

END TERM EXAMS-2019

PHYSICS PAPER 3 PRACTICAL FORM -4 TIME: 2 ½ HOURS

INSTRUCTIONS TO CANDIDATES

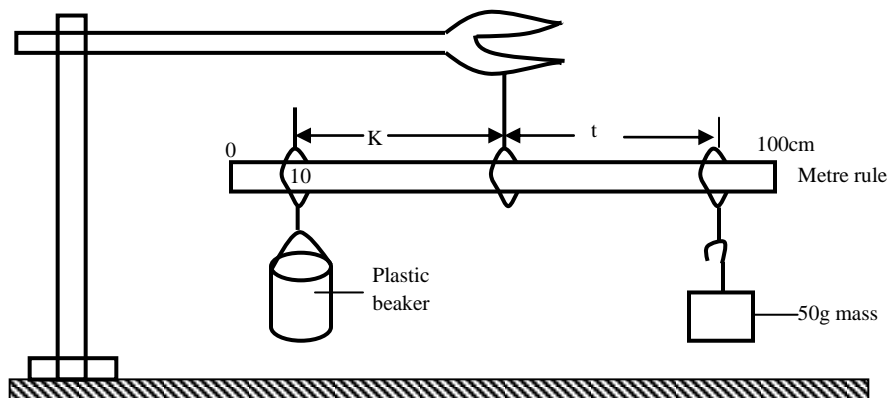
1. You are provided with the following apparatus:

- ✓ A metre rule
- ✓ A 250 ml plastic beaker
- ✓ 4 pieces of cotton thread each 30cm long
- ✓ A piece of cellotape
- ✓ 100ml measuring cylinder
- ✓ Complete stand
- ✓ A 50g mass
- ✓ Water in a beaker

Proceed

- (a) Suspend the metre rule using the thread and ensure it balances horizontally (the point of balance should remain unchanged throughout the experiment).
- (b) Suspend the empty plastic beaker at the 10cm mark and hang the 50g mass on the other side of the metre rule.
- Move the 50g mass along the metre rule until the set-up balances horizontally as shown in the figure below.

Figure 1



- (c) - Record the distances K and t (1 mark)

K _____ cm

T _____ cm

(Use the cellotape to fix the position of 50g mass)

- The 50g mass should remain at this position throughout the experiment.

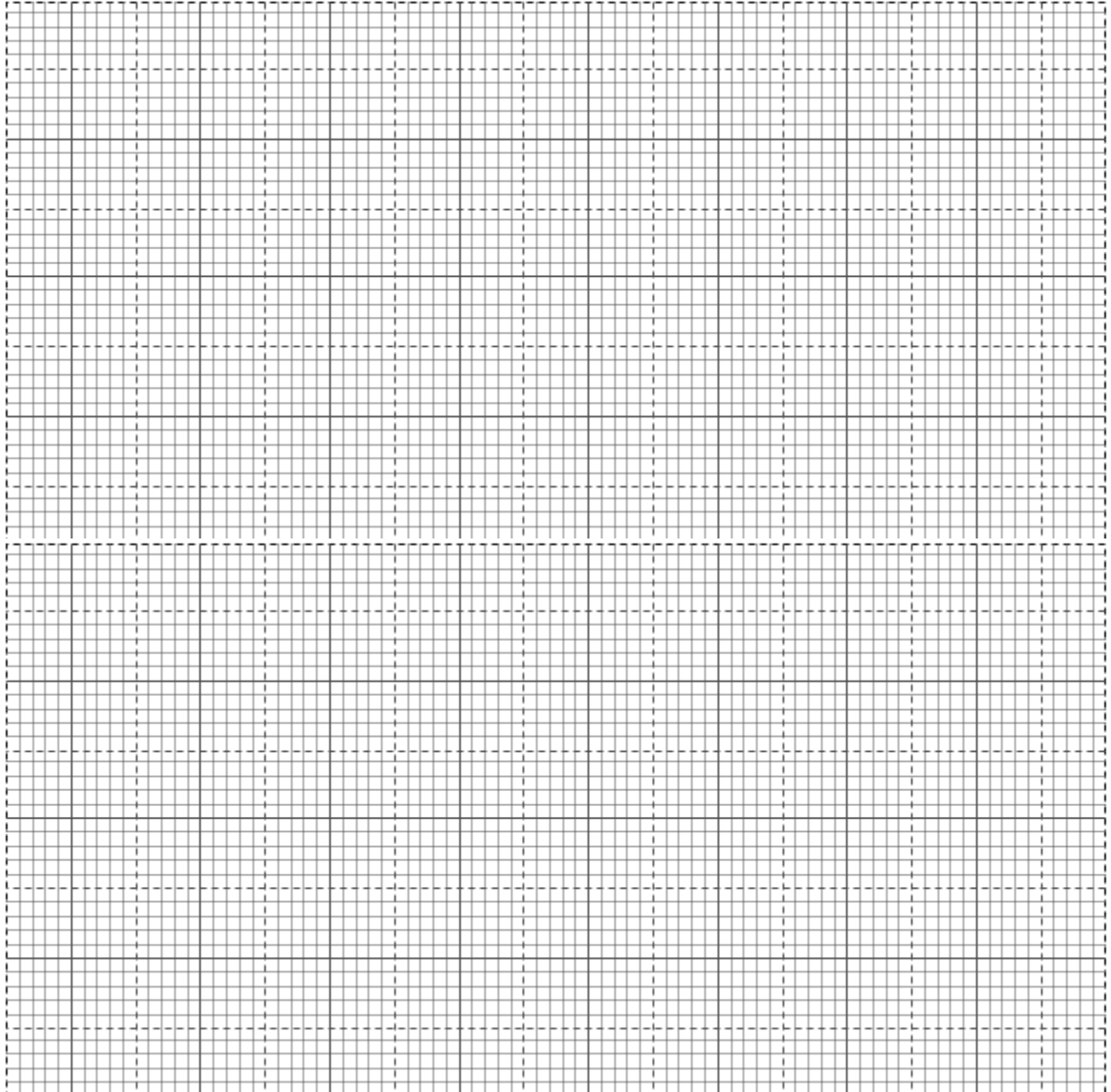
- (d) Using the measuring cylinder, measure 20cm³ of water and pour it into the plastic beaker. Adjust the position of the beaker until the metre rule balances horizontally again. Record the distance K in table 1 below.

- (e) Repeat the procedure (d) above for the other value of V shown. (6 Marks)

Table 1

Volume, V (cm^3)	0	20	40	60	80	100	120
Distance, K , (cm)							
$\frac{1}{k}$ (cm^{-1})							

(f) Plot a graph of volume, V (y – axis) against $\frac{1}{k}$ (5 Marks)



(g) Determine the slope, S , of the graph. (2 Marks)

(h) Given that $V = 1000 \left(\frac{50t}{dk} \right) - \frac{1000m}{d}$
 Use your graph to determine the values of
 (i) $d =$

(3 marks)

.....

(ii) $m =$ (3 marks)

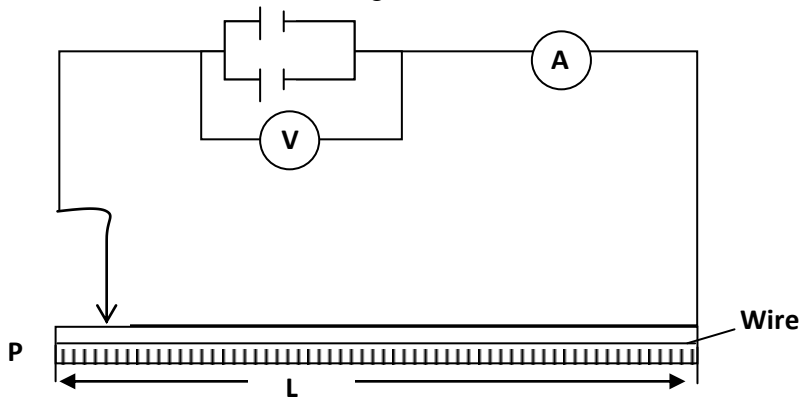
QUESTION 2

a) **You require;**

- Two dry cells (size D)
- A two cell holder
- A voltmeter
- An ammeter
- Mounted resistance wire on a mm scale
- 7 connecting wires (3 with crocodile clips)
- Vernier calipers (to be shared among five students)

Proceed as follows

i) Set the circuit as shown in figure below



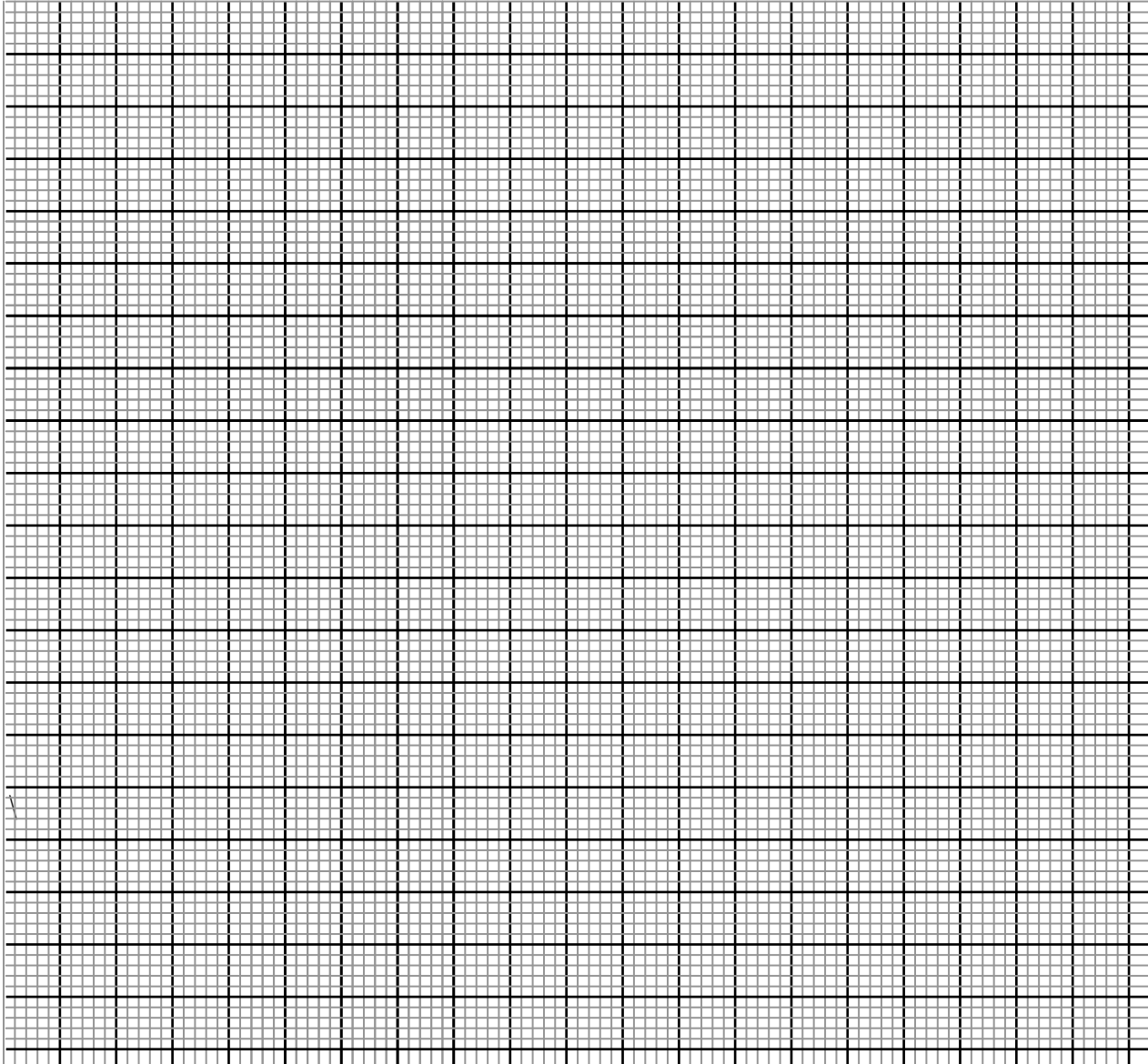
ii) With the crocodile clip at P (i.e. $L = 100\text{cm}$) take the voltmeter reading V and the ammeter reading I . Repeat the procedure for values of $L = 90, 70, 50, 40$ and 20cm respectively. Record your reading in table below

L (cm)	L(m)	V	I	V/I
100				
90				
70				
50				
40				
20				

iii) a) With the same apparatus design a circuit to determine the e.m.f of the two cells (1mk)

b) Measure the e.m.f of the cells _____ (volts) (1mk)

iv) Plot a graph V/I (ohms) against L (metres)



v) Calculate the slope S of the graph (3mks)

vi) Measure the diameter d of the mounted resistance wire (1mk)

d=mm=.....metres

vii) Given that $S = \pi d^2 / 4h$. Calculate the value of h (2mks)