FORM 4 TERM 1 OPENER EXAM
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PHYSICS
PAPER 3
(PRACTICAL)
TIME: 2½ HOURS

MARKING SCHEME

1. i) Mass 0.057 kg ✓1

Mark according to the material of metre rule in your school

v) Table 1

Position of the mass of 50g	x (cm)	y (cm)
49.5	13.5	36.0
47.5	12.5	35.0
45.5	10.5	33.7
43.5	10.2	33.2
41.5	9.2	32.3
39.5	8.0	31.5
37.5	7.9	30.6
35.5	5.7	29.8

Maximum 6 marks

NB: *These values may be affected by the rule used*

vi) Plotting ✓2

Axes✓1

Scale ✓1

Line✓1

vii) $\frac{36-32.3}{13.5-9.2}$ ✓1 $= \frac{3.7}{4.3}$✓1

$= 0.86047$✓1

viii) I) $y = \frac{50}{P}x + C$

$\frac{50}{P} = slope$ ✓

$\frac{50}{P} = 0.86047$ ✓

$P = \frac{50}{0.86047} = 58$ ✓

(NB: *P should equal or be close to the candidates mass in (i)*)

II) C = 25 ✓± 1

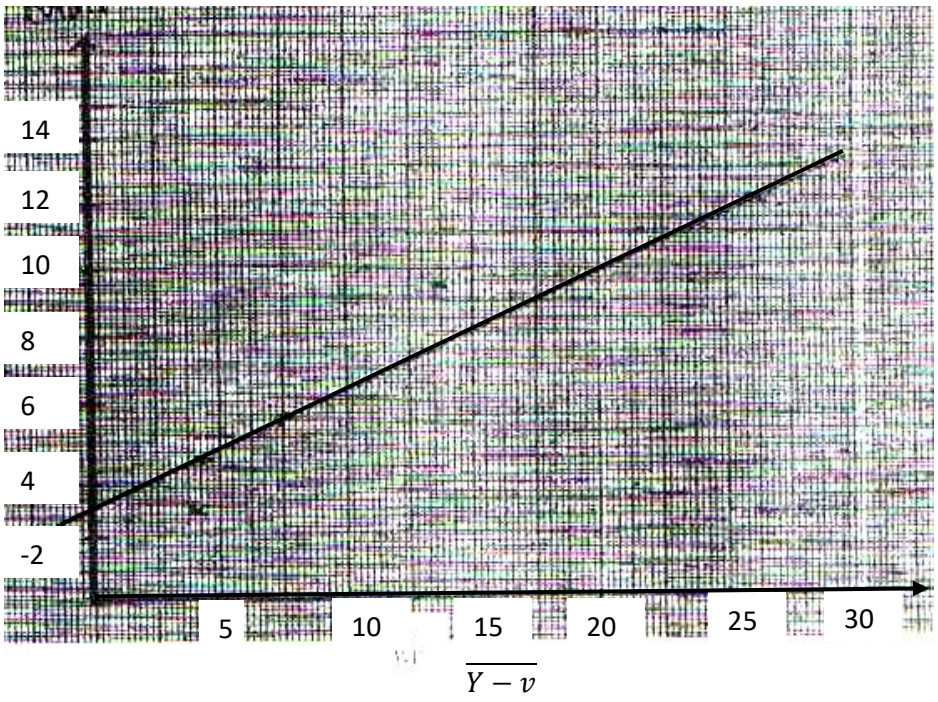
Centre of gravity (y-intercept) ✓

2. a) ii) V=2.7volts

vi)

Length l(cm)	10	20	30	50	80
Current	0.86	0.48	0.43	0.255	0.205
p.d V(v)	2.1	2.3	2.4	2.5	2.6
Y-V	0.6	0.4	0.3	0.2	0.1
$\frac{V}{Y-V}$	3.5	5.75	8.0	12.5	26
$\frac{V}{I} = R$	2.442	4.792	5.581	9.804	12.683

vii) a)



b) $Slope\ M = \frac{R}{\Delta\left(\frac{V}{Y-v}\right)} = \left(\frac{26-0}{12.6-2.6}\right)\Omega = 12.75\Omega$✓1$(values\ extracted\ from\ the\ graph)$

c) d=2.6Ω intercept on R axis✓1

$m = Gradient\ x5$✓1 $= (12.75x5)\Omega = 63.75\Omega$✓

Part B

L_1cm	L_2	$\frac{L_1}{L_2}$
30	50.0±2	0.60
60	27.5±2	2.18

$f1 = \frac{L_1}{m+1} = \frac{30}{1.6} = 18.75$

$f2 = {}^{60}/_{3.18} = 18.75$

$\frac{f_1+f_2}{2} = \frac{18.75+18.87}{2} = 18.81$