**535/3**

**PHYSICS**

**Paper 3**

**July/Aug. 2019**

2¼ hours

**MASAKA DIOCESE EXAMINATION BOARD**

**UCE Joint Mock Examinations 2019**

PHYSICS PRACTICAL

**Paper 3**

2 hours 15 minutes

**INSTRUCTIONS TO CANDIDATES:**

*Answer* **Question1,** *and* **one** *other question.*

*Any additional question(s) answered will* **not** *be marked.*

*For each question, candidates will be required to select suitable apparatus from the equipment provided.*

*You will* **not** *be allowed to start working with the apparatus for the* **firstquarter** *of an hour.*

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*Marks are given mainly for a clear record of work and the observations actually made, for their suitability and accuracy, and the use made of them.*

**Turn Over**

*Candidates are reminded to record their observations as soon as they are made.*

*Whenever possible, candidates should put their observations and calculations in a suitable table drawn in advance.*

**Turn Over**

*An account of the method of carrying out the experiment is* **not** *required.*

*Squared papers are provided.*

*Mathematical tables and silent non-programmable calculators may be used.*

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**Turn Over**

1. *In this experiment you will determine a constant M*c *of the dry cell provided and k of the spring.*
2. Suspend a spring balance from a retort stand.
3. Suspend through the hook of the lower end of the spring balance a dry cell with a mass tied firmly on its top using a thread.
4. Lower the dry cell with the mass horizontally into the beaker provided without letting it touch the bottom of the beaker.

**Figure 1**

Spring balance

Retort stand

Graph paper scale

Dry cell

Mass

Water

0.0cm

Hook

1. Pour water gently into the beaker until the spring balance reads a mass, *m* = 90g.
2. Measure and record the height, *h*, of the liquid level from 0.0cm mark.
3. Repeat procedures (d) and (e) for values of *m* = 85, 80, 75, 70 and 65g.
4. Enter your results in a suitable table including values of *h* in metres.
5. Plot a graph of *m* against *h*.
6. Read and record the intercept, *I*, on the vertical axis.
7. Find the constant, *M*c of the dry cell from

*I* = *M*c + 20

1. Find the slope, *S* of the graph.
2. Calculate k from 100*k* = –*S*.
3. In this experiment you will determine constant *q* of the concave mirror provided.
4. Mount the mirror provided in a mirror holder and place it facing the window.
5. Focus light from a distant object onto the screen by moving the mirror to and fro in front of the screen until a clear image of the object is formed.
6. Measure and record the distance, N, between the screen and the mirror.
7. Arrange the mounted mirror, the object screen with wire gauze and the white screen as shown in Figure 2.

**Figure 2**

*V*

*U*

Illuminated object

Bulb

White screen

Concave mirror

K

1. Connect the circuit as shown in Figure 2.
2. Adjust the distance, *U*, between the wire gauze and the mirror to 50.0cm.
3. Close switch, K.
4. Move the white screen until a sharp image of the illuminated object is formed on the screen.
5. Open switch K.
6. Measure and record distance, *V*, between the screen and the mirror.
7. Repeat procedures (f) to (j) for values of *U* = 45.0, 40.0, 35.0, 30.0, and 25.0cm.
8. Record your values in a suitable table.
9. Plot a graph of *U* against *V*.
10. Using the same axis, drew the line *U* = *V*.
11. Determine the value, *V*o, of *V* at a point of intersection of the two graphs.
12. Calculate, *q* from the expression;

*N* = 2*q* – *V*o

**DISMANTLE THE SETUP OF THE APPARATUS.**

1. In this experiment you will determine the constant, *β*, of the wire provided.
2. Connect the voltmeter across the dry cell.
3. Read and record the reading, *E*, of the voltmeter.
4. Fix the bare wire labelled, W, firmly on the table using cello-tape.
5. Connect the circuit as shown in Figure 3.

K

Crocodile clip

R

Bare wire, W

*l*

V

**Figure 3**

Crocodile clip

A

Sellotape

Sellotape

1. Starting with length, *l* = 0.100m, close switch, K.
2. Read and record the reading, *V*, of the voltmeter and, *I*, of the ammeter.
3. Open switch K.
4. Repeat procedures (e) to (g) for values of *l* = 0.200, 0.300, 0.400, 0.500 and 0.600m.
5. Record your results in a suitable table including values of *V*1 = (*E* – *V*) and .
6. Plot a graph of against *l.*
7. Find the slope, *β*, of the graph.

**END**

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