be found in all cells at stages **C** and **D**. The drawing should distinguish the different chromosomes clearly by size and shading as shown in stages **A** and **B**. [4]

[Total: 8]

## Section B

Answer **both** questions.

Write your answers on the separate answer paper provided.

- 6 (a) Define *homeostasis*. [2]
- (b) Describe the role of the following organs of the body in homeostasis.
- (i) Liver, [4]
- (ii) Skin. [9]

[Total: 15]

- 7 Fig. 7.1 shows places labelled 1 and 2, where some activities which affect the environment occur.

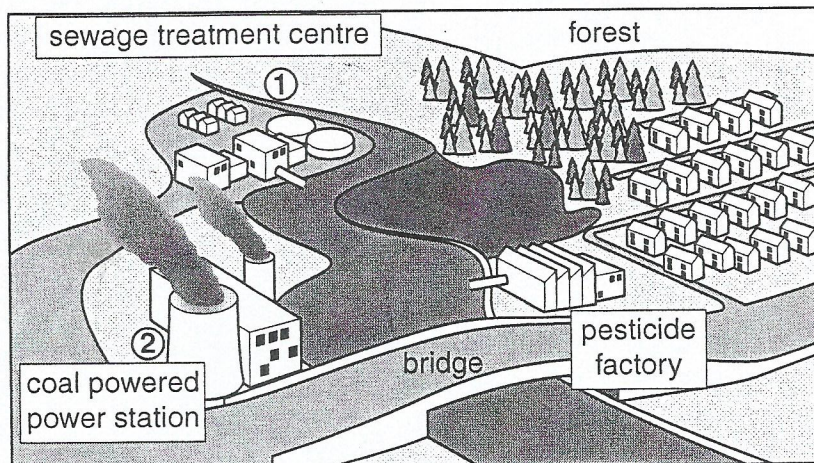


Fig. 7.1

- (a) Define *pollution*. [2]
- (b) Describe the harmful effects on the environment of activities taking place at 1 and 2 in Fig. 7.1. [13]

[Total: 15]