

(f)	(i)	$\text{Log } R = \text{Log } K + n \text{Log } T$ $n = \text{gradient}$ $= -0.78 \checkmark$	(1 mark)
	(ii)	$\text{Log } K = \text{y-intercept}$ $\therefore K =$ $\text{Log } K = 0.63$ $K = \text{antlog of } 0.63 \checkmark$ $K = 4.265$ $= 4.3 \checkmark$	(2 marks)

QUESTION 2
PART A MARKING SCHEME

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

d)	(i) $W \times 0.3 = 0.5 \times 0.1$ ✓ $W = 0.166$ $= 0.17 \text{ N}$ ✓	(2 marks)
	(ii) $N = mg$ $\frac{20}{1000} \times 10 = 0.2 \text{ N}$ ✓	(1 mark)
	(iii) Loss in weight = $0.2 - 0.17$ $= 0.03 \text{ N}$ ✓	(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) $f_1 = \frac{2.8 \times 15}{2.8 + 1}$ $= 11.05$	(1 mark)
f	(i) When $U = 18$ $V = 29$ ✓	(1 mark)
	(ii) $M_2 = \frac{29}{18}$ $= 1.6$ ✓	(1 mark)
	(iii) $f_2 = \frac{1.6 \times 18}{1.6 + 1}$ $= 11.08$ ✓	(1 mark)
g	Average $f = \frac{11.05 + 11.08}{2}$ $= 11.1$ ✓	(1 mark)
	Total	7 marks