

PHYSICS 232/3
MARKING SCHEME

Q1(i)	d = 0.20 + 0.01m conversion to metre accuracy								1mk 1mk
(i)	ucm	35	40	45	50	55	60	70	5mks 1mk 1mk
	vcn	46.7	40.0	36.0	33.3	31.4	30.0	28.0	
	uvcn ²	1635	1600	1620	1665	1727	1800	1960	
	u + vcn	81.7	80.0	81.0	83.3	86.4	90.0	98.0	
G (i)									2mks 1mk 1mk 1mk
	<p>Slope = $\frac{1600 - 0}{80 - 0}$</p> <p>= 20cm; + 2</p>								1mk 1mk
	<p>Slope = Focal length ;</p> <p>= 20cm;</p>								1mk 1mk
	<p>d is also the focal length;</p> <p>if the object is placed at the principal focus, the rays emerge parallel. The rays are then reflected by the plane mirror along the same path and hence the image is next to the object cross-wire</p>								1mk 1mk
Q.2	(b) $L_o = 56.2\text{cm}$ (accept students value)								20mks
	(d)								1mk
	Mass (g)	50	100	120	150	200	250		1mk
	L (cm)	58.2	60.3	61.1	62.2	64.8	66.6		2mks
	E = L - L _o (cm)	2.0	4.1	4.9	6.0	8.6	10.6		3mks
	Time, t for 20 Oscillations (s)	6.70	8.74	9.25	10.25	11.82	13.20		
	Log t	0.8261	0.9415	0.9661	1.0107	1.0726	1.1212		1mk
									1mk
									1mk

Log e	0.3010	0.6128	0.6902	0.7782	0.9345	1.0253
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log t intercept = 0.67;
 $0.67 = \frac{1}{2} \log \left(\frac{16\pi^2}{A} \right)$
 $\log 4.677 = \log \left(\frac{16\pi^2}{A} \right)^{\frac{1}{2}}$
 $\left(\frac{16\pi^2}{A} \right)^{\frac{1}{2}} = 4.677$
 $A = 7.219$

(b)	Current	Voltage	Resistance
	0.04	0.15	3.75
	0.06	0.20	3.33
	0.08	0.30	3.75

(c) Average resistance = $\frac{3.75 + 3.33 + 3.75}{3}$
 $= 3.61\Omega$

GRAND TOTAL 40MKS

1mk
1mk
2mks
1mk

log t intercept = 0.67;

$0.67 = \frac{1}{2} \log \frac{16\pi^2}{A}$

$\log 4.677 = \log \frac{16\pi^2}{A}^{\frac{1}{2}}$

$\frac{16\pi^2}{A}^{\frac{1}{2}} = 4.677$

$A = 7.219$;

1mk

1mk

(b)

Current	Voltage	Resistance
0.04	0.15	3.75
0.06	0.20	3.33
0.08	0.30	3.75

Reading
2mks

Resistance
1mk

(c)

Average resistance = $\frac{3.75 + 3.33 + 3.75}{3}$

$= 3.61\Omega$;

1mk

GRAND TOTAL

40MKS

