

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.

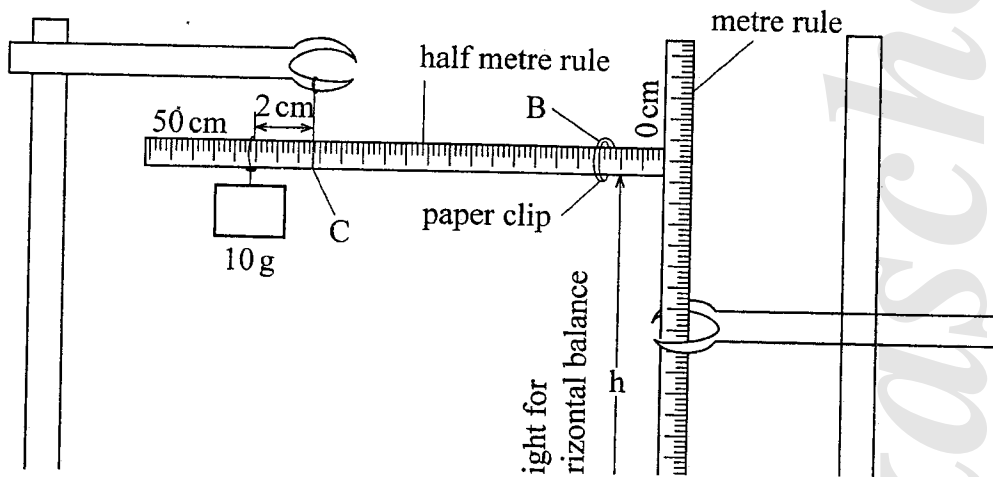
(2 marks)

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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**.



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