

FORM TP 2020002



TEST CODE 01207020

JANUARY 2020

CARIBBEAN EXAMINATIONS COUNCIL

CARIBBEAN SECONDARY EDUCATION CERTIFICATE®

EXAMINATION

BIOLOGY

Paper 02 – General Proficiency

2 hours 30 minutes

READ THE FOLLOWING INSTRUCTIONS CAREFULLY.

1. This paper consists of SIX questions in two sections. Answer ALL questions.
2. Write your answers in the spaces provided in this booklet.
3. DO NOT write in the margins.
4. Where appropriate, answers should be illustrated by diagrams.
5. If you need to rewrite any answer and there is not enough space to do so on the original page, you must use the extra lined page(s) provided at the back of this booklet. **Remember to draw a line through your original answer.**
6. If you use the extra page(s), you **MUST** write the question number clearly in the box provided at the top of the extra page(s) and, where relevant, include the question part beside the answer.

DO NOT TURN THIS PAGE UNTIL YOU ARE TOLD TO DO SO.

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SECTION A

Answer ALL questions.

Write your answers in the spaces provided in this booklet.

1. (a) (i) Briefly describe the process of transpiration in plants. Your description must include the names of TWO of the organs involved in transpiration.

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(4 marks)

- (ii) An experiment was carried out to determine the effect of relative humidity (RH) on the rate of transpiration. The results are presented in Table 1. Use the grid on page 5 to draw a graph of the results.

TABLE 1: THE EFFECT OF RELATIVE HUMIDITY ON THE RATE OF TRANSPIRATION

Relative Humidity (%)	Rate of Transpiration (mg/cm ² /h)
10	25
20	25
30	25
40	20
50	15
60	12
70	10
80	8
90	5
100	5

(9 marks)



(iii) Using the results from Table 1, state how the rate of transpiration changes as the relative humidity changes.

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(1 mark)

(iv) Suggest TWO ways by which the results given in Table 1 support your answer in (a) (iii).

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(2 marks)

(v) A farmer observed that his plants wilted during the day but recovered at night. Suggest to the farmer ONE reason for this occurrence.

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(1 mark)



2. (a) (i) Figure 1 shows the internal structures of a generalized plant cell.

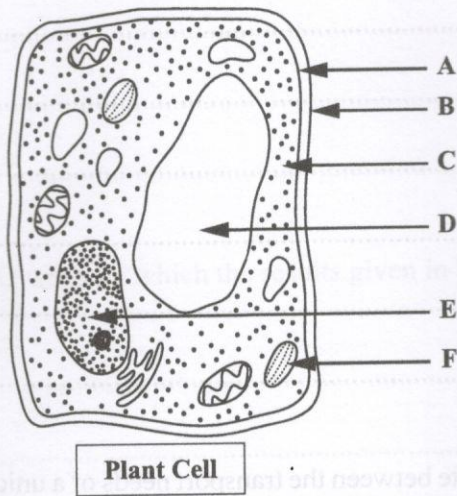


Figure 1. Diagram of the internal structures of a generalized plant cell

Name EACH of the structures labelled A, B, C, D, E and F.

- A
- B
- C
- D
- E
- F

(6 mark)



3. Figure 2 shows a boy reading a book under a tree while his friends play in the distance.

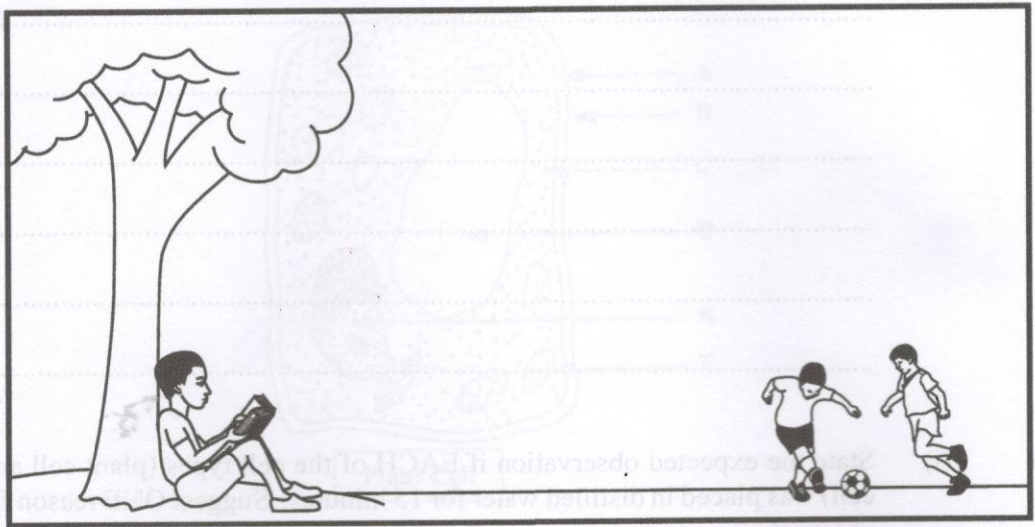


Figure 2. Diagram of boy reading a book with his friends playing in the distance

(a) Describe the process by which the structure of the boy's eye will allow him to

(i) read the book

(3 marks)

Total 15 marks

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(ii) John is nearsighted but his sister Mary has normal vision. What would cause John's sight to be different from Mary's?

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(2 marks)

(iii) How would wearing corrective lenses/glasses allow John to see objects as clearly as Mary?

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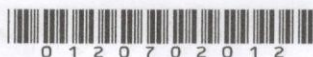
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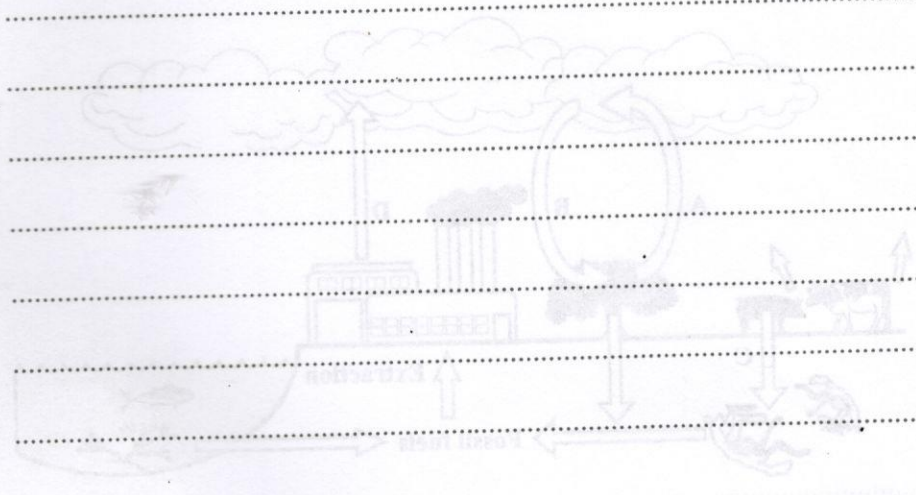


- (c) Explain why the appearance of the boy's eyes while seated under the shade of the tree would be different if he is seated in the sun.

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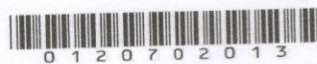
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(4 marks)

Total 15 marks

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SECTION B

Answer ALL questions.

Write your answers in the spaces provided in this booklet.

4. Figure 3 is a simplified diagram of the carbon cycle.

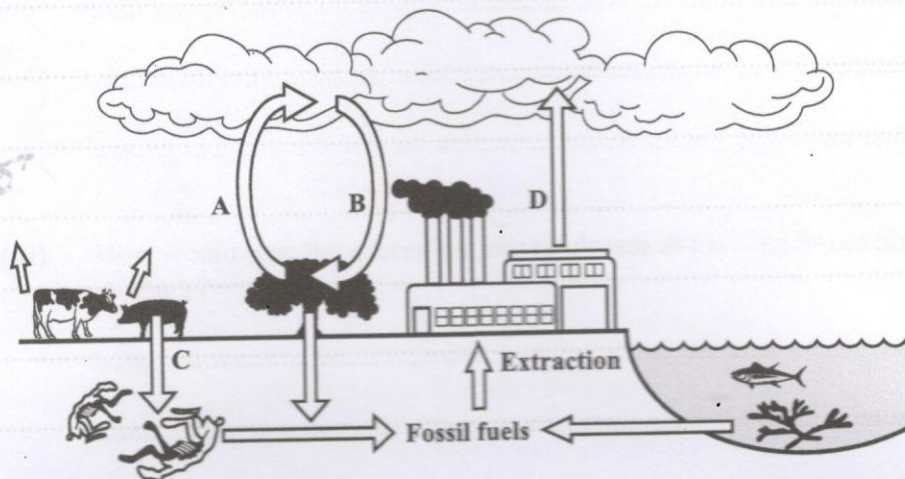


Figure 3. The carbon cycle

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

A

B

C

D

(4 marks)



(b) Explain how vaccination works to prevent persons from becoming ill with yellow fever.

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Disease	Transmission	Characteristic
(1)	(1)	(1)
(1)	(1)	(1)
(1)	(1)	(1)

(3 marks)

(6 marks)



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(c) Persons with the inherited condition albinism do not produce the pigment (melanin) that gives the skin its dark colour.

(i) Using the symbols **A** to represent a normal allele and **a** to represent the albino allele, draw a genetic diagram to illustrate how two heterozygous parents could produce an albino child.

(ii) Identify the genotype of the albino child.

(iii) State the probability of the albino child being produced.

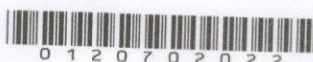
(6 marks)

Total 15 marks

END OF TEST

IF YOU FINISH BEFORE TIME IS CALLED, CHECK YOUR WORK ON THIS TEST.

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