

Centre Number	Candidate Number	Name
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MINISTRY OF EDUCATION, BOTSWANA
 in collaboration with
 UNIVERSITY OF CAMBRIDGE LOCAL EXAMINATIONS SYNDICATE
Botswana General Certificate of Secondary Education

BIOLOGY **0572/03**
 Paper 3 October/November 2005

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.

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.
 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.

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For Examiner's Use	
Section A	
Section B	
6	
7	
TOTAL	

Section A

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

1 Fig. 1.1 shows cells found in the lining of the trachea.

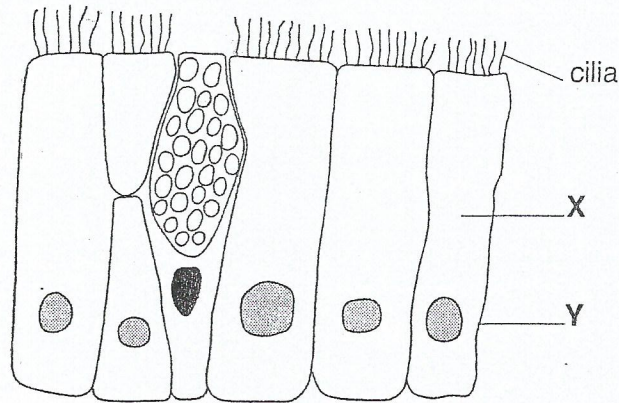


Fig. 1.1

(a) Identify structures X and Y.

X

Y

[2]

(b) (i) State the function of structure Y.

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

(ii) Describe the function of the cilia in Fig. 1.1.

.....
.....
..... [3]

[Total: 6]

- 2 Fig. 2.1 shows a set up used to investigate the movement of a growth hormone on the tip of a plant shoot. The tip was placed on an agar block separated into sides **A** and **B** by an impermeable sheet and illuminated from one side.

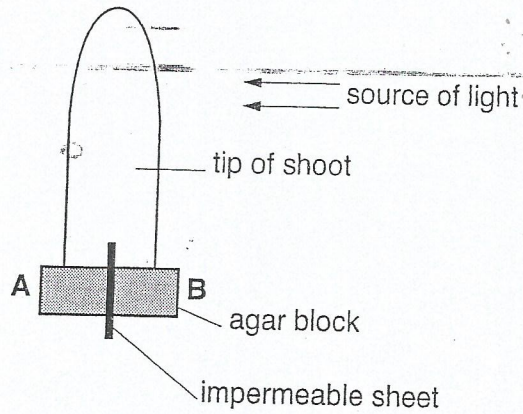


Fig. 2.1

- (a) (i) Which side of the agar block will have the highest concentration of the hormone?

..... [1]

- (ii) Explain your answer in (i).

.....
 [2]

- (b) Side **A** of the block was then placed on a shoot with its tip removed as shown in Fig. 2.2.

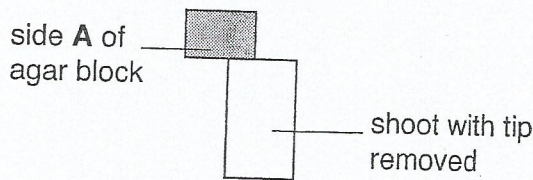


Fig. 2.2

Explain what would happen to the shoot.

.....

 [3]

[Total: 6]

3 Fig. 3.1 shows part of the mammalian placenta and the umbilical cord.

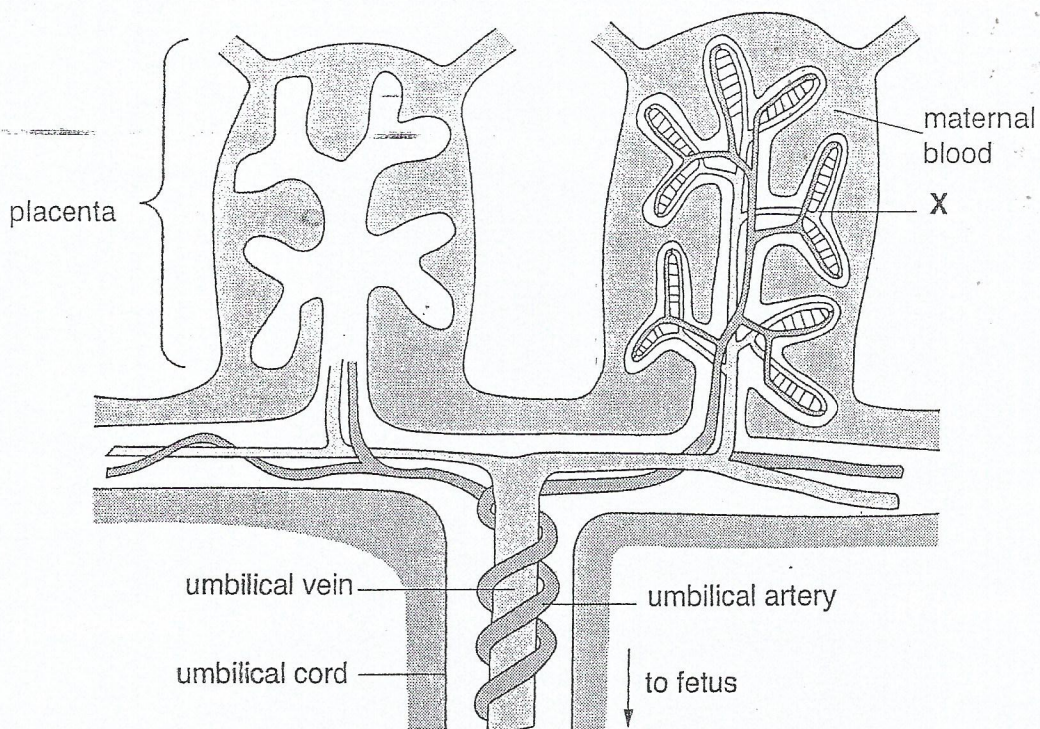


Fig. 3.1

(a) State **two** substances which are at a higher concentration in the umbilical vein than in the umbilical artery.

.....
.....

[2]

(b) What type of blood vessel is X?

..... [1]

(c) Name the substance which is likely to pass across the placenta to the fetus of a mother who smokes while pregnant.

..... [1]

(d) (i) State any **three** advantages of breast-feeding.

.....
.....
..... [3]

(ii) Suggest **one** disadvantage of breast-feeding.

..... [1]

(iii) Explain why the need for iron in the diet is high in pregnant women.

.....
.....
.....
..... [3]

[Total: 11]

- 4 Fig. 4.1 shows a shoot cut while held in a dye solution. The cut ends were left submerged for 10 minutes in direct sunlight. When examined, the dye had moved away from the two cut surfaces in the directions indicated by the arrows.

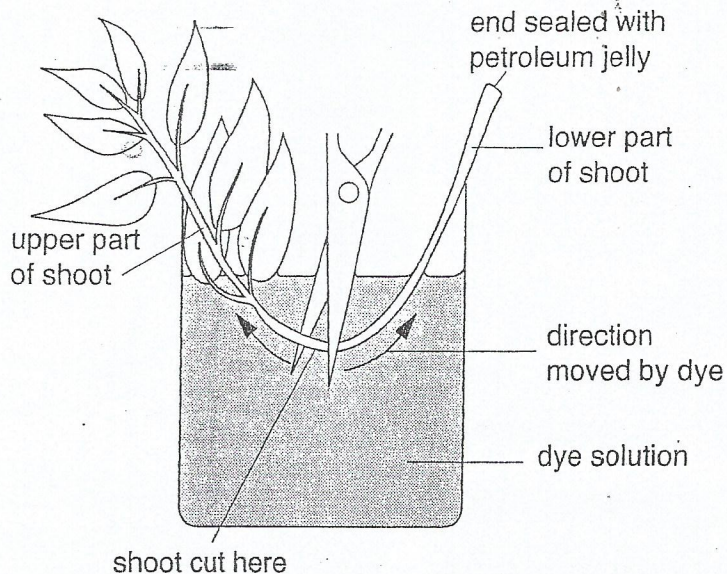


Fig. 4.1

- (a) Name the tissue through which the dye has moved.

..... [1]

- (b) (i) Which part of the shoot will have more movement of the dye?

..... [1]

- (ii) Explain your answer in (i).

.....

 [3]

- (c) Suggest why the shoot was cut under the dye solution.

.....
 [2]

(d) Fig. 4.2 shows a section through the leaf of a desert plant.

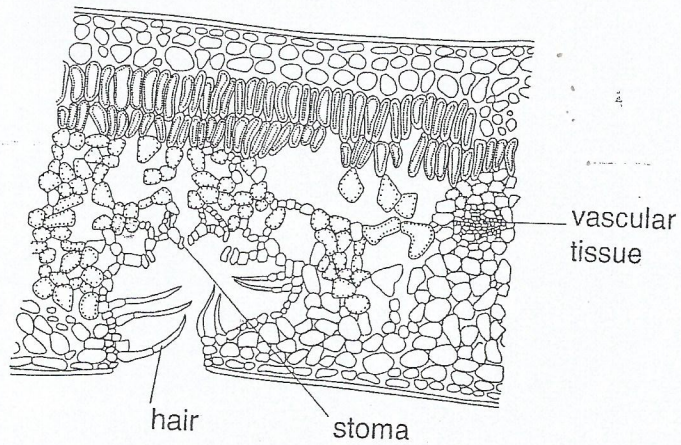


Fig. 4.2

In Table 4.1, identify **three** features that would reduce water loss and explain how each feature is able to do so.

Table 4.1

feature	explanation
1.	
2.	
3.	

[6]

[Total: 13]

5 Fig. 5.1 shows a generalised diagram of a virus.

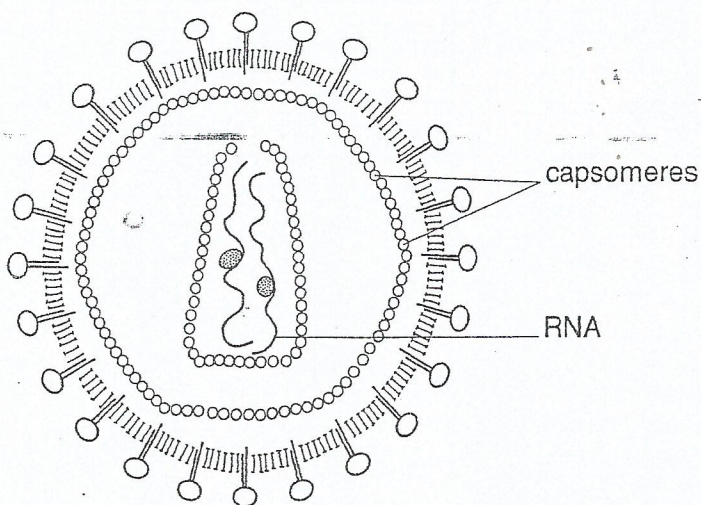


Fig. 5.1

(a) Which structure is formed by the capsomeres?

.....

[1]

(b) State four reasons why viruses are not considered as cells but just particles.

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

[4]

[Total: 5]

Section B

Answer **both** questions.

Write your answers on separate sheets of paper provided.

- 6 (a) Distinguish between the terms *producers* and *consumers*. [2]
- (b) Discuss why only a small proportion of the energy in sunlight reaching the surface of the earth reaches the top carnivores in food chains. [6]
- (c) Describe how deforestation can lead to:
- (i) global warming
 - (ii) reduced soil fertility

[7]

[Total: 15]

- 7 (a) Discuss leukaemia in terms of:
- (i) cause, [2]
 - (ii) symptoms [2]
 - (iii) and treatment. [1]
- (b) (i) Explain how the treatment of leukaemia may increase the chances of HIV/AIDS transmission. [2]
- (ii) State how drug abuse may increase the spread of HIV/AIDS. [2]
- (c) (i) Using examples, describe allergic reactions. [4]
- (ii) Distinguish between medicinal and non-medicinal drugs. [2]

[Total: 15]