5.4.3 Physics Paper 3 (232/3)

1. (a)

(i) $I = 0.34$, $V = 2.3$ ✓ **(1 mark)**

(ii) $R = \frac{2.3}{0.34}$

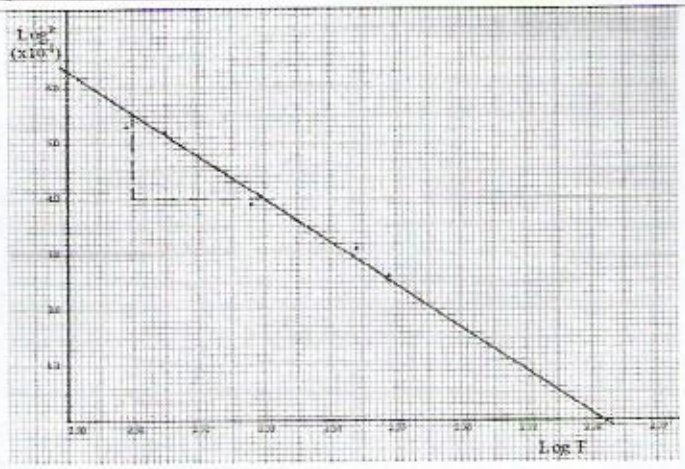
$= 6.76\Omega$ ✓ **(1 mark)**

(c) Table 1 **(8 marks)**

Temperature of water (°C)	**80**	**75**	**70**	**65**	**60**	**55**	
T (K)	353	348	343	338	333	328	
Current I (A)	0.76	0.72	0.68	0.64	0.60	0.56	✓✓
Potential difference V (V)	1.40	1.50	1.55	1.60	1.70	1.8	✓✓
Resistance $R=\frac{V}{I}(\Omega)$	1.84	2.08	2.28	2.50	2.83	3.21	✓✓
Log R (3 decimal places)	0.265	0.318	0.358	0.398	0.452	0.507	✓
Log T (3 decimal places)	2.548	2.541	2.535	2.528	2.522	2.516	✓

(e) **(4 marks)**

(i)



(ii) Slope $S = \frac{(-5.5-4.0)\times 10^{-1}}{2.51-2.528}$ ✓

$= \frac{1.5\times 10^{-1}}{0.0.9}$ ✓

$= -0.78$ ✓ **(3 marks)**

(f)	(i)	Log R = Log K + nLogT n = gradient = –0.78 ✓	(1 mark)
	(ii)	Log K = y-intercept ∴ K = Log K = 0.63 K = antlog of 0.63 ✓ K = 4.265 = 4.3 ✓	(2 marks)

QUESTION 2
PART A MARKING SCHEME

a)	Centimeter mark = 50.1cm	✓	(1 mark)
b)	(i) d = 11.3 cm d = 0.113m	✓	(1 mark)
c)	(i) V = 17cm^3	✓	(1 mark)
	(ii) V_1 = 19.5cm^3 d_1 = 10cm	✓ ✓	(1 mark) (1 mark)
	(iii) (I) Volume of water displaced V = V_1 – V = 19.5 – 17 = 2.5cm^3 (II) Weight of displaced water ρV = m ✓ $w = mg = 10^{-3} x10x2.5$ N ✓ $= 2.5x10^{-2}$ N ✓	✓	(1 mark) 3 marks

d)	(i) $W \times 0.3 = 0.5 \times 0.1$ ✓ $W = 0.166$ $= 0.17\ N$ ✓	(2 marks)
	(ii) $N = mg$ $\frac{20}{1000} x10 = 0.2N$ ✓	(1 mark)
	(iii)Loss in weight $= 0.2 - 0.17$ $= 0.03\ N$ ✓	(1 mark)
	Total	**13 marks**

PART B

e)	(i) When $U = 15$ $V = 42$ ✓	(1 mark)
	(ii) $M_1 = \frac{42}{15}$ $= 2.8$ ✓	(1 mark)
	(iii) $f_1 = \frac{2.8x15}{2.8+1}$ $= 11.05$	(1 mark)
f	(i) When $U = 18$ $V = 29$ ✓	(1mark)
	(ii) $M_2 = \frac{29}{18}$ $= 1.6$ ✓	(1 mark)
	(iii) $f_2 = \frac{1.6x18}{1.6+1}$ $= 11.08$ ✓	(1 mark)
g	Average $f = \frac{11.05+11.08}{2}$ $= 11.1$ ✓	(1 mark)
		Total 7 marks