

FORM TP 02025095



TEST CODE 01230020

MAY/JUNE 2025

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. Answer ALL questions.
2. Do NOT write in the margins.
3. You may use a silent, non-programmable calculator to answer questions.
4. 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.**
5. **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.

Copyright © 2024 Caribbean Examinations Council
All rights reserved.

01230020/MJ/CSEC 2025



0 1 2 3 0 0 2 0 0 3



564

A003

1. (a) Water is a unique substance because it exists in three states. Figure 1 shows the arrangement of water particles in the three states of matter.

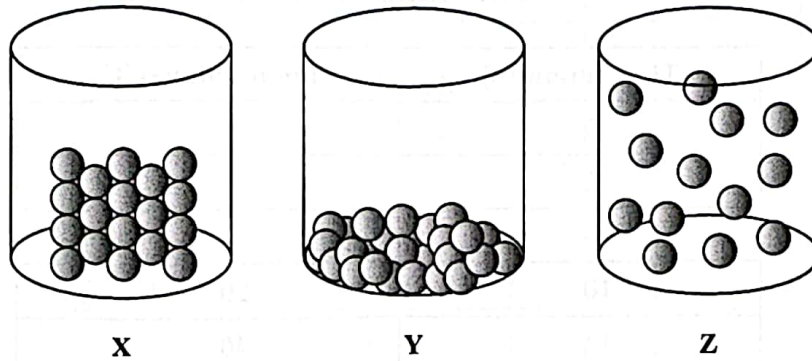


Figure 1. The arrangement of water particles in the three states of matter

(i) Identify the THREE states of matter labelled X, Y and Z in Figure 1.

X

Y

Z

(3 marks)

(ii) Identify which ONE of the states of matter labelled X, Y or Z BEST represents the arrangements of the particles in ice.

.....

1 mark)

(iii) State the name of the gas that is formed when heat is applied to water.

.....

(1 mark)

GO ON TO THE NEXT PAGE



(b) The table below shows data collected from an experiment where heat was applied to ice.

TABLE 1: DATA COLLECTED WHEN HEAT IS APPLIED TO ICE OVER TIME

Time (minutes)	Temperature (°C)
0	-20
2	0
6	0
10	20
14	40
18	60
22	80
26	100
34	100
38	120

(i) On the grid provided on page 7, plot a line graph of time against temperature to represent the data in Table 1. You MUST connect each plotted point and label EACH axis. **(10 marks)**

(ii) Using the graph drawn at (b) (i) on page 7, determine the time at which the temperature of the water was 70 °.

.....
(1 mark)

(iii) In another experiment, heat was applied to ice and then the container was covered for a few seconds. When the lid of the container was removed, water started to drip from it.

Explain why there was water on the lid of the container.

.....
.....
.....
.....
.....
.....
(3 marks)

GO ON TO THE NEXT PAGE



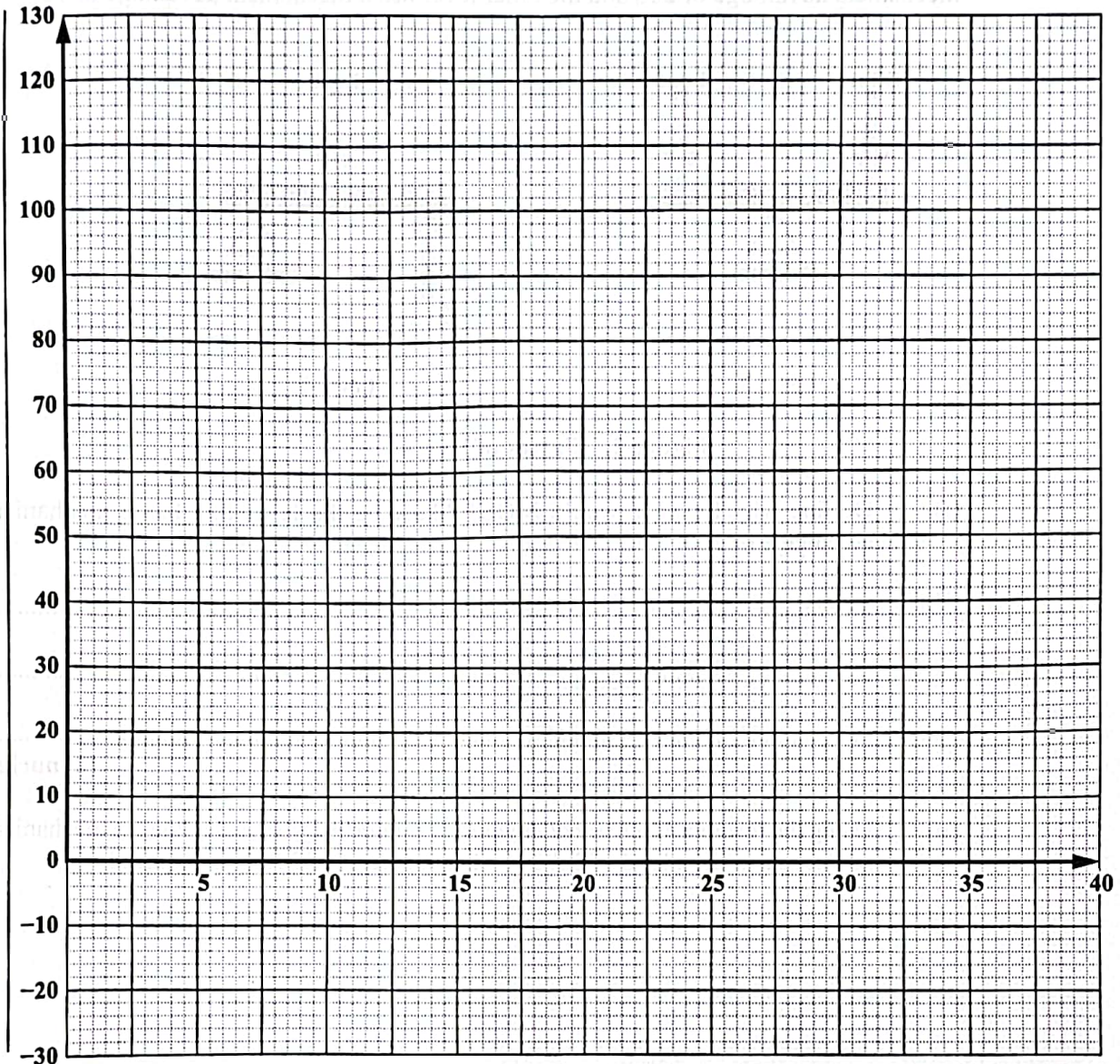
564

A003

DO NOT WRITE IN THIS AREA

564

A003



01230020/MJ/CSEC 2025

GO ON TO THE NEXT PAGE



(c) Figure 2 shows two classes of levers, Lever X and Lever Y. One of the levers has a mechanical advantage of 200 and the other lever has a mechanical advantage of 10.

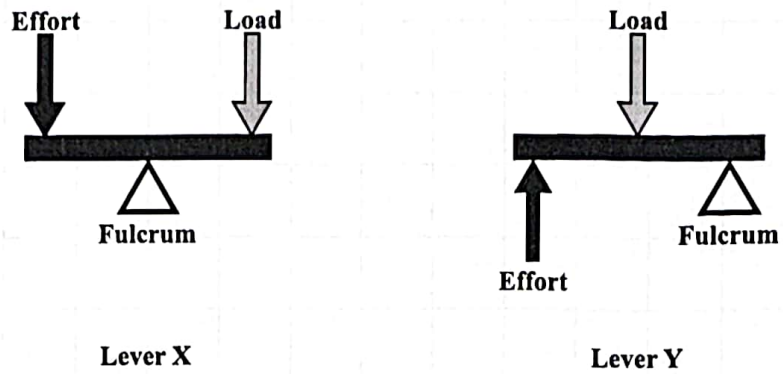


Figure 2. Classes of levers

(i) Outline why Lever Y would MOST likely be the lever that has a mechanical advantage of 200.

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

(2 marks)

(ii) Using the formula $Mechanical\ Advantage = Load \div Effort$, calculate the mechanical advantage to lift a load of 3000 N when an effort of 300 N is required.

(2 marks)

(iii) Using the formula $Work\ Done = Force \times Distance$, calculate the work done by the lever to move the 3000 N load a distance of 0.1 m.

(2 marks)

Total 25 marks

GO ON TO THE NEXT PAGE



2. (a) Figure 3 shows a diagram of a shoulder joint.

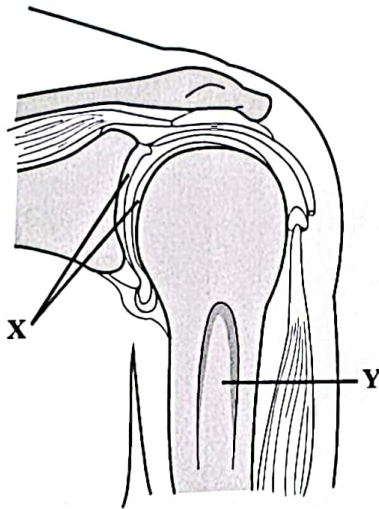


Figure 3. Diagram of a shoulder joint

(i) Name the type of joint shown in Figure 3.

..... (1 mark)

(ii) Name ONE type of joint which can be found in the body **other than** the one shown in Figure 3.

..... (1 mark)

(iii) Identify the structures labelled X and Y in Figure 3.

X

Y

(2 marks)

(iv) Other than movement, state ONE function of EACH of the structures labelled X and Y.

X

.....

Y

.....

(2 marks)

GO ON TO THE NEXT PAGE



(v) Compare the movement of the shoulder joint with that of the elbow joint.

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

(3 marks)

(b) Bruce required surgery and was sent for a blood test. The results indicated that his blood only contains anti-A antibodies.

(i) Identify Bruce's blood type, based on the results of the blood test.

.....

(1 mark)

(ii) List TWO other blood types in humans.

.....
.....

(2 marks)

(iii) Explain why only certain types of blood would be compatible with Bruce's blood type. Your response MUST include ONE blood type that would be compatible with Bruce's blood type.

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

(3 marks)

Total 15 marks

GO ON TO THE NEXT PAGE



DO NOT WRITE IN THIS AREA

564

A003

3. (a) (i) Write the word equation for photosynthesis.

.....
(2 marks)

(ii) Organisms rely directly or indirectly on plants for food. Figure 4 shows a diagram of a food chain.

Circle the producer in Figure 4 below.

(1 mark)

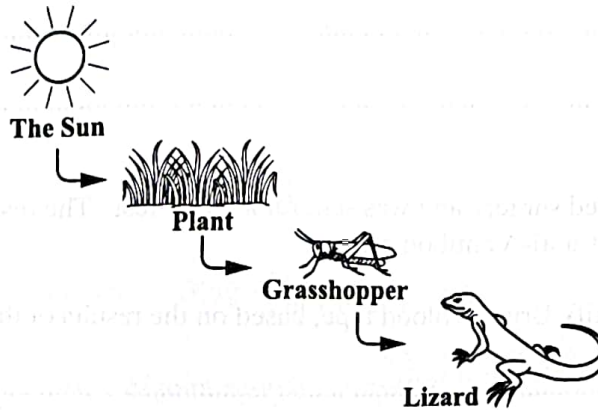


Figure 4. Diagram of a food chain

(iii) Explain the possible impact on the lizard if there was a drought.

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

(3 marks)

564

A003



- (b) Mary decided to start a kitchen garden but realized that her plants were not developing like the ones in her neighbour's garden even though her plants were being watered often. Figure 5 shows the results of a soil profile test that Mary conducted with samples of soil from her garden and from two of her neighbours. The results of the soil test revealed that the soil in Mary's garden is sandy soil.

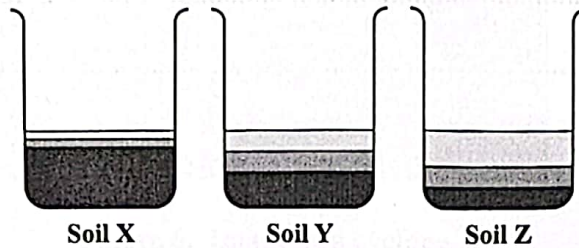


Figure 5. Diagram of a soil profile test

- (i) Identify which of the results shown in Figure 5 is MOST likely from Mary's garden.

.....
(1 mark)

- (ii) State TWO characteristics of sandy soil.

.....
.....
.....
(2 marks)

- (iii) Explain how the results of the test help to explain the challenge with the development of the plants in Mary's garden.

.....
.....
.....
.....
.....
.....
(3 marks)

GO ON TO THE NEXT PAGE



(iv) Mary decided to use hydroponics as a second method of crop cultivation. List THREE advantages of hydroponics.

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

(3 marks)

Total 15 marks

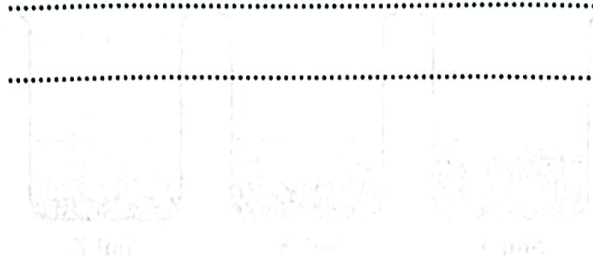


Fig. 1.1: Hydroponics

564

A003



4. (a) Figure 6 shows an image of a cyclone.



Figure 6. Image of a cyclone

Source: Unknown

(i) List THREE conditions necessary for cyclone development.

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

(3 marks)

(ii) On Figure 6, circle the area of the cyclone that represents the eye.

(1 mark)

DO NOT WRITE IN THIS AREA

564

A003

GO ON TO THE NEXT PAGE

01230020/MJ/CSEC 2025

GO ON TO THE NEXT PAGE



0 1 2 3 0 0 2 0 1 5



(b) The air surrounding the earth organizes into bodies or areas called air masses.

(i) State ONE characteristic of the maritime tropical air mass.

.....
.....
(1 mark)

(ii) Name TWO type of air masses **other than** the maritime tropical air mass.

.....
.....
(2 marks)

(c) Figure 7 shows a diagram of a front.

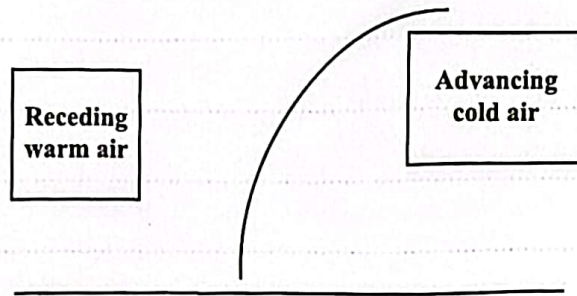


Figure 7. Diagram of a front

(i) Define the term 'front'.

.....
.....
(1 mark)

(ii) Draw an arrow on the diagram in Figure 7 to show the direction in which the front is moving. (1 mark)

564

A003



(iii) Name the type of front formed in Figure 7. You MUST give a reason for your response.

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

(2 marks)

(iv) Discuss what would happen when the TWO air masses shown in Figure 7 meet.

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

(4 marks)

Total 15 marks



DO NOT WRITE IN THIS AREA

564

A003

5. (a) (i) Define the term 'immunity'.

.....
.....
..... (1 mark)

(ii) Name TWO types of immunity.

.....
..... (2 marks)

(b) Worldwide, more than one million persons contract sexually transmitted infections every day.

(i) State whether EACH of the following sexually transmitted infections is viral or fungal.

Herpes
Hepatitis B (2 marks)

(ii) State ONE sign/symptom of EACH of the following sexually transmitted infections.

Herpes
.....
Hepatitis B
..... (2 marks)

(iii) Name ONE form of contraceptive that can be used to prevent the transmission of sexually transmitted infections.

..... (1 mark)

564

A003



(c) An expectant mother did not seek medical care for the first six months of her second pregnancy. In her first pregnancy, it was discovered that the mother was Rh negative and the foetus was Rh positive. At a medical appointment at six months into her second pregnancy, the doctors expressed concerns for the foetus as it was discovered that the foetus is Rh positive.

(i) Explain why the doctors would be concerned about the foetus being Rh positive given that the mother did not seek early prenatal care.

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

(3 marks)

(ii) List FOUR other likely consequences of the mother not receiving medical care for the first six months of pregnancy.

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

(4 marks)

Total 15 marks

DO NOT WRITE IN THIS AREA

564

A003



- (b) Table 2 shows the heart rate of three persons before exercise and then one minute after exercise. Each person completed the exercise activities at different intensities.

TABLE 2: DATA SHOWING THE HEART RATE OF THREE PERSONS BEFORE AND AFTER EXERCISE

Person	Before Exercise	After Exercise
Person A	53	85
Person B	66	105
Person C	87	108

- (i) Identify which participant performed exercise at the LOWEST intensity. Provide a reason for your answer.

.....
.....
.....
..... (2 marks)

- (ii) State ONE conclusion which can be made from the data shown in Table 2.

.....
..... (1 mark)

564

A003



(iii) List FOUR possible benefits of exercise based on your conclusion stated at (b) (ii).

.....

.....

.....

.....

.....

.....

.....

(4 marks)

Total 15 marks

END OF TEST

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

DO NOT WRITE IN THIS AREA

564

A003

01230020/MJ/CSEC 2025

01230020/MJ/CSEC 2025

