TEST CODE **01230032**

FORM TP 2009088

MAY/JUNE 2009

CARIBBEAN EXAMINATIONS COUNCIL

SECONDARY EDUCATION CERTIFICATE EXAMINATION

INTEGRATED SCIENCE
(Single-Award)

Paper 03/2

General Proficiency

PRACTICAL PAPER

$2\frac{1}{2}$ hours

READ THE FOLLOWING DIRECTIONS CAREFULLY

1. You MUST use this answer booklet when responding to the questions. For EACH question, write your answer in the space indicated and return the answer booklet at the end of the examination.

2. This test consists of TWO questions. You should answer **BOTH** questions.

3. Each question is divided into parts. Each part measures a particular skill. The allocation of marks to the skill within each part is given at the end of that part.

4. **You MUST read ALL instructions completely and carefully before you begin the questions.**

N.B. **Candidates are allowed to have practical notebooks and/or any materials relevant to the practical examination.**

Candidates may be given additional materials without penalty.

If candidates lose time during the examination through no fault of their own, they must be awarded the equivalent time.

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Candidates are required to answer ALL questions.

1. You are provided with a beaker, a black ink pen, a filter paper, a pipette, a clock, ethanol, and some paper tape.

(a) Using the black ink pen, mark a spot of 1 mm in diameter in the centre of the filter paper.

(b) Place the filter paper on the upright beaker.

(c) Using the pipette, gently place a drop of ethanol on the spot on the filter paper.

(d) Repeat every five minutes, for 30 minutes.

(e) Describe the colours observed on the filter paper in Table 1.

TABLE 1. COLOURS OBSERVED ON FILTER PAPER

Time	Colours observed

(11 marks)

(f) Using the tape provided attach your filter paper in Box 1.

BOX 1. FILTER PAPER

(1 mark)

(g) In the space provided below, draw a diagram indicating how you used the beaker, filter paper and pipette.

(6 marks)

(h) Write an aim for this activity.

_____

_____

(1 mark)

(i) Write a corresponding conclusion for this activity.

_____

_____

_____

(4 marks)

(j) In comparing two brands of ink, a manufacturer needed to determine, through an experiment, whether his red or black ink had the greater rate of movement across filter paper.

Write a possible hypothesis for the experiment.

_____

_____

(2 marks)

(k) Identify ONE variable that would be controlled in this experiment.

_____

_____

(1 mark)

Total 26 marks

2. You are provided with an ammeter, a voltmeter, a bulb, some wire, two 1.5 V dry cells, a pair of clips, four materials labelled W, X, Y and Z, and some paper tape.

Part A

(a) Connect the circuit as shown in Figure 1 below. **(5 marks)**

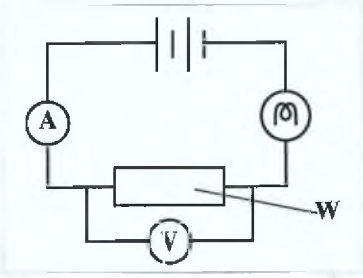


Figure 1. A series circuit

(b) Connect material W to the circuit as shown in Figure 1.

(c) Observe if the bulb lights, and read off the voltage from the voltmeter and the current from the ammeter. Record these observations and measurements in Table 2 below.

(d) Repeat steps (b) and (c) using materials X, Y and Z.

TABLE 2. RESULTS TABLE

Materials	Does the bulb light? Yes/No	Voltage (V)	Current (A)
W			
X			
Y			
Z			

Part B

Use the results in Table 2 to answer the questions which follow.

(a) Classify the materials W, X, Y and Z as either conductors or insulators:

W ..... X .....

Y ..... Z .....

(4 marks)

(b) Using your results in Table 2 and the formula $V = I \times R$, calculate the resistance of any conductor, giving the correct units for your answer.

_____

_____

_____

(4 marks)

(c) Give a suitable hypothesis for this experiment.

_____

_____

(2 marks)

(d) How would you use your results to calculate the wattage of the bulb?

_____

_____

_____

(1 mark)

Total 28 marks

END OF TEST