FORM TP 2018084

TEST CODE 01230020

MAY/JUNE 2018

CARIBBEAN EXAMINATIONS COUNCIL

CARIBBEAN SECONDARY EDUCATION CERTIFICATE® EXAMINATION

INTEGRATED SCIENCE

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 answer 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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"*"Barcode Area"*"
Sequential Bar Code

SECTION A

Answer ALL questions.

1. (a) Name TWO methods, **other than** conduction, by which heat is transferred from one object to another.

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(2 marks)

(b) (i) Leana uses natural outdoor conditions to dry her clothes after washing. State THREE **weather** conditions that will most likely cause the fastest drying time for the clothes.

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(3 marks)

(ii) Why does a wet towel dry faster when it is open than when it is left rolled up in a ball?

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(2 marks)

(c) When Leana visits her grandmother's house, she notices that there is a row of vents at the top of each wall. She learns that this provides natural ventilation. Explain how natural ventilation cools the house.

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(3 marks)

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(d) Leana lives in an air-conditioned apartment in an urban area in the Caribbean. Explain what would most likely occur if she does not open the windows when the air-condition unit stops working.

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(4 marks)

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(e) A teacher uses the equipment in Figure 1 to demonstrate conduction in a metal rod. She places small drops of wax to hold pins in place at various distances from the flame.

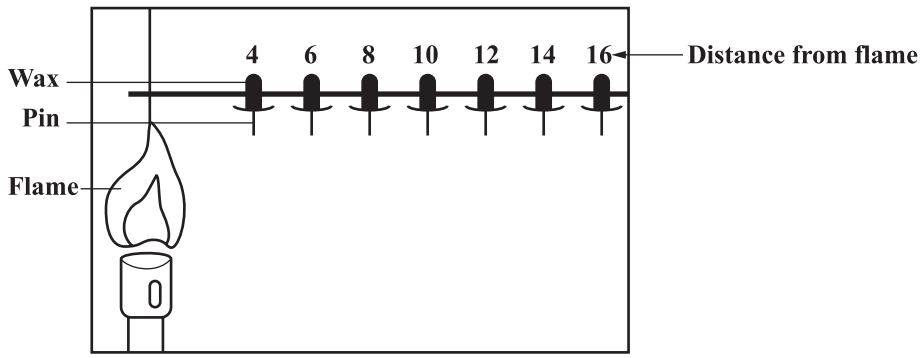


Figure 1. Diagram showing conduction in a metal rod

As the heat is conducted along the rod, it melts the wax and the pins drop to the ground. The data collected are recorded in Table 1.

TABLE 1: DATA COLLECTED FROM EXPERIMENT

Distance from Flame (cm)	4	6	8	10	12	14	16
Time Taken for Pin to Drop (minutes)	1.00	1.60	2.10	2.70	3.30	4.00	4.50

(i) On the grid provided in Figure 2 **on page 7**, plot the data in Table 1. **(4 marks)**

(ii) On Figure 2, draw the best straight line to show the trend. Extend this line to the *x*-axis. **(2 marks)**

(iii) Label the axes on the graph. **(2 marks)**

(iv) State an appropriate title for the graph.

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(1 mark)

(v) From the graph, determine the distance travelled by the heat

after three minutes .....

(1 mark)

when the timing started .....

(1 mark)

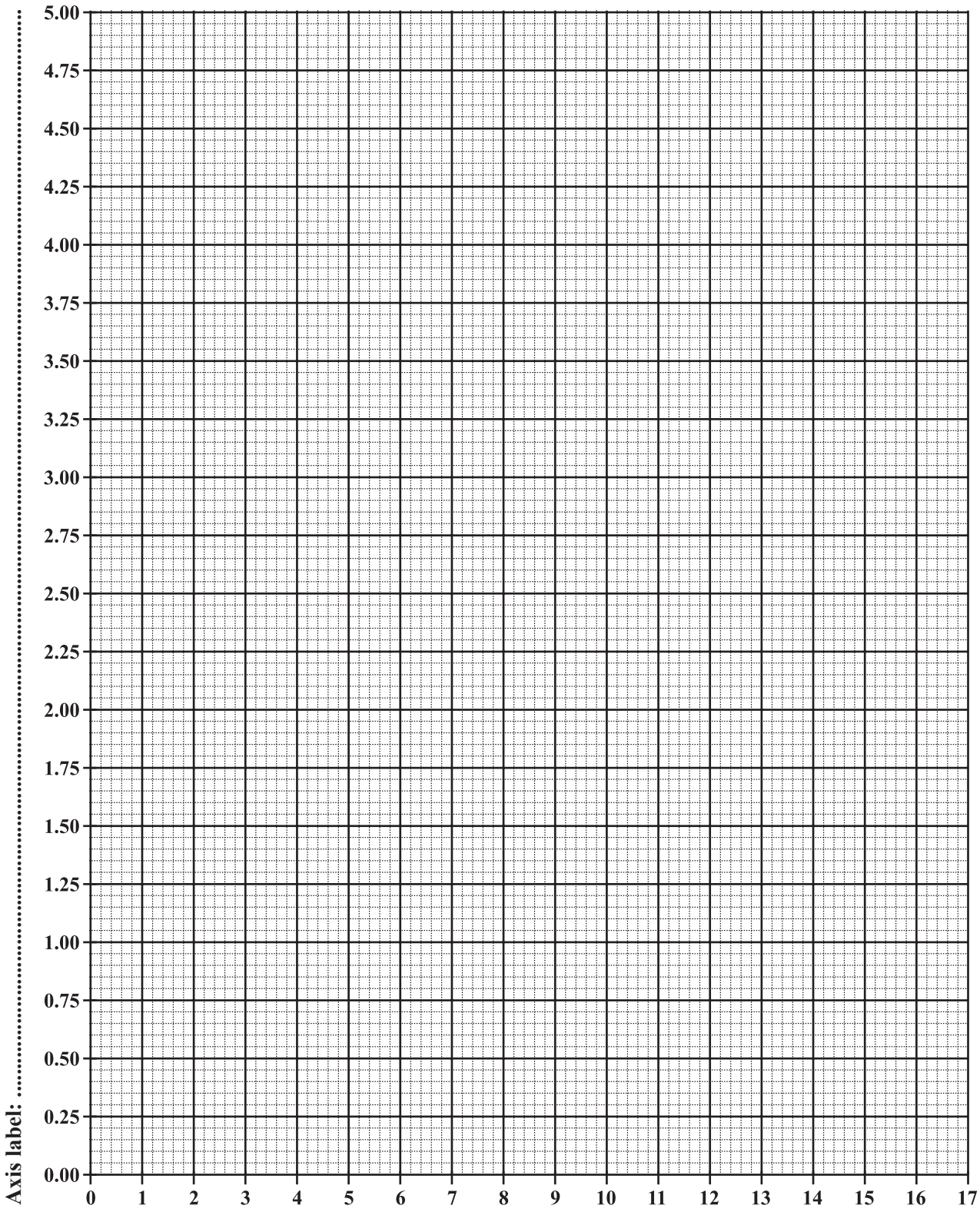
Total 25 marks

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Axis label: .....

Figure 2. Grid for (e)

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2. (a) State TWO examples of household pests, **other than** houseflies and rats.

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(2 marks)

(b) Define the term 'parasite'.

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(1 mark)

(c) Label the stages A, B, C to complete the life cycle of the housefly. Write your answers in the relevant spaces in Figure 3. **(2 marks)**

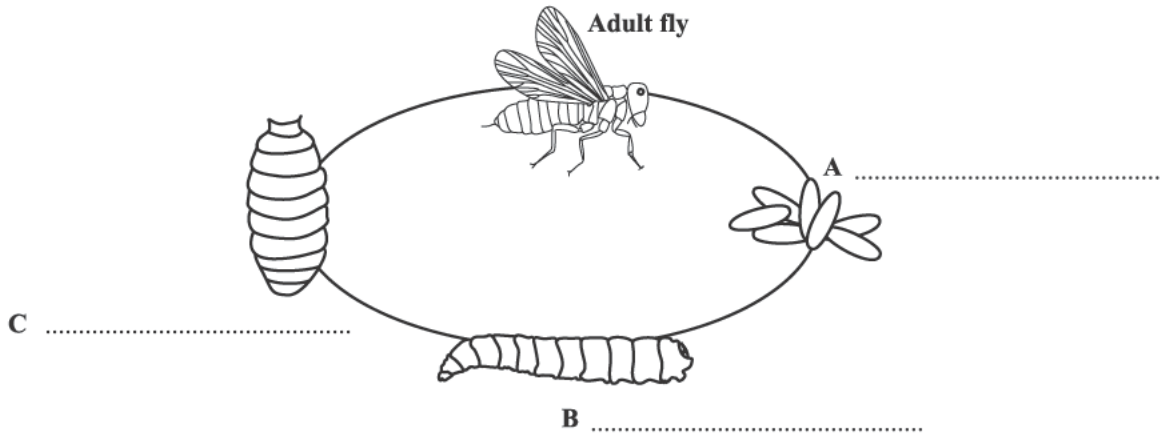


Figure 3. Life cycle of the housefly

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(d) The government proposes the use of chemical sprays to control pests. Suggest THREE harmful effects of chemical sprays.

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(3 marks)

(e) Mr Henry has four big dogs on his property. He notices that he always has a lot of flies inside his house. Suggest FOUR **mechanical** means by which he could prevent or control the flies.

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(4 marks)

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(f) A small village is infested with rats.

(i) Explain ONE **biological** method that the community could use to control the rats.

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(2 marks)

(ii) Some villagers believe that they are becoming ill because of the rats. State the name of the disease that is caused by rats.

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(1 mark)

Total 15 marks

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3. (a) (i) Describe TWO functions of the outer ear (pinna) in mammals.

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(2 marks)

(ii) The pinna in mammals comes in various shapes and sizes. Explain how its shape and size affect the sensitivity of hearing.

Shape .....

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Size .....

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(3 marks)

(b) A dog trainer blows a whistle in the park. Explain how the people nearby do not hear a sound, yet all the dogs react to the whistle.

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(2 marks)

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(c) (i) Vashti listens to music through headphones. Suggest TWO adverse effects of the headphones on her hearing.

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(2 marks)

(ii) Vashti's mother calls her and she responds by walking over to her mother. Describe how her nervous system processes the sound from her ears and uses this information to respond to her mother.

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(3 marks)

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(iii) An unexpected loud sound startles Vashti and she responds by letting out a short scream. Describe how her nervous system processes the sound differently from the way it processes the sound in (c) (ii) **on page 12**.

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(3 marks)

Total 15 marks

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4. Figure 4 and Figure 5 are diagrams of two simple machines.

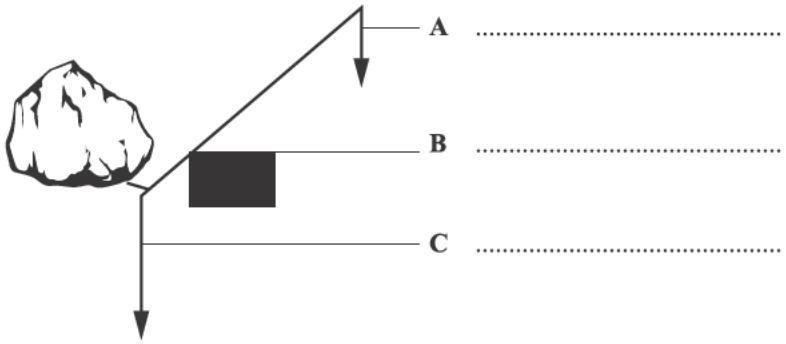


Figure 4. A lever

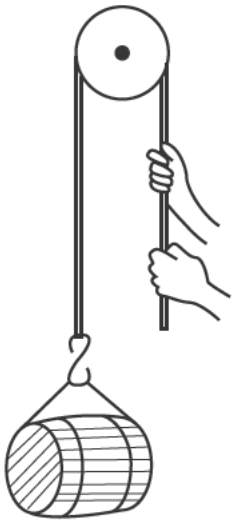


Figure 5. A pulley system

(a) (i) State the names of the parts labelled A, B and C on the lever in Figure 4. Write your answers in the relevant spaces in Figure 4. **(3 marks)**

(ii) Name the class of the lever in Figure 4.

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(1 mark)

(iii) Give the name of a simple machine **other than** the lever or the pulley.

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(1 mark)

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(b) (i) A construction worker uses a crowbar to move a heavy stone as shown in Figure 4 **on page 14**. The weight of the stone is 1000 N. Using the lever in Figure 4, the worker exerts a force of 250 N when moving the stone. Calculate the mechanical advantage of the lever in Figure 4. **Show your working**.

(3 marks)

(ii) Calculate the work done on the stone in Figure 4 if it is lifted to a vertical distance of 0.1 m. State the unit in your answer. **Show your working**.

(4 marks)

(c) (i) Identify TWO causes, **other than** friction, of loss of efficiency of the pulley system shown in Figure 5 **on page 14**.

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(2 marks)

(ii) Outline how friction decreases the efficiency of the pulley.

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(1 mark)

Total 15 marks

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SECTION B

Answer ALL questions.

5. Both plants and animals excrete waste products.

(a) State the meaning of EACH of the following terms:

Excretion .....

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Egestion .....

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(2 marks)

(b) Identify TWO waste products of plants and THREE waste products of animals.

Plants .....

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Animals .....

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(5 marks)

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(c) Outline how plants excrete waste products through various structures, and how animals excrete waste products through their lungs.

Plants .....

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(4 marks)

Animals .....

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(4 marks)

Total 15 marks

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6. (a) State THREE substances released from a volcanic eruption, and describe THREE negative impacts and ONE positive impact of a volcanic eruption.

Substances .....

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Negative impacts .....

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Positive impact .....

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(7 marks)

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(b) John notices that there are two high tides and two low tides on the coastline each day. With the aid of a diagram, explain how these tides are formed, and outline THREE effects of these tides on organisms found on the coastline.

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(5 marks)

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Effects on organisms found on the coastline

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(3 marks)

Total 15 marks

END OF TEST

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

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