TEST CODE **01230032**

FORM TP 2014087

June 2014

CARIBBEAN EXAMINATIONS COUNCIL

CARIBBEAN SECONDARY EDUCATION CERTIFICATE® EXAMINATION

INTEGRATED SCIENCE
(Single-Award)

Paper 032 – Alternative to School-Based Assessment

General Proficiency

2 hours 10 minutes

READ THE FOLLOWING INSTRUCTIONS CAREFULLY.

1. 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. You are advised to take some time to read through the paper and plan your answers.
6. EACH question is worth 18 marks.
7. If you need to rewrite any answer and there is not enough space to do so on the original page, you must request extra lined pages from the invigilator. **Remember to draw a line through your original answer and correctly number your new answer in the box provided**.
8. **If you use extra pages you MUST write your registration number and question number clearly in the boxes provided at the top of EVERY extra page.**

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

Copyright © 2012 Caribbean Examinations Council
All rights reserved.

Answer ALL questions.

1. (a) Figure 1 shows a cross section of a fruit.

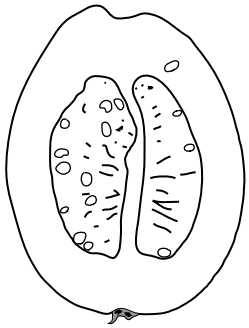


Figure 1. Cross section of a fruit

(i) Measure the height and width of the cross section of the fruit in Figure 1. Include units in your answer.

Height .....

Width ..... **(3 marks)**

(ii) In the box provided below, draw a cross section of the fruit shown in Figure 1. **(3 marks)**

(b) A student performs food tests to determine the nutrient content of the fruit in Figure 1. Complete Table 1 to show the nutrients that are MOST likely present or absent.

(3 marks)

TABLE 1: OBSERVATIONS AND CONCLUSIONS FOR FOOD TESTS

Food Test	Observation	Nutrient Present/Absent
1. A drop of iodine solution is placed on the cut surface of the fruit.	Colour changes from reddish brown to blue-black.	
2. A small portion of the ripe fruit is squashed and the juice collected. 2 cm^3 of Benedict's solution is added to 1 cm^3 of the fruit juice in a test tube. The mixture is heated to boiling over a Bunsen burner for five minutes.	An orange-red precipitate is formed in the test tube.	
3. 2 cm^3 of potassium hydroxide and two drops of copper sulphate solution are added to 2 cm^3 of fruit juice.	No change in colour is observed.	

(c) (i) Name the process by which the nutrient identified in Food Test 1 is produced in the plant.

.....

(1 mark)

(ii) Name TWO nutrients, **other** than those identified in Table 1, that are often present in fruits.

.....

.....

(2 marks)

(d) (i) Write a suitable hypothesis to investigate whether the fruit in Figure 1 will ripen faster when placed in **dark** conditions than when placed in **light** conditions.

.....

.....

.....

.....

(2 marks)

(ii) State TWO variables that should be held constant during the investigation in (d) (i) above.

.....

.....

(2 marks)

(iii) State TWO precautions that should be taken during the investigation in (d) (i) above.

.....

.....

(2 marks)

Total 18 marks

2. (a) In a practical activity, a student uses the following apparatus and materials to find out which of four unknown metals labelled A, B, C and D is the best conductor of heat:

- Paraffin wax
- A beaker filled halfway with tap water
- A Bunsen burner, tripod and wire gauze
- Four thumbtacks
- A thermometer

(i) Write an appropriate aim for the practical activity being carried out by the student.

.....

.....

(1 mark)

(ii) Outline a suitable procedure that could be used by the student to carry out this practical activity.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

(4 marks)

(iii) State THREE variables that must be kept constant in the practical activity outlined in (a) (ii) on page 5.

.....

.....

.....

.....

.....

(3 marks)

(iv) State the responding variable in the practical activity outlined in (a) (ii) on page 5.

.....

.....

(1 mark)

(v) Why is hot water used to provide the heat energy for this practical activity instead of heating directly with a Bunsen burner?

.....

.....

.....

(1 mark)

(vi) How will the student identify which rod is the BEST conductor of heat?

.....

.....

.....

(1 mark)

(vii) State TWO precautions that should be taken when carrying out this practical activity.

a) .....

.....

b) .....

.....

(2 marks)

(b) Figure 2 shows a beaker of water with a thermometer.

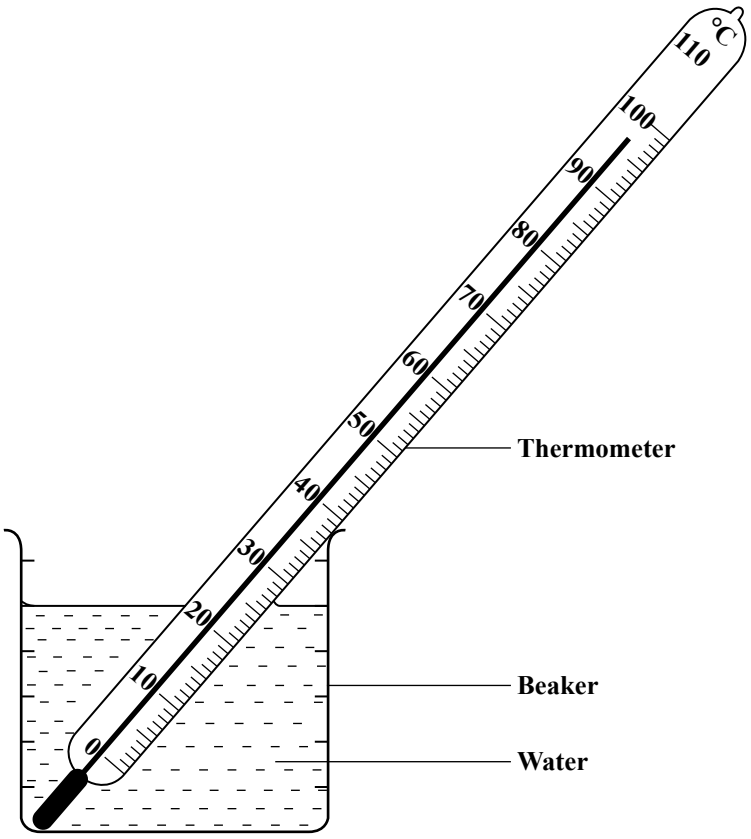


Figure 2 . Diagram showing beaker of water with a thermometer

(i) Read the temperature shown on the thermometer in Figure 2 and write your answer in the space below. State the units.

.....

(3 marks)

(ii) State TWO precautions to be taken when using the thermometer.

.....

.....

(2 marks)

Total 18 marks

3. Kamla constructs the device shown in Figure 3 to find the weight of unknown masses. The device is attached firmly to a stand in the laboratory and has pulleys at A and B with a hook at E to attach a load. She applies an effort at D which is measured on the spring balance at C. Kamla is surprised to find that the spring balance records 25 N when a load of 50 N is attached to the hook. She therefore attempts to check the device by recording the readings for some known weights (50 N, 40 N, 30 N, 20 N, 10 N,) so that she can determine the accurate weights for X and Y.

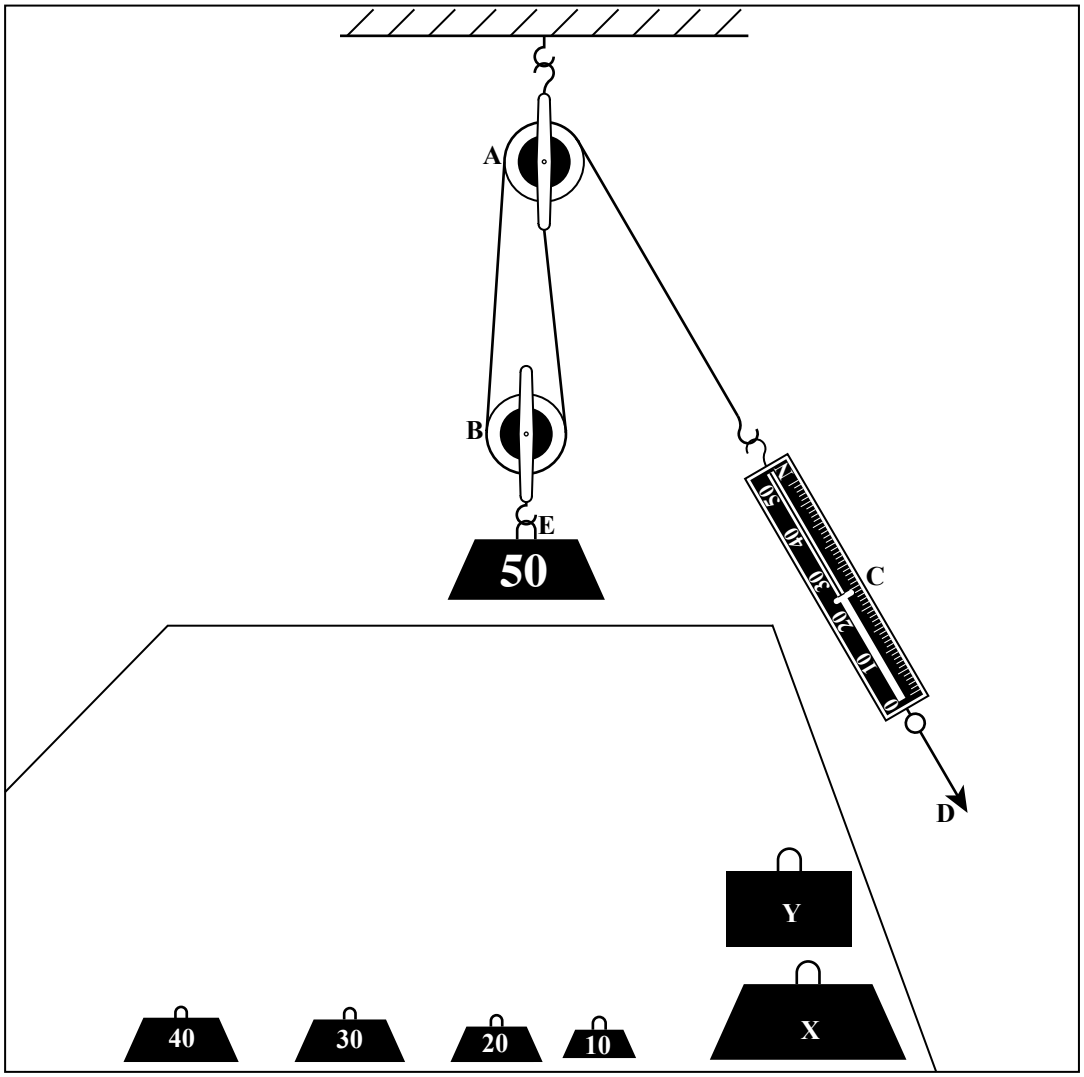
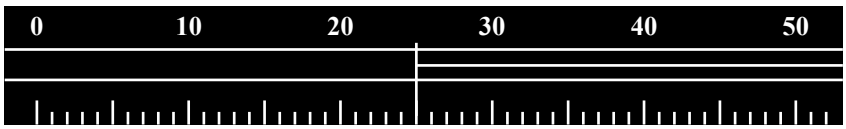
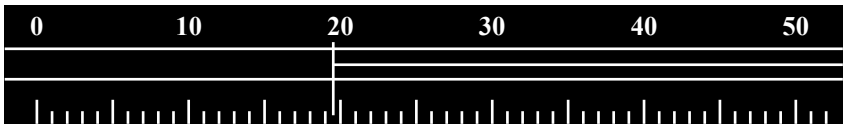
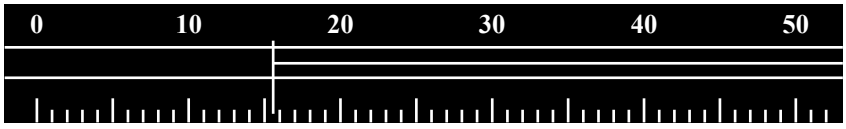
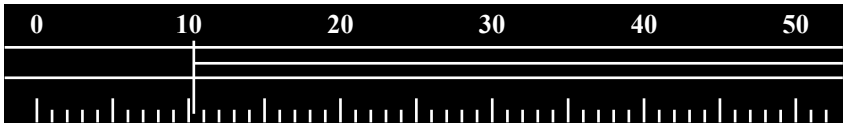
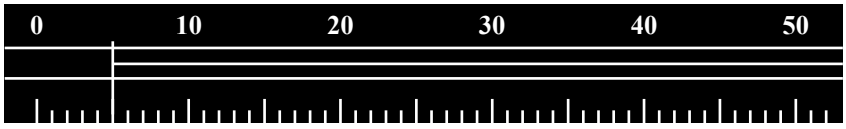
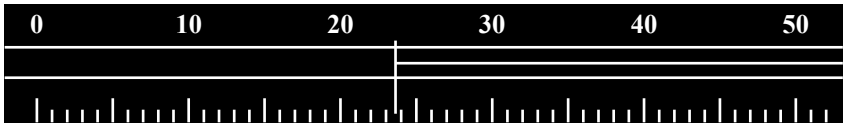


Figure 3. Diagram of device used to find weight

(a) Read the spring balances presented in the right column of Table 2 and record the results in the spaces provided in Table 2. **(5 marks)**

TABLE 2: READING ON SPRING BALANCE FOR WEIGHTS

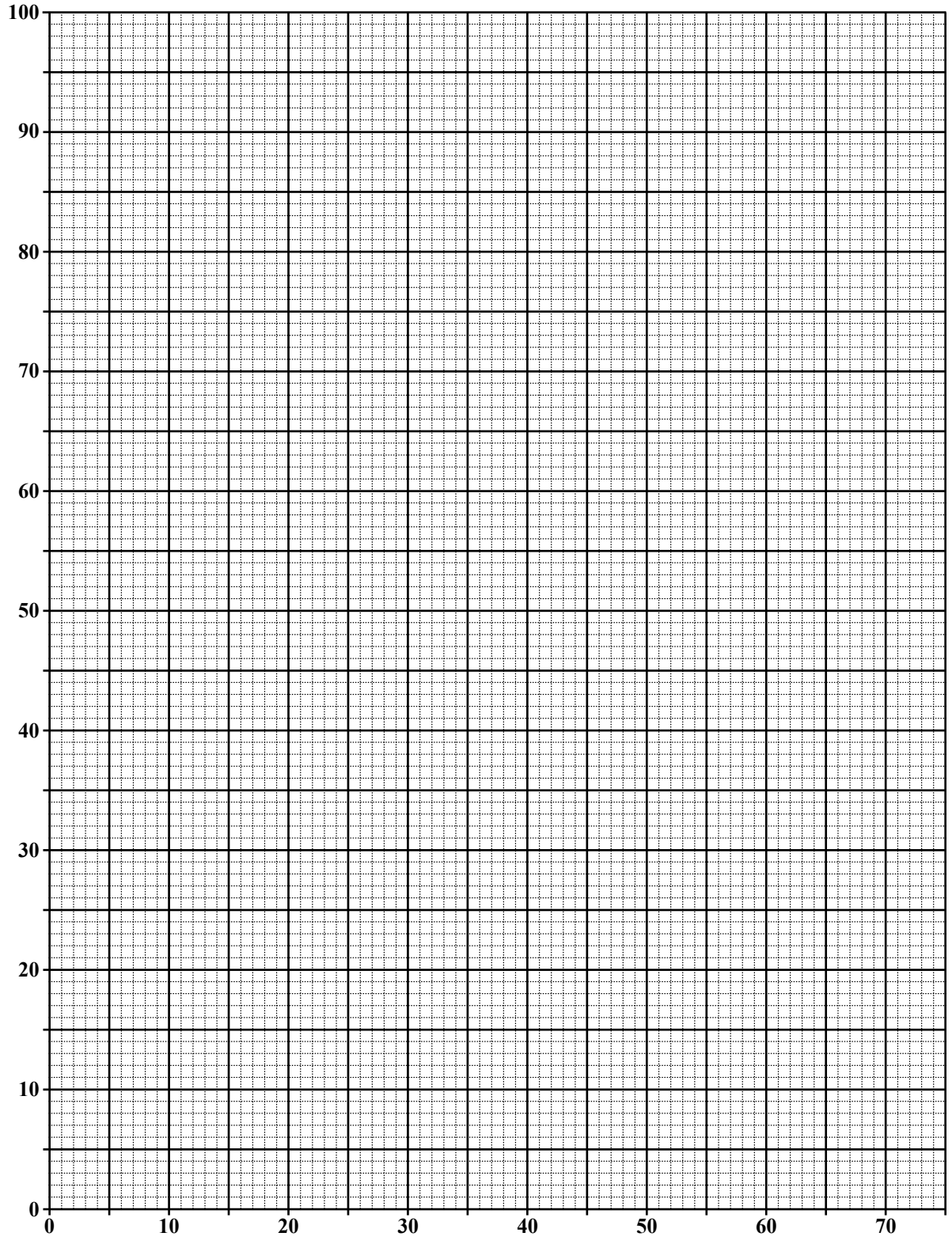
Weight at E (N)	Reading on Spring Balance (N)	Picture of Reading on Spring Balance (N)
50		
40		
30		
20		
10		
X		
Y		

(b) (i) Using the grid paper provided on page 11, plot the points of Kamla's results for the readings on the spring balance versus known weights at E. **(5 marks)**

(ii) Draw the best-fit line to represent the information. **(1 mark)**

(iii) Label the axes on the graph. Include the units on EACH axis. **(2 marks)**

GO ON TO THE NEXT PAGE


100
90
80
70
60
50
40
30
20
10
0
0
10
20
30
40
50
60
70

(iv) Extend your line upwards on the graph. Draw TWO dotted lines in the appropriate places on the graph to assist you with reading and recording the weight of X.

Weight of X ..... **(3 marks)**

(c) Figure 4 is a picture of the pulley system used by Kamla. In the box provided, draw a two-dimensional diagram of the pulley system in Figure 4. Include the magnification in your drawing. **(2 marks)**

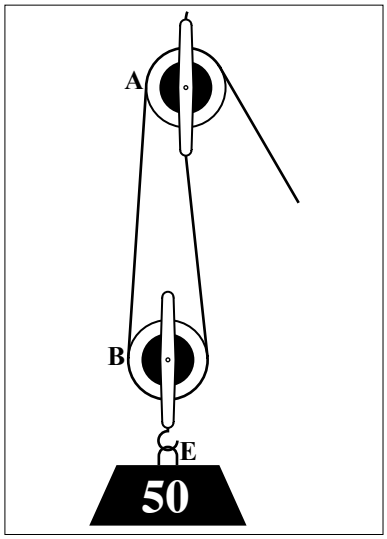


Figure 4. Pulley system used by Kamla

Total 18 marks

END OF TEST

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