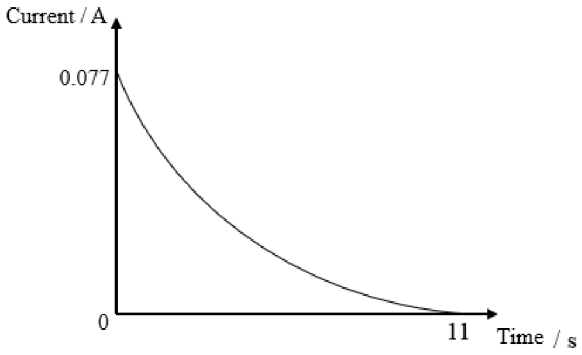
Question Number	Answer		Mark
12(a)	• Curve of decreasing negative gradient beginning at a positive current value • Initial current labelled as 0.077 (A) • Use of Time Constant = RC • Time for discharge marked as 11(.05) (s) **Or** 2.2 s marked when current has decreased to about 1/3 of initial value (0.028 A) **Or** 1.5 s marked when current has decreased to about 1/2 of initial value (0.038 A) Example of graph  Example of calculation I = V/R = 5000 V / 65×10^3 Ω = 0.077 A $T = RC = 65\times10^3\ \Omega \times 34\times10^{-6}$ F = 2.21 s	**(1)** **(1)** **(1)** **(1)**	**4**
12(b)	• Use of $I_0 = V/R$ • Use of $\ln I = \ln I_0 - t/RC$ • t = 0.53 ms • Conclusion with comparison between relevant calculated quantity and corresponding value from question **Or** • Use of $I_0 = V/R$ • Use $I = I_0 e^{-\frac{t}{RC}}$ with t = 2.0 ms • I = 22.5 A • Conclusion with comparison between relevant calculated quantity and corresponding value from question Example of calculation I_0 = 5000/150 = 33.3 A $\ln 30 = \ln 33.3 - t/150\Omega \times 34 \times 10^{-6}$ F t = 0.53 ms which is less than 2.0 ms, so it does not meet the requirement	**(1)** **(1)** **(1)** **(1)** **(1)** **(1)** **(1)** **(1)**	**4**
	Total for question 12		**8**