232/3 2018

PHYSICS

PRACTICAL

JUNE /JULY

TIME: 2HRS 30 MINUTES

GATUNDU SOUTH FORM FOUR JOINT EVALUATION EXAMINATION 2018

MARKING SCHEME 2018

QUESITON TWO
This question has two parts A and B. answer both parts

PART A
You are provided with the following:

- A meter rule
- Two identical 100g masses
- About 200ml of liquid L in 250ml beaker
- Three pieces of thread, each about half metre long
- Stand with clamps
- Tissue paper

Proceed as follows:

(a) Using a stand and one piece of thread, suspend the metre rule in air such that it balances horizontally.

Record the position of the centre of gravity. G.

G = *500* mm **(1mk)**

NOTE: The metre rule should remain suspended at this point through out the experiment.
(b) Set up the apparatus as in figure 2 below.

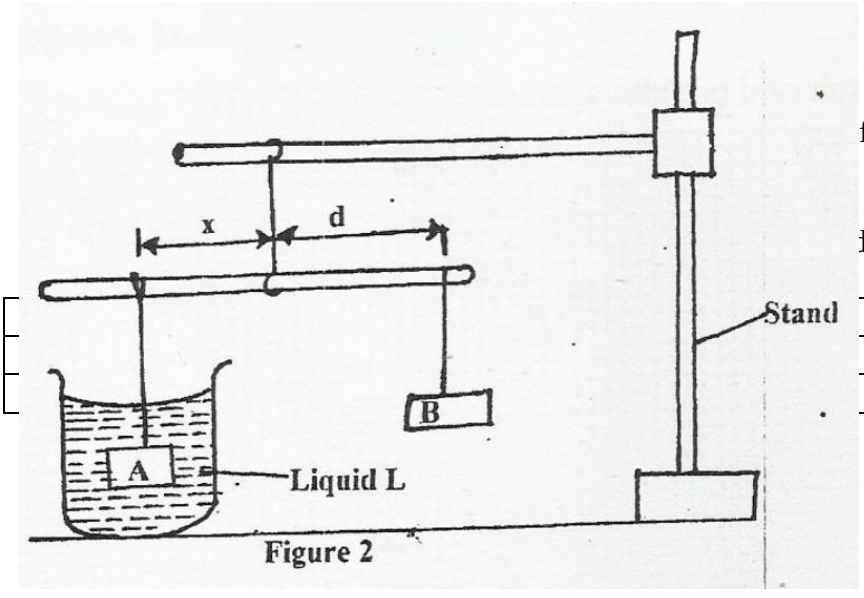

Figure 2

f mass B until it

l complete the table.

		300	
		27.4	±0.2

(c) Plot a graph of d (y axis) against x (cm).

Axes - labeled with quantity and correct units 1mk)
Scale - simple and uniform (1mk)
Plotting – each point ½mk to a max of four point (2mks)
Line -Straight line (1mk)

(d) Determine the slope, S of the graph

$$\text{Gradient} = \frac{DY}{D5} = \frac{14-0}{15-0}$$
$$= 0.9333$$

Correct substation both intervals ½mk each (1mk)
Evaluation (3sf a must) (1mk)
Ignore unit

(e) Given $S = \frac{F}{W}$, where F is the apparent weight of objects A in the liquid L and W is the actual weight of A, find: -

(i) The value of F.

$$0.9333 = \frac{F}{1}$$
$$F = 0.9333N$$

Correct substation (1mk)
Evaluation (3sf a must) (½mk)
Unit a must N (½mk)

(i) The up thrust, U

$$U = W - F$$

$$U = 1 - 0.9333$$
$$U = 0.0667N$$

Correct substation (1mk)
Evaluation (3sf a must) (1mk)
Unit a must N (1mk)

PART B
You are provided with the following:

- A concave mirror with holder
- A screen

- A meter rule
- A candle
- A match box (to be shared)

Proceed as follows:

(f) Set p the apparatus as in figure 3 below.

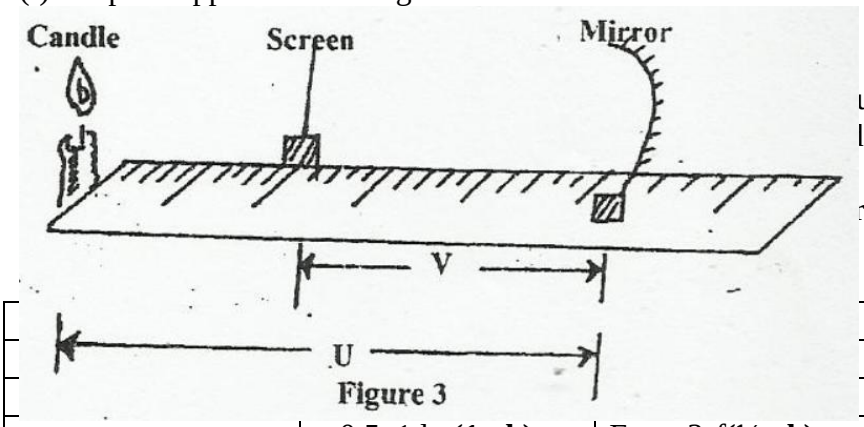

Figure 3

ust the position of the
l the distance V.

ecord the new distance

			(m+1)
			2.333
			2.329
	± 0.5 1dp **(1mk)**	Exert 3sf**(½mk)**	Exert 3sf **(½mk)**

(i) Given $f = \frac{V}{(m+1)}$, calculate the values of f hence determine the average value f_{av}: (3 marks)

$f_1 = \frac{22.5}{2.333} = 9.657\text{cm}$

Correct substation **(½mk)**
Evaluation with unit a must (3sf a must) **(½mk)**
No unit denial **(½mk)**
Wrong units award zero

$f_2 = \frac{30.1}{2.329} = 12.924\text{cm}$

Correct substation **(½mk)**
Evaluation with unit a must (3sf a must) **(½mk)**
No unit denial **(½mk)**
Wrong units award zero

$f = \frac{f1+f2}{2} = \frac{9.657 + 12.924}{2}$

$= 11.2905\text{cm}$

Correct substation **(½mk)**
Evaluation with unit a must (3sf a must) **(½mk)**
No unit denial **(½mk)**
Wrong units award zero