

NAME:.....INDEX NO:.....

SCHOOL:.....

Candidate's Signature:

Date:

232 / 3
 PHYSICS
 PAPER 3
 PRACTICAL
 JULY / AUGUST 2009
 2 ½ HOURS

JOINT INTERSCHOOLS EVALUATION TESTS JISET 2009

232 / 3
 PHYSICS
 PAPER 3

INSTRUCTIONS TO CANDIDATES

- ❖ Answer ALL the questions in the spaces provided in the question paper.
- ❖ You are supposed to spend the first 15 minutes of the 2¼ hours allowed for this paper reading the whole paper carefully before commencing your work.
- ❖ Marks are given for clear record of the observations actually made, for their suitability and accuracy and the use made of them.
- ❖ Candidates are advised to record their observations as soon as they are made.
- ❖ Mathematical table and electronic calculators **may be** used.

For Examiners Use Only

Question 1	a	b	c	e	Part B	
					c	d
Maximum Score	1	6	5	3	3	3
Candidate's Score						

TOTAL

Question 2	a(i)	(ii)	(iii)	(iv)	b (i)	(ii)
Maximum Score	1	7	5	1	2	3
Candidate's Score						

TOTAL

TOTAL SCORE

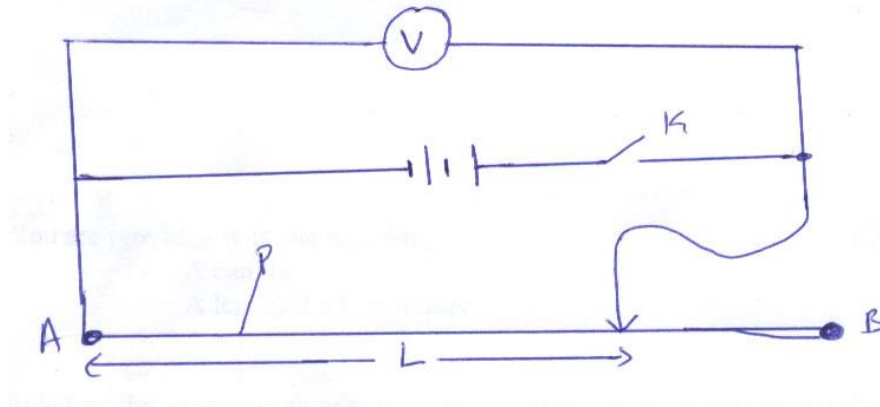
This paper consists of 6 printed pages. Candidates should check the question paper to ensure that all the pages are printed as indicates and no questions are missing.

PART A

1. You are provided with the following;

- One resistance wire labelled P
- Two dry cells
- Switch K
- A voltmeter
- Three connecting wires with crocodile clips
- A meter rule
- 3 connecting wires

(a) **Set up** the apparatus as shown in the diagram below



Take off the crocodile clip from the wire AB and close the switch K. Record the reading E of the voltmeter

E = _____

(1mk)

(b) Keeping the crocodile clip attached to the wire AB at a distance L 10cm from A record the reading V of the voltmeter in the table below. Repeat for other values of L shown in the table. **Complete** the table. (6mks)

Length L cm	Voltage (v)	(E - V)	$\frac{V}{E - V}$
10			
20			
30			
40			
50			
60			

(c) **Plot** a graph of $\frac{V}{E - V}$ against L.

(5mks)

GRAPH PAPER

(d) **Determine** the slope S , of the graph.

(3mks)

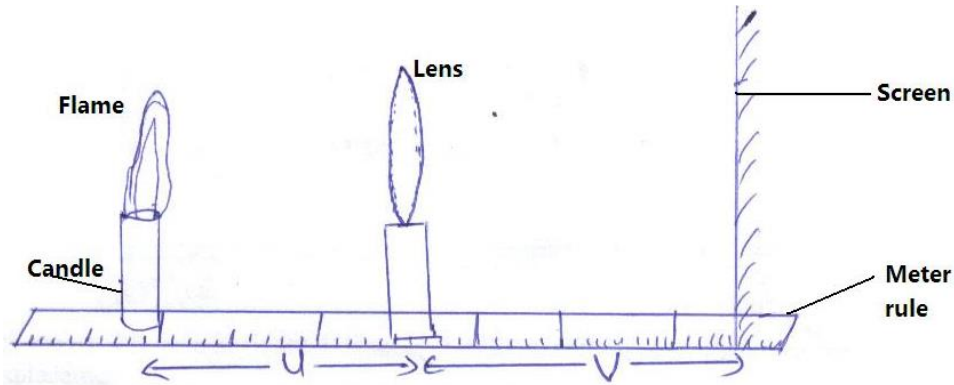
PART B

1. **Question one**

You are provided with the following

- A candle
- A lens and a lens holder
- A screen
- A meter rule

a) Set up the apparatus shown in the figure below. Ensure that the candle flame and the lens are approximately the same height above the bench.



- b) Set the position of the lens so that it is 0.3m from the candle ($u = 0.3\text{m}$). Adjust the position of the screen until a sharp image of the candle flame is obtained. Measure the distance V between the lens and the screen. Record the value of v in the table below.
- c) Repeat the procedures in (b) above for the other values of u in the table

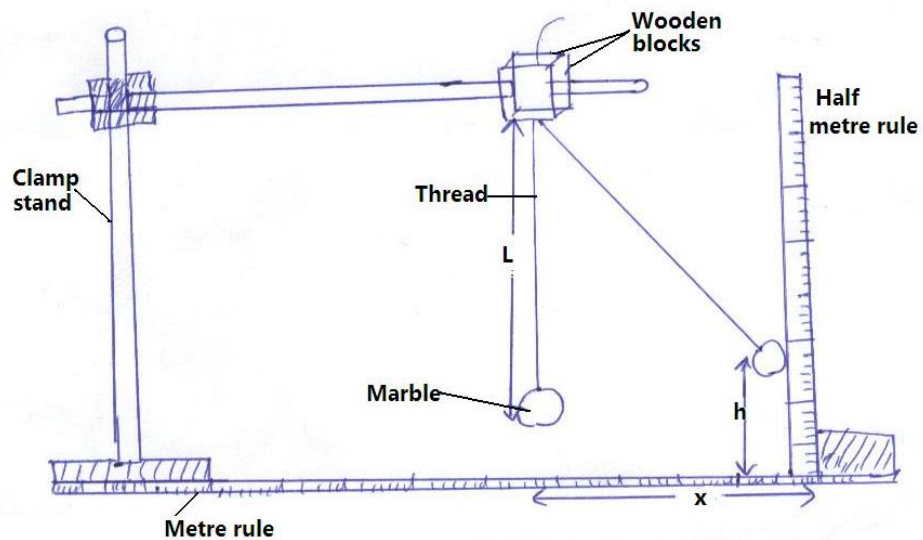
U (m)	0.30	0.35	0.40
Vm			
$m = \frac{v}{u}$			

- d) Given that $P = \frac{V}{m + 1}$ Use the results in the table above to determine the average value of P
(3mks)

2. Question Two

You are provided with;

- A marble with a piece of thread attached
 - Two wooden blocks
 - Clamp, boss and retort stand
 - Meter rule
 - V2 meter rule attached to wooden block
 - Cellotape (2 pieces of about 10cm long)
- (a) Fix the thread between the two wooden blocks and fasten in the clamp. Adjust the thread so that the length L shown in the figure below is 50cm. Fix the metre rule horizontally to the bench using the cellotape provided. Adjust the clamp so that the marble is next to the end of the metre rule as shown.



- (i) Displace the marble by a horizontal distance $x = 20\text{cm}$ and measure the corresponding vertical displacement

$h =$ _____ cm. (1mk)

- (ii) Repeat the experiment to find h for each of the following values of x , 25cm , 30cm , 35cm , 40cm , and 45cm . **Complete** the table below.

x cm	h cm	$x^2(\text{cm}^2)$	$x^2/h\text{cm}$
20			
25			
30			
35			
40			
45			

(7mks)

- (iii) Plot the graph of x^2/h against h . (5mks)

Graph

(iv) From the graph find the value of x^2/h when $h = 0$. (1mk)

(b) Raise the clamp slightly without changing the length L so that the marble is free to swing. Displace the marble through a horizontal distance of about 10cm and let free to swing.

(i) **Determine** the period T for one complete oscillation by timing twenty oscillations

Time for 20 oscillations = _____
(1mk)

Period T = _____
(1mk)

(ii) **Calculate** the value of P from the following equations.

$$T = 2\pi \frac{P}{g} \quad \text{where } g = 10\text{m/s}^2 \quad (3\text{mks})$$