

232/3 -

**PHYSICS**  
**(PRACTICAL)**

- Paper 3

**Nov. 2018 - 2½ hours**

Name ..... Index Number .....

Candidate's Signature ..... Date .....

**Instructions to candidates**

- (a) Write your name and index number in the spaces provided above.
- (b) Sign and write the date of examination in the spaces provided above.
- (c) Answer **all** the questions in the spaces provided in the question paper.
- (d) You are supposed to spend the first **15 minutes** of the **2½ hours** allowed for this paper reading the whole paper carefully before commencing your work.
- (e) Marks are given for a clear record of the observations actually made, their suitability, accuracy and the use made of them.
- (f) Candidates are advised to record their observations as soon as they are made.
- (g) **Non-programmable silent electronic calculators may be used.**
- (h) **This paper consists of 9 printed pages.**
- (i) **Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.**
- (j) **Candidates should answer the questions in English.**



**For Examiner's Use Only**

Question 1	a	b	c	d	g	h	i	j
Maximum Score	1	1	1	4	4	4	3	2
Candidate's Score								

Total

Question 2	a	b	c	d	h	i
Maximum Score	1	3	6	2	6	2
Candidate's Score						

Total

Grand Total

### Question 1

You are provided with the following:

- Some water in a container
- A 10 ml measuring cylinder
- A piece of a glass rod
- A 10 g mass
- 5 paper clips
- A half metre rule
- A metre rule
- Two stands, two bosses and two clamps
- Three pieces of sewing thread

**Proceed as follows:**

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- (a) Pour 6 ml of the water into the measuring cylinder. Lower the glass rod into the water and determine the volume  $V$  of the glass rod.

$$V = \dots\dots\dots \text{cm}^3 \quad (1 \text{ mark})$$

Remove the glass rod from water.

- (b) Using a stand and a piece of string, suspend the half metre rule at its centre of gravity  $C$  so that it balances horizontally with the scale facing you.

Using a second stand, clamp a metre rule vertically near one end of the half metre rule to note the height at which the half metre rule is horizontal.

**Maintain this height throughout the experiment**

Record the centimetre mark of the centre of gravity  $C$ .

$$C = \dots\dots\dots \text{cm} \quad (1 \text{ mark})$$

A037

- (c) Using the string, suspend the 10 g mass on the half metre rule at a distance  $d = 2 \text{ cm}$  from  $C$ . **The distance  $d = 2 \text{ cm}$  should be maintained throughout the experiment.**

Balance the half metre rule by suspending the glass rod using a string at a distance  $X$  from  $C$ .

Record the value of  $X$

$$X = \dots\dots\dots \text{cm} \quad (1 \text{ mark})$$



(d) Using the results in part (a) and (c) determine the;

(i) mass of the glass rod,

(2 marks)

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(ii) density of the glass rod.

(2 marks)

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(e) Remove the glass rod. Push the half metre rule through one paper clip and adjust the position of the clip to a point P where the half metre rule balances horizontally. See **Figure 1**.

