

FORM TP 2016133



TEST CODE **02102020**

MAY/JUNE 2016

CARIBBEAN EXAMINATIONS COUNCIL

CARIBBEAN ADVANCED PROFICIENCY EXAMINATION®

AGRICULTURAL SCIENCE

UNIT 1 – Paper 02

*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. You may use a silent, non-programmable calculator to answer questions.
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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02102020/CAPE 2016

Barcode Area  
Sequential Bar Code

SECTION A

Answer ALL questions.

1. (a) Figure 1 depicts a particular active transport mechanism in which specific ions are bound and released.

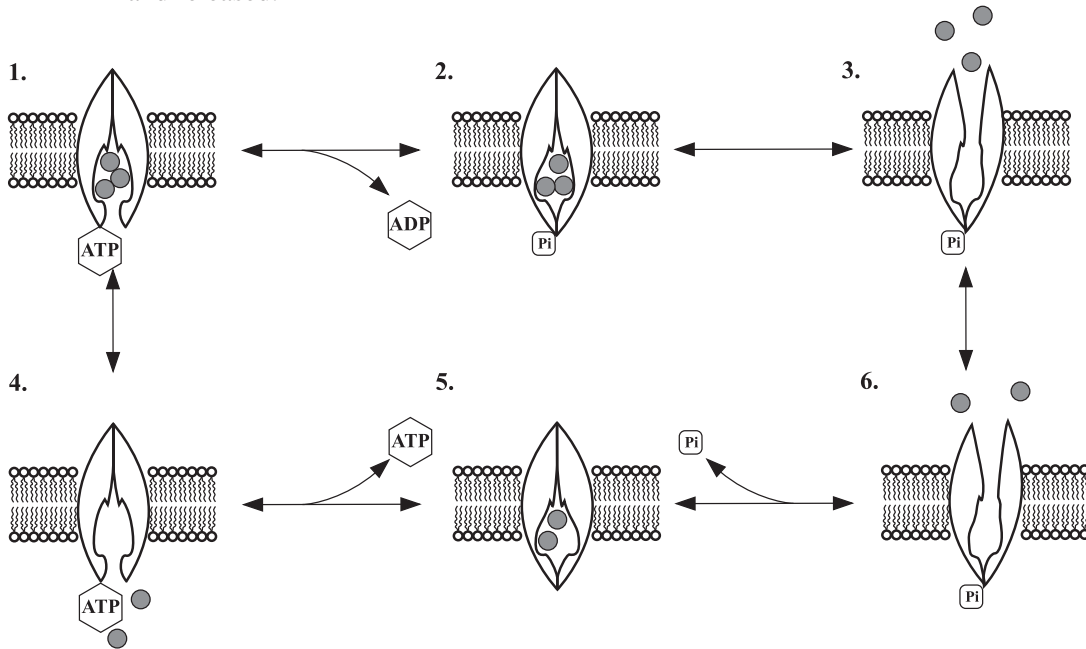


Figure 1. Diagrammatic representation of an active transport mechanism

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- (i) Name the active transport mechanism shown in Figure 1.

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[1 mark]

- (ii) Describe the activities at 1, 2, 3, 4, 5 and 6 in Figure 1.

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2. ....  
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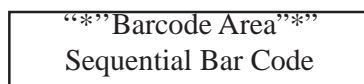
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6. ....  
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[6 marks]

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(b) (i) Name the photosynthetic process which occurs in the stroma of the chloroplast.

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[1 mark]

(ii) What is the difference between cyclic and noncyclic photophosphorylation?

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[2 marks]

(iii) Briefly explain why the Calvin cycle requires ATP and CO<sub>2</sub>.

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[2 marks]

(c) (i) Explain why photosynthesis is faster in C4 plants than in C3 plants.

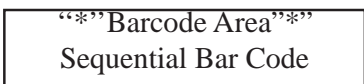
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[2 marks]

(ii) Why do C4 plants have better water use efficiency than C3 plants under high light intensity and high temperatures?

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[1 mark]

**Total 15 marks**

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2. There are several gated communities developing throughout the islands of the Caribbean. The attractions of these modern dwelling centres are the green spaces, which include rooftop farming, and other urban and peri-urban agriculture practices. In many instances, natural flora is destroyed to establish the gated communities.

(a) Explain TWO ways, other than aesthetic value, in which green spaces may contribute to the environment.

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**[4 marks]**

(b) Describe TWO factors that should be considered when choosing a site for a rooftop garden.

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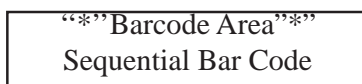
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**[4 marks]**

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- (c) Explain TWO economic benefits of rooftop farming.

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**[4 marks]**

- (d) Suggest THREE aesthetic values that families in the gated communities derive from the rooftop farming.

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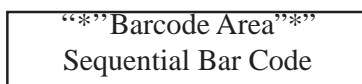
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**[3 marks]**

**Total 15 marks**

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3. (a) State what is meant by a 'transgenic organism'.

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[1 mark]

(b) Explain TWO disadvantages of genetically modified organisms (GMOs).

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[4 marks]

(c) Identify FOUR advantages of GMOs.

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[4 marks]

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