FORM TP 2024095

TEST CODE 01230020

MAY/JUNE 2024

CARIBBEAN EXAMINATIONS COUNCIL

CARIBBEAN SECONDARY EDUCATION CERTIFICATE® EXAMINATION

INTEGRATED SCIENCE

Paper 02 – General Proficiency

2 hours 30 minutes

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READ THE FOLLOWING INSTRUCTIONS CAREFULLY.

1. This paper consists of SIX questions in TWO sections.
2. Section A consists of FOUR questions. Answer ALL questions. Write your answers in the spaces provided in this answer booklet.
3. Section B consists of TWO questions. Answer ALL questions. Write your answers on the pages provided at the end of each question.
4. Do NOT write in the margins.
5. You may use a silent, non-programmable calculator to answer questions.
6. 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.**
7. **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.**

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SECTION A

Answer ALL FOUR questions.

1. (a) (i) Waste can be categorized as domestic, commercial, industrial and hazardous. State which category of waste BEST describes single-use plastic.

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(1 mark)

(ii) Define the term 'landfill'.

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(2 marks)

(iii) Explain why there is an urgency to ban the use of single use plastics in Caribbean nations.

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(3 marks)

(iv) Outline TWO things which can be done to minimize the negative impact resulting from the shortage of garbage trucks.

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(4 marks)

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(b) The administration of the Mount Glory Secondary School has decided to monitor the amount of garbage generated on the school compound. Table 1 shows the results of the garbage monitoring.

TABLE 1: RESULTS OF GARBAGE MONITORING

Time (weeks)	Amount of garbage (pounds)
1	125
2	136
3	152
4	175
5	142
6	98
7	86
8	73
9	65
10	55

(i) On the grid provided **on page 7**, plot a graph of time against the amount of garbage generated, to represent the data in Table 1. You MUST draw a smooth curve through the plot points.

(8 marks)

(ii) State ONE of the trends evident in the graph.

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(1 mark)

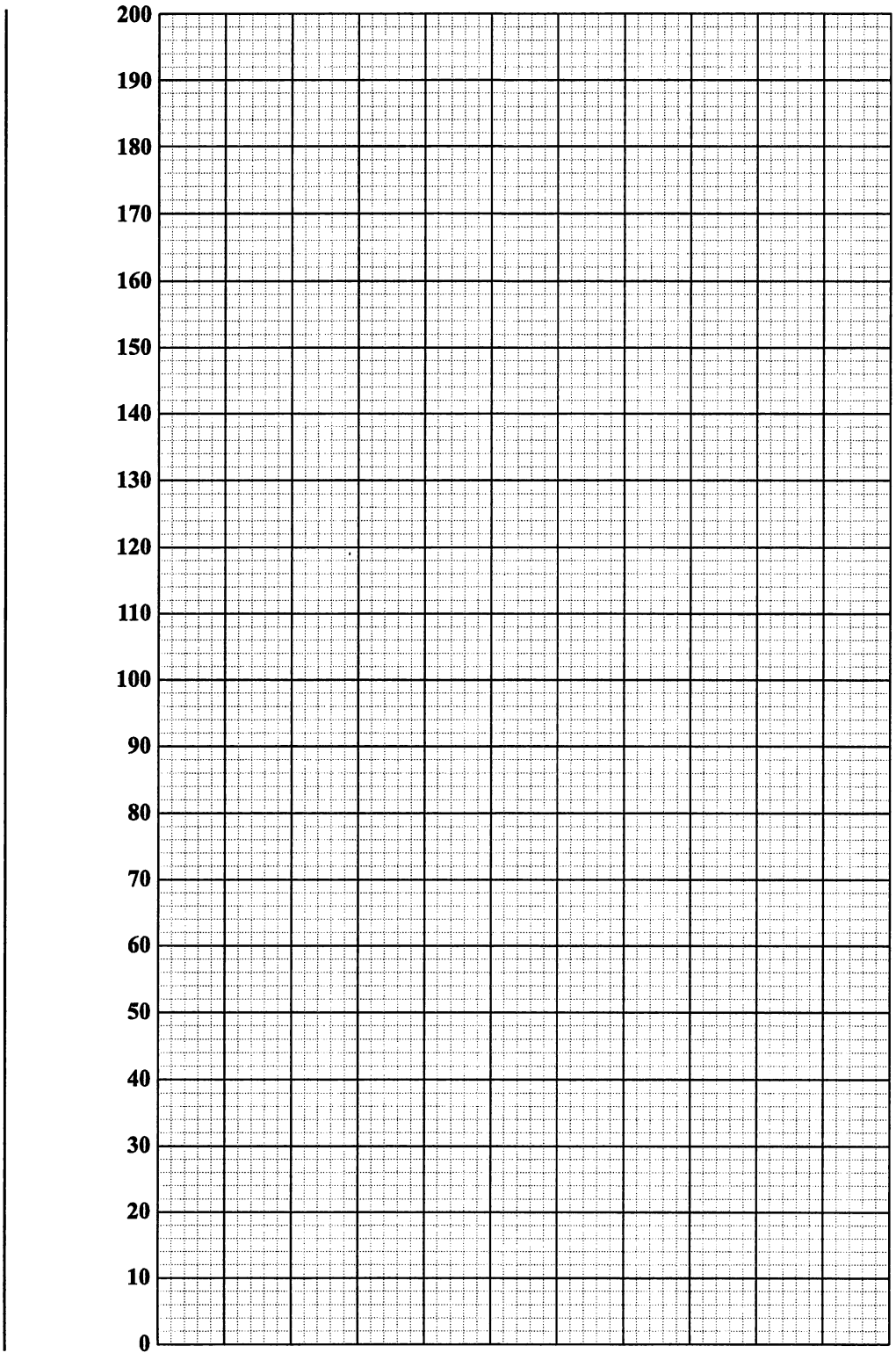
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(c) An accident occurred between a truck with a mass of 3000 kg, moving at 25 m/s, and a vehicle with a mass of 5000 kg, which was parked.

(i) Calculate the momentum of the parked vehicle. You must use the formula *Momentum (P) = Mass (M) × Velocity (V)*.

(2 marks)

(ii) State TWO forms of energy.

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(2 marks)

(iii) Before the collision, the truck was speeding out of control down the hill. State the energy transformations which occurred as the garbage truck was moving out of control down the hill before the collision.

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(2 marks)

Total 25 marks

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2. (a) Figure 1 shows a graph of plant growth over a seven-month period. The heights of the plants are recorded at the end of each month.

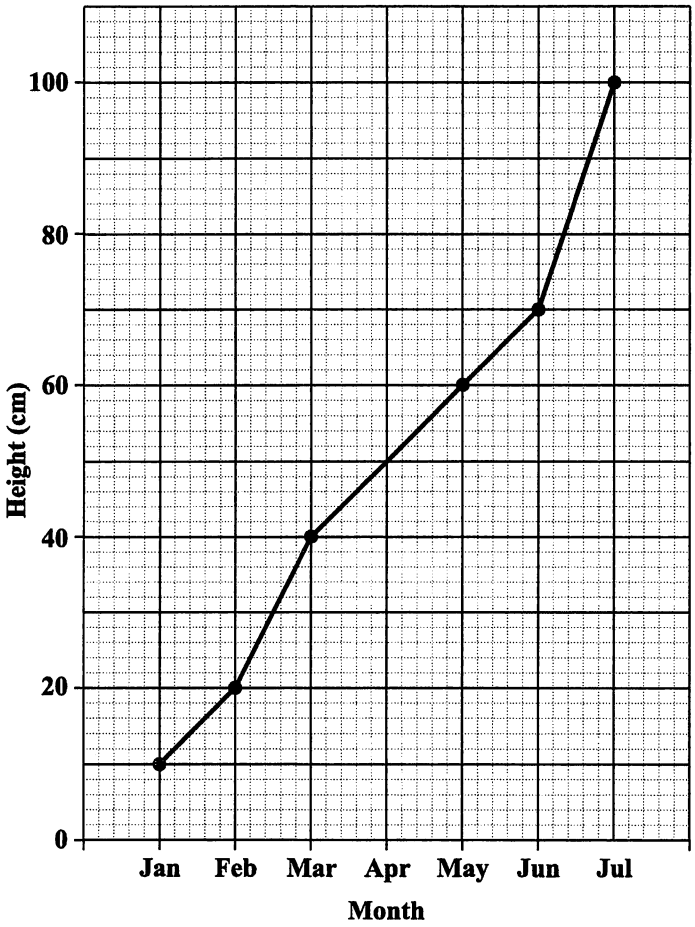


Figure 1. Graph of plant growth over a seven-month period

(i) State the total increase in the height of the plants between June and July. You must include the unit in your response.

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(1 mark)

(ii) Estimate the height of the plants for the month of April.

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(1 mark)

(iii) State TWO conditions which are needed to promote plant growth.

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(2 marks)

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(b) (i) Explain what happens in the female reproductive system during the menstrual cycle.

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(3 marks)

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(ii) Mary is taking an oestrogen-based contraception pill. Explain how the pill acts as a contraceptive.

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(3 marks)

(c) (i) Identify TWO natural methods of contraception.

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(2 marks)

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(ii) Explain how an increase in population size can affect the Earth's natural resources.

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(3 marks)

Total 15 marks

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3. (a) (i) Identify the parts of the skin labelled I, II and III in Figure 2.

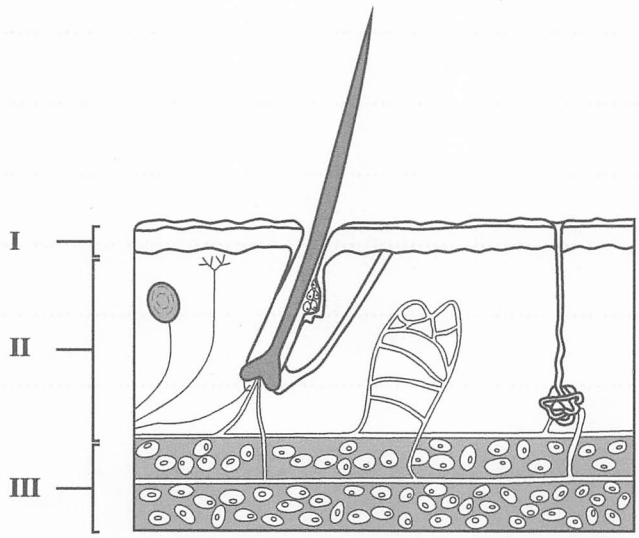


Figure 2. Diagram of the skin

I .....

II .....

III .....

(3 marks)

(ii) Use the diagram above to explain what happens to the skin when a person enters a cold environment.

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(3 marks)

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(b) (i) Jane has filament bulbs inside her home. She finds that her blue dress looks dull when she is inside and looks brighter when she is outside.

State which terms BEST describe the types of light that can be found outside and inside.

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(2 marks)

(ii) Outline how the TWO different types of light contribute to the observed differences in the colour of Jane's dress.

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(4 marks)

(iii) The government is encouraging residents to switch from using filament bulbs to LED ones. Explain why the government is promoting this change at this time.

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(3 marks)

Total 15 marks

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4. (a) Write a simple word equation to show the reaction which occurs when iron is placed in hydrochloric acid.

(4 marks)

(b) Three spoons were used in an experiment that was conducted to determine the time it takes for petroleum jelly to melt when heat is applied. The results are shown in the following table.

TABLE 2: RESULTS OF EXPERIMENT

Spoon	Time (minutes)
Spoon A	5
Spoon B	15
Spoon C	30

(i) State which of the spoons is MOST likely metal. You must outline a reason for your answer.

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(3 marks)

(ii) State which of the spoons would be considered as a good insulator. You must outline a reason for your answer.

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(3 marks)

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(c) Pam and Sam look forward to their weekend fishing trips each week. Sam always walks with his trusted compass to ensure they do not get lost at sea.

(i) Outline how a compass works as a navigational device.

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(2 marks)

(ii) State the function of the following navigational devices.

Sonar .....

Radar .....

GPS .....

(3 marks)

Total 15 marks

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SECTION B

Answer BOTH questions.

5. (a) State ONE device which is used to harvest the energy of the sun.

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(1 mark)

(b) Outline ONE factor which can negatively impact the use of the following sources of energy in the Caribbean.

(i) Solar

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(2 marks)

(ii) Wind

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(2 marks)

(c) Due to the high cost of electricity in the Caribbean region, governments are looking at alternative sources of energy. Discuss the suitability of hydroelectric power as an alternative source of energy in the Caribbean.

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(4 marks)

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(d) The following shows Terry's electricity usage and bill over three months.

Month 1

Appliance	Energy used	No. of hours used	Cost/day 70 cents per kW	Per month
Refrigerator	.20 kW	24	$3.36	$113.10
TV	.05 kW	3	10 cents	
Washing machine	.15 kW	3	31 cents	

Month 2

Appliance	Energy used	No. of hours used	Cost/day 70 cents per kW	Per month
Refrigerator	.30 kW	24	$5.04	$163.50
TV	.05 kW	3	10 cents	
Washing machine	.15 kW	3	31 cents	

Month 3

Appliance	Energy used	No. of hours used	Cost/day 70 cents per kW	Per month
Refrigerator	.50 kW	24	$5.04	$264.30
TV	.05 kW	3	10 cents	
Washing machine	.15 kW	3	31 cents	

(i) Terry has had his refrigerator for eight years. Discuss why the refrigerator may be using more energy every month.

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(4 marks)

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(ii) Suggest TWO things that Terry can do to reduce the electrical usage of the refrigerator.

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(2 marks)

Total 15 marks

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6. (a) (i) List THREE physical properties of pure water.

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(3 marks)

(ii) The water on Earth is recycled in a process known as the water cycle. Identify the processes labelled I, II, III and IV in the diagram of earth's water cycle shown in Figure 3 below.

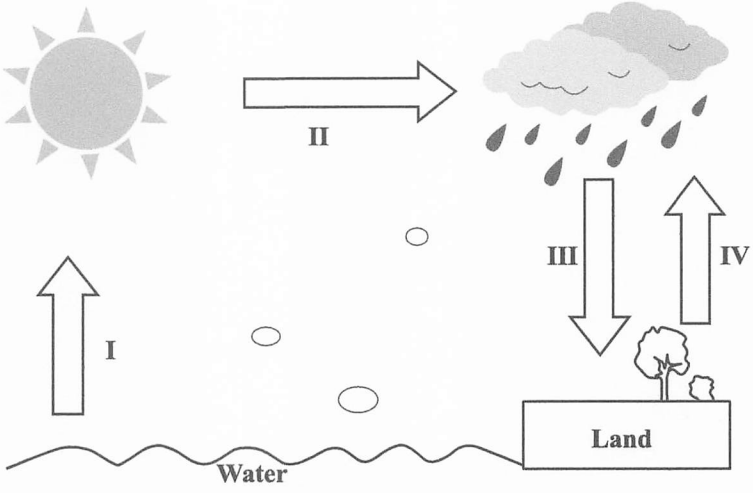


Figure 3. Diagram of earth's water cycle

I .....

II .....

III .....

IV .....

(4 marks)

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(b) Figure 4 shows the orbits of the earth and moon.

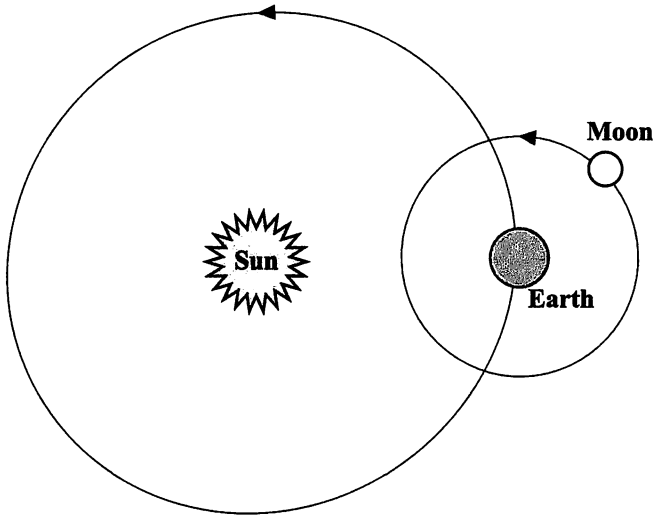


Figure 4. Diagram showing the orbits of the earth and moon

Discuss how the earth and moon remain in orbit as shown in Figure 4.

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(4 marks)

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(c) A volcano erupted in Country X after the country experienced minor earthquakes two weeks before. Discuss whether or not earthquakes always result in volcanoes erupting.

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(4 marks)

Total 15 marks

END OF TEST

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

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